



Disadvantaged Business Enterprise Disparity Study: Volume I

Prepared for the Maryland Department of
Transportation

July 5, 2013

PROJECT TEAM

Prime Contractor:

NERA Economic Consulting

Project Director:

**Jon Wainwright, Ph.D., Senior Vice President,
NERA Economic Consulting**

Subconsultants:

Abt SRBI, Inc.

Armand Resource Group, Inc.

Colette Holt & Associates

J&D Data Services

ACKNOWLEDGMENTS

This Study would not have been possible without the generous assistance of leadership and staff at the Maryland Department of Transportation as well as at the State Highway Administration, the Maryland Transit Administration, and the Maryland Aviation Administration. Our thanks go to the many other state personnel, too numerous to mention here, who helped us greatly along the way. Finally, a very special thanks to all the prime contractors, prime consultants, vendors, subcontractors, subconsultants, and suppliers who took precious time away from running their businesses to help us collect the data necessary to perform this Study.

NOTICE

This report sets forth the information required by the terms of NERA's engagement by the Maryland Department of Transportation and is prepared in the form expressly required thereby. This report is intended to be read and used as a whole and not in parts. Separation or alteration of any section or page from the main body of this report is expressly forbidden and invalidates this report.

This report is not intended to be used, reproduced, quoted or distributed for any purpose other than those stipulated in the terms of NERA's engagement by the Maryland Department of Transportation without the prior written permission of NERA.

Information furnished by others, upon which all or portions of this report are based, is believed to be reliable but has not been verified. No warranty is given as to the accuracy of such information. Public information and industry and statistical data, including without limitation contracting, subcontracting, and procurement data are from sources we deem to be reliable; however, we make no representation as to the accuracy or completeness of such information and have accepted the information without further verification.

The findings contained in this report may contain predictions based on current data and historical trends. Any such predictions are subject to inherent risks and uncertainties. In particular, actual results could be impacted by future events which cannot be predicted or controlled, including, without limitation, changes in business strategies, the development of future products and services, changes in market and industry conditions, the outcome of contingencies, changes in management, changes in law or regulations. NERA accepts no responsibility for actual results or future events.

The opinions expressed in this report are valid only for the purpose stated herein and as of the date of this report. No obligation is assumed to revise this report to reflect changes, events or conditions, which occur subsequent to the date hereof.

All decisions in connection with the implementation or use of advice or recommendations contained in this report are the sole responsibility of the Maryland Department of Transportation. This report does not represent investment advice nor does it provide an opinion regarding the fairness of any transaction to any and all parties.

This report is for the exclusive use of the Maryland Department of Transportation. There are no third party beneficiaries with respect to this report, and NERA does not accept any liability to any third party. In particular, NERA shall not have any liability to any third party in respect of the contents of this report or any actions taken or decisions made as a consequence of the results, advice or recommendations set forth herein.

Contents

Volume I:

Executive Summary	i
A. Introduction	i
B. Defining the Relevant Markets.....	i
C. DBE Availability in MDOT’s Market Area.....	ii
D. Statistical Disparities in Minority and Female Business Formation and Business Owner Earnings	v
E. Statistical Disparities in Credit/Capital Markets	vii
F. DBE Public Sector Utilization vs. Availability in MDOT’s Contracting and Procurement Markets	viii
G. Anecdotal Evidence	xviii
H. Conclusion.....	xix
I. Defining the Relevant Markets	1
A. Preparing the Master Contract/Subcontract Database	1
B. Geographic Market Definition for Contracting and Procurement	8
C. Product Market Definition for Contracting and Procurement	12
II. DBE Availability in MDOT’s Market Area	21
A. Introduction.....	21
B. Identifying Businesses in the Relevant Markets.....	23
C. Estimates of DBE Availability by Detailed Race, Gender, and Industry	61
III. Statistical Disparities in Minority and Female Business Formation and Business Owner Earnings.....	87
A. Review of Relevant Literature	87
B. Race and Gender Disparities in Earnings	91
C. Race and Gender Disparities in Business Formation.....	103
D. Expected Business Formation Rates—Implications for Current DBE Availability.....	112
E. Evidence from the Survey of Business Owners.....	113
IV. Statistical Disparities in Capital Markets	123
A. Introduction	123
B. Theoretical Framework and Review of the Literature	124
C. Empirical Framework and Description of the Data	128
D. Qualitative Evidence	132
E. Differences in Loan Denial Rates by Race, Ethnicity or Gender.....	136
F. Differences in Interest Rates Charged on Approved Loans	147
G. Loan Approval Rates and Access to Credit	150
H. Analysis of Credit Market Discrimination in the U.S. in 1998.....	153
I. Analysis of Credit Market Discrimination in the U.S. in 2003	164
J. Further Analysis of Credit Market Discrimination: NERA Surveys 1999-2007.....	172
K. Conclusions	175
V. DBE Utilization and Disparity in MDOT Contracting.....	181

A. Introduction.....	181
B. Utilization	182
C. Disparity Analysis.....	185
D. Current versus Expected Availability	219
VI. Qualitative Evidence of Disparity	223
A. Business Experience Surveys	224
B. Business Owner Interviews.....	242
C. Conclusion	251
References.....	253
Appendix I. Glossary.....	261
Appendix II. Master Directory Sources.....	265
Appendix III. Individual Modal Administration Tables.....	271
 Volume II:	
Appendix IV. Utilization, Availability, and Disparity Tables by Detailed Industry Category.....	421
 Volume III:	
Appendix IV. Utilization, Availability, and Disparity Tables by Detailed Industry Category, Cont'd	756

List of Tables

Volume I:

Table A1. Estimated Availability for MDOT (Award Dollar Weights)—Overall and By Major Procurement Category.....	iii
Table A2. Estimated Availability for MDOT (Paid Dollar Weights)—Overall and By Major Procurement Category.....	iii
Table A3. Estimated Availability for MDOT (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category.....	iv
Table A4. Estimated Availability for MDOT (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category.....	iv
Table B1. DBE Utilization at MDOT (Dollars Awarded).....	viii
Table B2. DBE Utilization at MDOT (Dollars Paid).....	viii
Table B3. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Awarded).....	ix
Table B4. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Paid).....	ix
Table C1. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Awarded).....	x
Table C2. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Paid).....	xii
Table C3. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Awarded).....	xiv
Table C4. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Paid).....	xvi
Table 1.1. Distribution of MDOT Prime Contracts and Purchase Orders by Procurement Category.....	3
Table 1.2. Distribution of MDOT Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities.....	4
Table 1.3. Summary of Master Contract/Subcontract Database: MDOT Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	6
Table 1.4. Summary of Master Contract/Subcontract Database: Federally-Assisted MDOT Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	7
Table 1.5. Distribution of MDOT Contracting and Procurement Dollars by Geographic Location.....	9
Table 1.6. Distribution of MDOT Prime Contract and Subcontract Award Dollars by State and County, 2005-2009.....	10

Table 1.7. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: Construction.....	14
Table 1.8. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS	15
Table 1.9. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance.....	16
Table 1.10. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: IT.....	17
Table 1.11. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services.....	18
Table 1.12. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE	19
Table 2.1. Construction—Number of Businesses and Industry Weight, by NAICS Code	25
Table 2.2. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code.....	28
Table 2.3. Maintenance—Number of Businesses and Industry Weight, by NAICS Code	30
Table 2.4. IT—Number of Businesses and Industry Weight, by NAICS Code	33
Table 2.5. Services—Number of Businesses and Industry Weight, by NAICS Code.....	34
Table 2.6. CSE—Number of Businesses and Industry Weight, by NAICS Code.....	37
Table 2.7. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code	39
Table 2.8. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code.....	42
Table 2.9. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code	44
Table 2.10. IT—Number of Listed DBEs and Industry Weight, by NAICS Code	47
Table 2.11. Services—Number of Listed DBEs and Industry Weight, by NAICS Code.....	48
Table 2.12. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code.....	51
Table 2.13. Listed DBE Survey—Amount of Misclassification, by NAICS Code Grouping.....	55
Table 2.14. Listed DBE Survey—Amount of Misclassification, by Putative DBE Type	56
Table 2.15. Unclassified Businesses Survey —By NAICS Code Grouping	57
Table 2.16. Unclassified Businesses Survey—By Race and Gender	58
Table 2.17. Detailed DBE Availability—Construction	62
Table 2.18. Detailed DBE Availability—AE-CRS.....	68
Table 2.19. Detailed DBE Availability—Maintenance	72
Table 2.20. Detailed DBE Availability—IT	76
Table 2.21. Detailed DBE Availability—Services	77

Table 2.22. Detailed DBE Availability—CSE	82
Table 2.23. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category	84
Table 2.24. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category	84
Table 2.25. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category	85
Table 2.26. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category	85
Table 3.1. Annual Wage Earnings Regressions, All Industries, 2006–2008	95
Table 3.2. Annual Wage Earnings Regressions, Construction and Related Industries, 2006–2008.....	96
Table 3.3. Annual Wage Earnings Regressions, Goods and Services Industries, 2006–2008	97
Table 3.4. Annual Business Owner Earnings Regressions, All Industries, 2006–2008	100
Table 3.5. Business Owner Earnings Regressions, Construction and Related Industries, 2006–2008.....	101
Table 3.6. Business Owner Earnings Regressions, Goods and Services Industries, 2006–2008.....	102
Table 3.7. Self-Employment Rates in 2006–2008 for Selected Race and Gender Groups: United States and the Maryland Market Area, All Industries.....	105
Table 3.8. Self-Employment Rates in 2006–2008 for Selected Race and Gender Groups: United States and the Maryland Market Area, Construction and AE-CRS Sectors and Goods and Services Sectors	106
Table 3.9. Business Formation Regressions, All Industries, 2006–2008	109
Table 3.10. Business Formation Regressions, Construction and Related Industries, 2006–2008.....	110
Table 3.11. Business Formation Regressions, Goods and Services Industries, 2006–2008.....	111
Table 3.12. Actual and Potential Business Formation Rates in the Maryland Market Area	113
Table 3.13. Disparity Ratios from the 2007 Survey of Business Owners, United States, All Industries.....	116
Table 3.14. Disparity Ratios from the 2007 Survey of Business Owners, State of Maryland, All Industries.....	117
Table 3.15. Disparity Ratios from the 2007 Survey of Business Owners, United States, Construction and AE-CRS	118
Table 3.16. Disparity Ratios from the 2007 Survey of Business Owners, State of Maryland, Construction and AE-CRS	119

Table 3.17. Disparity Ratios from the 2007 Survey of Business Owners, United States, Goods and Services.....	120
Table 3.18. Disparity Ratios from the 2007 Survey of Business Owners, State of Maryland, Goods and Services.....	121
Table 4.1. Selected Population-Weighted Sample Means of Loan Applicants – USA, 1993.....	130
Table 4.2. Selected Sample Means of Loan Applicants – SATL 1993	131
Table 4.3. Problems Firms Experienced During Preceding 12 Months - USA, 1993	133
Table 4.4. Problems Firms Experienced During Preceding 12 Months – SATL, 1993	133
Table 4.5. Percentage of Firms Reporting Most Important Issues Affecting Them Over the Next 12 Months - USA, 1993	134
Table 4.6. Percentage of Firms Reporting Most Important Issues Affecting Them Over the Next 12 Months – SATL, 1993.....	134
Table 4.7. Types of Problems Facing Your Business, by Race and Gender – USA, 2005 (%).....	135
Table 4.8. Determinants of Loan Denial Rates – USA, 1993.....	139
Table 4.9. Determinants of Loan Denial Rates – SATL Region, 1993	140
Table 4.10. Alternative Models of Loan Denials, 1993.....	144
Table 4.11. Models of Credit Card Use – USA, 1993	146
Table 4.12. Models of Credit Card Use – SATL, 1993	147
Table 4.13. Models of Interest Rate Charged – USA, 1993	148
Table 4.14. Models of Interest Rate Charged – SATL, 1993	149
Table 4.15. Racial Differences in Failing to Apply for Loans Fearing Denial, 1993.....	151
Table 4.16. Models of Failure to Obtain Credit Among Firms that Desired Additional Credit, 1993.....	153
Table 4.17. Most Important Problem Facing Your Business Today – USA, 1998	155
Table 4.18. Determinants of Loan Denial Rates - USA, 1998	158
Table 4.19. Determinants of Loan Denial Rates – SATL, 1998.....	159
Table 4.20. More Loan Denial Probabilities, 1998.....	161
Table 4.21. Models of Interest Rate Charged, 1998	163
Table 4.22. Racial Differences in Failing to Apply for Loans Fearing Denial, 1998.....	163
Table 4.23. Models of Credit Card Use, 1998	164
Table 4.24. Most Important Problem Facing Your Business Today – USA, 2003	166

Table 4.25. Determinants of Loan Denial Rates - USA, 2003	168
Table 4.26. Determinants of Loan Denial Rates – SATL, 2003	169
Table 4.27. Models of Interest Rate Charged, 2003	171
Table 4.28. Models of Credit Card Use, 2003	171
Table 4.29. Racial Differences in Failing to Apply for Loans Fearing Denial, 2003.....	172
Table 4.30. Determinants of Loan Denial Rates – Nine Jurisdictions.....	174
Table 4.31. Determinants of Interest Rates – Nine Jurisdictions.....	175
Table 5.1. DBE Utilization at MDOT (Dollars Awarded).....	183
Table 5.2. DBE Utilization at MDOT (Dollars Paid)	183
Table 5.3. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Awarded)	184
Table 5.4. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Paid).....	185
Table 5.5. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Awarded)	187
Table 5.6. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Paid).....	190
Table 5.7. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Awarded)	192
Table 5.8. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Paid).....	194
Table 5.9. Utilization, Availability, and Disparity Results for SHA Contracting, Overall and by Contracting Category (Dollars Awarded)	195
Table 5.10. Utilization, Availability, and Disparity Results for SHA Contracting, Overall and by Contracting Category (Dollars Paid).....	197
Table 5.11. Utilization, Availability, and Disparity Results for Federally-Assisted SHA Contracting, Overall and by Contracting Category (Dollars Awarded)	199
Table 5.12. Utilization, Availability, and Disparity Results for Federally-Assisted SHA Contracting, Overall and by Contracting Category (Dollars Paid).....	201
Table 5.13. Utilization, Availability, and Disparity Results for MTA Contracting, Overall and by Contracting Category (Dollars Awarded)	203
Table 5.14. Utilization, Availability, and Disparity Results for MTA Contracting, Overall and by Contracting Category (Dollars Paid).....	205
Table 5.15. Utilization, Availability, and Disparity Results for Federally-Assisted MTA Contracting, Overall and by Contracting Category (Dollars Awarded)	207
Table 5.16. Utilization, Availability, and Disparity Results for Federally-Assisted MTA Contracting, Overall and by Contracting Category (Dollars Paid).....	209

Table 5.17. Utilization, Availability, and Disparity Results for MAA Contracting, Overall and by Contracting Category (Dollars Awarded)	211
Table 5.18. Utilization, Availability, and Disparity Results for MAA Contracting, Overall and by Contracting Category (Dollars Paid).....	213
Table 5.19. Utilization, Availability, and Disparity Results for Federally-Assisted MAA Contracting, Overall and by Contracting Category (Dollars Awarded)	215
Table 5.20. Utilization, Availability, and Disparity Results for Federally-Assisted MAA Contracting, Overall and by Contracting Category (Dollars Paid).....	217
Table 5.21. Current Availability and Expected Availability for MDOT	219
Table 6.1. Race, Gender and Procurement Category of Mail Survey Respondents (Number of Respondents)	226
Table 6.2. Survey Respondents Indicating They Had Worked or Attempted to Work for Public Sector Agencies in the Last Five Years	227
Table 6.3. Firms Indicating They Had Been Treated Less Favorably Due to Race and/or Gender While Participating in Business Dealings	230
Table 6.4. Firms Indicating They Had Been Treated Less Favorably Due to Race and/or Gender While Participating in Business Dealings (Rankings)	231
Table 6.5. Prevalence of Disparate Treatment Facing DBEs	233
Table 6.6. Prevalence of Disparate Treatment Facing DBEs, by Type of Business Dealing	235
Table 6.7. Firms Indicating that Specific Factors in the Business Environment Make It Harder or Impossible to Obtain Contracts, Sample Differences.....	237
Table 6.8. Firms Indicating that Specific Factors in the Business Environment Make It Harder or Impossible to Obtain Contracts, Regression Results.....	238
Table 6.9. Percent of DBEs Indicating that Prime Contractors Who Use Them as Subcontractors on Projects with DBE Goals Seldom or Never <i>Hire</i> Them on Projects without Such Goals	239
Table 6.10. Percent of DBEs Indicating that Prime Contractors Who Use Them as Subcontractors on Projects with DBE Goals Seldom or Never <i>Solicit</i> Them on Projects without Such Goals	240
Table 1.2.A. Distribution of SHA Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities	271
Table 1.2.B. Distribution of MTA Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities	272
Table 1.2.C. Distribution of MAA Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities	273
Table 1.3.A. Summary of Master Contract/Subcontract Database: SHA Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	274

Table 1.3.B. Summary of Master Contract/Subcontract Database: MTA Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	275
Table 1.3.C. Summary of Master Contract/Subcontract Database: MAA Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	276
Table 1.4.A. Summary of Master Contract/Subcontract Database: Federally-Assisted SHA Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	277
Table 1.4.B. Summary of Master Contract/Subcontract Database: Federally-Assisted MTA Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	278
Table 1.4.C. Summary of Master Contract/Subcontract Database: Federally-Assisted MAA Prime Contracts and Subcontracts by Procurement Category, 2005-2009.....	279
Table 1.5.A. Distribution of SHA Contracting and Procurement Dollars by Geographic Location	280
Table 1.5.B. Distribution of MTA Contracting and Procurement Dollars by Geographic Location	281
Table 1.5.C. Distribution of MAA Contracting and Procurement Dollars by Geographic Location	282
Table 1.6.A. Distribution of SHA Prime Contract and Subcontract Award Dollars by State and County, 2005-2009.....	283
Table 1.6.B. Distribution of MTA Prime Contract and Subcontract Award Dollars by State and County, 2005-2009.....	284
Table 1.6.C. Distribution of MAA Prime Contract and Subcontract Award Dollars by State and County, 2005-2009.....	285
Table 1.7.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Construction.....	286
Table 1.7.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Construction.....	287
Table 1.7.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Construction.....	288
Table 1.8.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS	289
Table 1.8.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS	290
Table 1.8.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS	291
Table 1.9.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance.....	292

Table 1.9.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance.....	293
Table 1.9.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance.....	294
Table 1.10.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: IT.....	295
Table 1.10.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: IT.....	296
Table 1.11.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services.....	297
Table 1.11.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services.....	298
Table 1.11.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services.....	299
Table 1.12.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE.....	300
Table 1.12.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE.....	301
Table 1.12.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE.....	302
Table 2.1.A. Construction—Number of Businesses and Industry Weight, by NAICS Code (SHA).....	303
Table 2.1.B. Construction—Number of Businesses and Industry Weight, by NAICS Code (MTA).....	306
Table 2.1.C. Construction—Number of Businesses and Industry Weight, by NAICS Code (MAA).....	308
Table 2.2.A. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code (SHA).....	309
Table 2.2.B. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code (MTA).....	311
Table 2.2.C. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code (MAA).....	312
Table 2.3.A. Maintenance—Number of Businesses and Industry Weight, by NAICS Code (SHA).....	313
Table 2.3.B. Maintenance—Number of Businesses and Industry Weight, by NAICS Code (MTA).....	315

Table 2.3.C. Maintenance—Number of Businesses and Industry Weight, by NAICS Code (MAA).....	316
Table 2.4.A. IT—Number of Businesses and Industry Weight, by NAICS Code (SHA).....	317
Table 2.4.B. IT—Number of Businesses and Industry Weight, by NAICS Code (MTA).....	318
Table 2.5.A. Services—Number of Businesses and Industry Weight, by NAICS Code (SHA).....	319
Table 2.5.B. Services—Number of Businesses and Industry Weight, by NAICS Code (MTA).....	320
Table 2.5.C. Services—Number of Businesses and Industry Weight, by NAICS Code (MAA).....	323
Table 2.6.A. CSE—Number of Businesses and Industry Weight, by NAICS Code (SHA).....	324
Table 2.6.B. CSE—Number of Businesses and Industry Weight, by NAICS Code (MTA).....	325
Table 2.6.C. CSE—Number of Businesses and Industry Weight, by NAICS Code (MAA).....	326
Table 2.7.A. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA).....	327
Table 2.7.B. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA).....	330
Table 2.7.C. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA).....	332
Table 2.8.A. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA).....	333
Table 2.8.B. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA).....	335
Table 2.8.C. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA).....	336
Table 2.9.A. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA).....	337
Table 2.9.B. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA).....	339
Table 2.9.C. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA).....	340
Table 2.10.A. IT—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA).....	341

Table 2.10.B. IT—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA).....	342
Table 2.11.A. Services—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA).....	343
Table 2.11.B. Services—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA).....	344
Table 2.11.C. Services—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA).....	347
Table 2.12.A. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA).....	348
Table 2.12.B. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA).....	349
Table 2.12.C. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA).....	350
Table 2.17.A. Detailed DBE Availability—Construction (SHA).....	351
Table 2.17.B. Detailed DBE Availability—Construction (MTA).....	357
Table 2.17.C. Detailed DBE Availability—Construction (MAA).....	360
Table 2.18.A. Detailed DBE Availability—AE-CRS (SHA).....	362
Table 2.18.B. Detailed DBE Availability—AE-CRS (MTA).....	365
Table 2.18.C. Detailed DBE Availability—AE-CRS (MAA).....	367
Table 2.19.A. Detailed DBE Availability—Maintenance (SHA).....	369
Table 2.19.B. Detailed DBE Availability—Maintenance (MTA).....	373
Table 2.19.C. Detailed DBE Availability—Maintenance (MAA).....	374
Table 2.20.A. Detailed DBE Availability—IT (SHA).....	376
Table 2.20.B. Detailed DBE Availability—IT (MTA).....	377
Table 2.21.A. Detailed DBE Availability—Services (SHA).....	378
Table 2.21.B. Detailed DBE Availability—Services (MTA).....	380
Table 2.21.C. Detailed DBE Availability—Services (MAA).....	385
Table 2.22.A. Detailed DBE Availability—CSE (SHA).....	387
Table 2.22.B. Detailed DBE Availability—CSE (MTA).....	388
Table 2.22.C. Detailed DBE Availability—CSE (MAA).....	389
Table 2.23.A. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category (SHA).....	390

Table 2.23.B. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category (MTA)	391
Table 2.23.C. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category (MAA)	392
Table 2.24.A. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category (SHA)	393
Table 2.24.B. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category (MTA)	394
Table 2.24.C. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category (MAA)	395
Table 2.25.A. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category (SHA)	396
Table 2.25.B. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MTA)	397
Table 2.25.C. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MAA)	398
Table 2.26.A. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category (SHA)	399
Table 2.26.B. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MTA)	400
Table 2.26.C. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MAA)	401
Table 5.1.A. DBE Utilization at SHA (Dollars Awarded)	402
Table 5.1.B. DBE Utilization at MTA (Dollars Awarded)	403
Table 5.1.C. DBE Utilization at MAA (Dollars Awarded)	404
Table 5.2.A. DBE Utilization at SHA (Dollars Paid)	405
Table 5.2.B. DBE Utilization at MTA (Dollars Paid)	406
Table 5.2.C. DBE Utilization at MAA (Dollars Paid)	407
Table 5.3.A. DBE Utilization at SHA on Federally-Assisted Contracts (Dollars Awarded)	408
Table 5.3.B. DBE Utilization at MTA on Federally-Assisted Contracts (Dollars Awarded)	409
Table 5.3.C. DBE Utilization at MAA on Federally-Assisted Contracts (Dollars Awarded)	410
Table 5.4.A. DBE Utilization at SHA on Federally-Assisted Contracts (Dollars Paid)	411
Table 5.4.B. DBE Utilization at MTA on Federally-Assisted Contracts (Dollars Paid)	412
Table 5.4.C. DBE Utilization at MAA on Federally-Assisted Contracts (Dollars Paid)	413
Table 5.21.A. Current Availability and Expected Availability for the SHA	414

Table 5.21.B. Current Availability and Expected Availability for the MTA	416
Table 5.21.C. Current Availability and Expected Availability for the MAA.....	418

Volume II:

Table A.1. Industry Group Utilization, Availability, and Disparity Results for MDOT Construction Contracting (All Funds) (Dollars Awarded)	422
Table A.2. Industry Group Utilization, Availability, and Disparity Results for MDOT Construction Contracting (All Funds) (Dollars Paid).....	445
Table A.3. Industry Group Utilization, Availability, and Disparity Results for MDOT Construction Contracting (Federally-Assisted) (Dollars Awarded)	469
Table A.4. Industry Group Utilization, Availability, and Disparity Results for MDOT Construction Contracting (Federally-Assisted) (Dollars Paid).....	492
Table A.5. Industry Group Utilization, Availability, and Disparity Results for MDOT AE-CRS Contracting (All Funds) (Dollars Awarded).....	515
Table A.6. Industry Group Utilization, Availability, and Disparity Results for MDOT AE-CRS Contracting (All Funds) (Dollars Paid)	531
Table A.7. Industry Group Utilization, Availability, and Disparity Results for MDOT AE-CRS Contracting (Federally-Assisted) (Dollars Awarded).....	546
Table A.8. Industry Group Utilization, Availability, and Disparity Results for MDOT AE-CRS Contracting (Federally-Assisted) (Dollars Paid)	556
Table A.9. Industry Group Utilization, Availability, and Disparity Results for MDOT Maintenance Contracting (All Funds) (Dollars Awarded)	565
Table A.10. Industry Group Utilization, Availability, and Disparity Results for MDOT Maintenance Contracting (All Funds) (Dollars Paid).....	584
Table A.11. Industry Group Utilization, Availability, and Disparity Results for MDOT Maintenance Contracting (Federally-Assisted) (Dollars Awarded)	603
Table A.12. Industry Group Utilization, Availability, and Disparity Results for MDOT Maintenance Contracting (Federally-Assisted) (Dollars Paid).....	613
Table A.13. Industry Group Utilization, Availability, and Disparity Results for MDOT IT Contracting (All Funds) (Dollars Awarded)	625
Table A.14. Industry Group Utilization, Availability, and Disparity Results for MDOT IT Contracting (All Funds) (Dollars Paid).....	630
Table A.15. Industry Group Utilization, Availability, and Disparity Results for MDOT IT Contracting (Federally-Assisted) (Dollars Awarded)	635
Table A.16. Industry Group Utilization, Availability, and Disparity Results for MDOT IT Contracting (Federally-Assisted) (Dollars Paid).....	639

Table A.17. Industry Group Utilization, Availability, and Disparity Results for MDOT Services Contracting (All Funds) (Dollars Awarded)	643
Table A.18. Industry Group Utilization, Availability, and Disparity Results for MDOT Services Contracting (All Funds) (Dollars Paid)	667
Table A.19. Industry Group Utilization, Availability, and Disparity Results for MDOT Services Contracting (Federally-Assisted) (Dollars Awarded)	690
Table A.20. Industry Group Utilization, Availability, and Disparity Results for MDOT Services Contracting (Federally-Assisted) (Dollars Paid)	712
Table A.21. Industry Group Utilization, Availability, and Disparity Results for MDOT CSE Contracting (All Funds) (Dollars Awarded)	734
Table A.22. Industry Group Utilization, Availability, and Disparity Results for MDOT CSE Contracting (All Funds) (Dollars Paid)	741
Table A.23. Industry Group Utilization, Availability, and Disparity Results for MDOT CSE Contracting (Federally-Assisted) (Dollars Awarded)	748
Table A.24. Industry Group Utilization, Availability, and Disparity Results for MDOT CSE Contracting (Federally-Assisted) (Dollars Paid)	752

Volume III:

Table B.1. Industry Group Utilization, Availability, and Disparity Results for SHA Construction Contracting (All Funds) (Dollars Awarded)	756
Table B.2. Industry Group Utilization, Availability, and Disparity Results for SHA Construction Contracting (All Funds) (Dollars Paid)	778
Table B.3. Industry Group Utilization, Availability, and Disparity Results for SHA Construction Contracting (Federally-Assisted) (Dollars Awarded)	801
Table B.4. Industry Group Utilization, Availability, and Disparity Results for SHA Construction Contracting (Federally-Assisted) (Dollars Paid)	821
Table B.5. Industry Group Utilization, Availability, and Disparity Results for SHA AE-CRS Contracting (All Funds) (Dollars Awarded)	842
Table B.6. Industry Group Utilization, Availability, and Disparity Results for SHA AE-CRS Contracting (All Funds) (Dollars Paid)	855
Table B.7. Industry Group Utilization, Availability, and Disparity Results for SHA AE-CRS Contracting (Federally-Assisted) (Dollars Awarded)	866
Table B.8. Industry Group Utilization, Availability, and Disparity Results for SHA AE-CRS Contracting (Federally-Assisted) (Dollars Paid)	874
Table B.9. Industry Group Utilization, Availability, and Disparity Results for SHA Maintenance Contracting (All Funds) (Dollars Awarded)	881

Table B.10. Industry Group Utilization, Availability, and Disparity Results for SHA Maintenance Contracting (All Funds) (Dollars Paid).....	897
Table B.11. Industry Group Utilization, Availability, and Disparity Results for SHA Maintenance Contracting (Federally-Assisted) (Dollars Awarded).....	913
Table B.12. Industry Group Utilization, Availability, and Disparity Results for SHA Maintenance Contracting (Federally-Assisted) (Dollars Paid).....	922
Table B.13. Industry Group Utilization, Availability, and Disparity Results for SHA IT Contracting (All Funds) (Dollars Awarded).....	932
Table B.14. Industry Group Utilization, Availability, and Disparity Results for SHA IT Contracting (All Funds) (Dollars Paid).....	934
Table B.15. Industry Group Utilization, Availability, and Disparity Results for SHA IT Contracting (Federally-Assisted) (Dollars Awarded).....	936
Table B.16. Industry Group Utilization, Availability, and Disparity Results for SHA IT Contracting (Federally-Assisted) (Dollars Paid).....	937
Table B.17. Industry Group Utilization, Availability, and Disparity Results for SHA Services Contracting (All Funds) (Dollars Awarded).....	938
Table B.18. Industry Group Utilization, Availability, and Disparity Results for SHA Services Contracting (All Funds) (Dollars Paid).....	947
Table B.19. Industry Group Utilization, Availability, and Disparity Results for SHA Services Contracting (Federally-Assisted) (Dollars Awarded).....	956
Table B.20. Industry Group Utilization, Availability, and Disparity Results for SHA Services Contracting (Federally-Assisted) (Dollars Paid).....	963
Table B.21. Industry Group Utilization, Availability, and Disparity Results for SHA CSE Contracting (All Funds) (Dollars Awarded).....	969
Table B.22. Industry Group Utilization, Availability, and Disparity Results for SHA CSE Contracting (All Funds) (Dollars Paid).....	970
Table C.1. Industry Group Utilization, Availability, and Disparity Results for MTA Construction Contracting (All Funds) (Dollars Awarded).....	971
Table C.2. Industry Group Utilization, Availability, and Disparity Results for MTA Construction Contracting (All Funds) (Dollars Paid).....	981
Table C.3. Industry Group Utilization, Availability, and Disparity Results for MTA Construction Contracting (Federally-Assisted) (Dollars Awarded).....	992
Table C.4. Industry Group Utilization, Availability, and Disparity Results for MTA Construction Contracting (Federally-Assisted) (Dollars Paid).....	1002
Table C.5. Industry Group Utilization, Availability, and Disparity Results for MTA AE-CRS Contracting (All Funds) (Dollars Awarded).....	1013

Table C.6. Industry Group Utilization, Availability, and Disparity Results for MTA AE-CRS Contracting (All Funds) (Dollars Paid)	1020
Table C.7. Industry Group Utilization, Availability, and Disparity Results for MTA AE-CRS Contracting (Federally-Assisted) (Dollars Awarded).....	1027
Table C.8. Industry Group Utilization, Availability, and Disparity Results for MTA AE-CRS Contracting (Federally-Assisted) (Dollars Paid)	1031
Table C.9. Industry Group Utilization, Availability, and Disparity Results for MTA Maintenance Contracting (All Funds) (Dollars Awarded)	1035
Table C.10. Industry Group Utilization, Availability, and Disparity Results for MTA Maintenance Contracting (All Funds) (Dollars Paid).....	1040
Table C.11. Industry Group Utilization, Availability, and Disparity Results for MTA Maintenance Contracting (Federally-Assisted) (Dollars Awarded)	1045
Table C.12. Industry Group Utilization, Availability, and Disparity Results for MTA Maintenance Contracting (Federally-Assisted) (Dollars Paid).....	1049
Table C.13. Industry Group Utilization, Availability, and Disparity Results for MTA IT Contracting (All Funds) (Dollars Awarded)	1054
Table C.14. Industry Group Utilization, Availability, and Disparity Results for MTA IT Contracting (All Funds) (Dollars Paid).....	1058
Table C.15. Industry Group Utilization, Availability, and Disparity Results for MTA IT Contracting (Federally-Assisted) (Dollars Awarded)	1062
Table C.16. Industry Group Utilization, Availability, and Disparity Results for MTA IT Contracting (Federally-Assisted) (Dollars Paid).....	1066
Table C.17. Industry Group Utilization, Availability, and Disparity Results for MTA Services Contracting (All Funds) (Dollars Awarded)	1070
Table C.18. Industry Group Utilization, Availability, and Disparity Results for MTA Services Contracting (All Funds) (Dollars Paid)	1090
Table C.19. Industry Group Utilization, Availability, and Disparity Results for MTA Services Contracting (Federally-Assisted) (Dollars Awarded)	1110
Table C.20. Industry Group Utilization, Availability, and Disparity Results for MTA Services Contracting (Federally-Assisted) (Dollars Paid).....	1130
Table C.21. Industry Group Utilization, Availability, and Disparity Results for MTA CSE Contracting (All Funds) (Dollars Awarded).....	1150
Table C.22. Industry Group Utilization, Availability, and Disparity Results for MTA CSE Contracting (All Funds) (Dollars Paid)	1154
Table C.23. Industry Group Utilization, Availability, and Disparity Results for MTA CSE Contracting (Federally-Assisted) (Dollars Awarded).....	1158

Table C.24. Industry Group Utilization, Availability, and Disparity Results for MTA CSE Contracting (Federally-Assisted) (Dollars Paid)	1162
Table D.1. Industry Group Utilization, Availability, and Disparity Results for MAA Construction Contracting (All Funds) (Dollars Awarded)	1166
Table D.2. Industry Group Utilization, Availability, and Disparity Results for MAA Construction Contracting (All Funds) (Dollars Paid)	1175
Table D.3. Industry Group Utilization, Availability, and Disparity Results for MAA Construction Contracting (Federally-Assisted) (Dollars Awarded)	1184
Table D.4. Industry Group Utilization, Availability, and Disparity Results for MAA Construction Contracting (Federally-Assisted) (Dollars Paid)	1188
Table D.5. Industry Group Utilization, Availability, and Disparity Results for MAA AE-CRS Contracting (All Funds) (Dollars Awarded)	1192
Table D.6. Industry Group Utilization, Availability, and Disparity Results for MAA AE-CRS Contracting (All Funds) (Dollars Paid)	1198
Table D.7. Industry Group Utilization, Availability, and Disparity Results for MAA AE-CRS Contracting (Federally-Assisted) (Dollars Awarded)	1204
Table D.8. Industry Group Utilization, Availability, and Disparity Results for MAA AE-CRS Contracting (Federally-Assisted) (Dollars Paid)	1208
Table D.9. Industry Group Utilization, Availability, and Disparity Results for MAA Maintenance Contracting (All Funds) (Dollars Awarded)	1211
Table D.10. Industry Group Utilization, Availability, and Disparity Results for MAA Maintenance Contracting (All Funds) (Dollars Paid)	1217
Table D.17. Industry Group Utilization, Availability, and Disparity Results for MAA Services Contracting (All Funds) (Dollars Awarded)	1223
Table D.18. Industry Group Utilization, Availability, and Disparity Results for MAA Services Contracting (All Funds) (Dollars Paid)	1229
Table D.21. Industry Group Utilization, Availability, and Disparity Results for MAA CSE Contracting (All Funds) (Dollars Awarded)	1235
Table D.22. Industry Group Utilization, Availability, and Disparity Results for MAA CSE Contracting (All Funds) (Dollars Paid)	1238
Table D.23. Industry Group Utilization, Availability, and Disparity Results for MAA CSE Contracting (Federally-Assisted) (Dollars Awarded)	1241
Table D.24. Industry Group Utilization, Availability, and Disparity Results for MAA CSE Contracting (Federally-Assisted) (Dollars Paid)	1242

Executive Summary

A. Introduction

During the 2006 Session of the Maryland General Assembly, Senate Bill 884 and House Bill 869 reenacted the State of Maryland’s Minority Business Enterprise Program (“MBE Program”) for five years, until July 1, 2011. These two bills also provided for the State’s certification agency, the Maryland Department of Transportation (MDOT), to commission a Study of the Minority Business Enterprise (“MBE”) program to ensure compliance with constitutional mandates and programmatic best practices.

MDOT commissioned a team led by NERA Economic Consulting to conduct the Study. The results of NERA’s Study, *The State of Minority- and Women-Owned Business Enterprise: Evidence from Maryland*,¹ provided the evidentiary record necessary for the State’s consideration of whether to implement renewed M/WBE policies that comply with the requirements of the courts and to assess the extent to which previous efforts have assisted M/WBEs to participate on a fair basis in the State’s contracting and procurement activities.

The 2011 Study found both statistical and anecdotal evidence of business discrimination against M/WBEs in the State’s relevant market area. The present document, which is a continuation of that Study, provides additional detail on federally-assisted and state-funded contracting and subcontracting activity at MDOT’s State Highway Administration (SHA), Maryland Transit Administration (MTA), and Maryland Aviation Administration (MAA).²

B. Defining the Relevant Markets

Chapter I describes how the relevant geographic and product markets were defined for this Study. Five years of prime contract and subcontract records were analyzed to determine the geographic radius around SHA, MTA, and MAA (hereinafter collectively referred to as “MDOT”)³ that accounts for at least 75 percent of aggregate contract and subcontract spending. These records were also analyzed to determine those detailed industry categories that collectively account for over 99 percent of contract and subcontract spending in excess of \$25,000 in the relevant procurement categories, which were Construction, Architecture-Engineering and Other

¹ NERA Economic Consulting (2011).

² With few exceptions, the underlying data in this document is drawn from the NERA’s 2011 Study, including the results of the contract and subcontract data collection, telephone surveys, econometric analyses, mail surveys, and business owner interviews. Throughout this Study, results are documented for SHA, MTA, and MAA collectively in the “MDOT” tables as well as for each mode individually. With a few exceptions, individual tables for SHA, MTA, and MAA appear in Appendix III and Appendix IV.

³ MDOT actually encompasses five modal administrations (SHA, MTA, MAA, the Maryland Port Administration, and the Motor Vehicle Administration) as well as the Maryland Transportation Authority. However, as used herein, the term MDOT refers only to SHA, MTA, and MAA, the three modal administrations that receive funding from the U.S. Department of Transportation.

Construction-Related Professional Services (“AE-CRS”), Maintenance, Information Technology (“IT”), Other Professional and General Services (“Services”), and Commodities, Supplies and Equipment (“CSE”).

MDOT’s relevant geographic market area was determined to be the State of Maryland, the State of Delaware, the District of Columbia, and the balance of the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area.

The relevant geographic and product markets were then used to focus and frame the quantitative and qualitative analyses in the remainder of the Study.

C. DBE Availability in MDOT’s Market Area

Chapter II estimates the percentage of firms in MDOT’s relevant market area that are owned by minorities and/or women. For each industry category, DBE availability is defined as the number of DBEs divided by the total number of businesses in MDOT’s contracting market area, weighted by the dollars attributable to each detailed industry category. Determining the total number of businesses in the relevant markets is more straightforward than determining the number of minority-owned or women-owned businesses in those markets. The latter task has three main parts: (1) identifying all listed DBEs in the relevant market; (2) verifying the ownership status of listed DBEs; and (3) estimating the number of unlisted DBEs in the relevant market.

Tables A1 through A4 below provide an executive level summary of the current DBE availability estimates derived in the Study.⁴ Corresponding tables for SHA, MTA, and MAA appear in Appendix III as Tables 2.23.A-2.26.A, 2.23.B-2.26.B, and 2.23.C-2.26.C, respectively.

⁴ In Tables A through D, and elsewhere in this Study, “Award” indicates that the availability measures are weighted according to dollars awarded and “Paid” indicates that the availability measures are weighted according to dollars paid. According to Md. Code Ann., State Fin. & Proc. §§ 14-301(j), “Black” or “African American” refers to an individual having origins in any of the Black racial groups of Africa; “Hispanic” refers to an individual of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race; “Asian” refers to an individual having origins in the Far East, Southeast Asia, or the Indian subcontinent; “Native American” refers to an individual having origins in any of the original peoples of North America other than Eskimos or Aleuts. In this report, businesses owned by members of these groups are collectively referred to as DBEs. There are some minor differences in the State’s definition of MBE and the federal definition of DBE, *see* 49 C.F.R. Part 26.5. For more on the interchangeability of the terms “DBE,” “MBE,” and “M/WBE” in this report, *see* Chapter II, Section A, below.

Table A1. Estimated Availability for MDOT (Award Dollar Weights)—Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.88	3.20	4.88	0.36	18.32	15.17	33.49	66.51
AE-CRS	10.19	3.87	11.40	0.40	25.85	15.42	41.27	58.73
MAINTENANCE	13.47	4.84	4.42	0.27	23.01	14.92	37.92	62.08
IT	14.60	3.82	13.51	0.52	32.45	16.31	48.76	51.24
SERVICES	15.49	3.72	8.56	0.30	28.07	19.18	47.25	52.75
CSE	8.51	2.39	8.43	0.91	20.25	15.80	36.05	63.95
TOTAL	10.66	3.63	7.89	0.37	22.55	15.46	38.00	62.00

Source and Notes: See Table 2.17.

Table A2. Estimated Availability for MDOT (Paid Dollar Weights)—Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.94	3.29	5.15	0.37	18.76	15.08	33.84	66.16
AE-CRS	10.52	3.83	11.33	0.40	26.08	15.74	41.82	58.18
MAINTENANCE	14.05	5.09	4.57	0.27	23.97	15.25	39.22	60.78
IT	13.36	3.70	13.19	0.47	30.71	16.67	47.39	52.61
SERVICES	15.81	3.43	8.53	0.28	28.05	19.84	47.89	52.11
CSE	8.51	2.39	8.43	0.91	20.25	15.80	36.05	63.95
TOTAL	10.76	3.60	7.37	0.38	22.10	15.54	37.64	62.36

Source and Notes: See Table 2.17.

Table A3. Estimated Availability for MDOT (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.97	3.10	5.07	0.36	18.49	15.57	34.07	65.93
AE-CRS	10.05	3.90	11.41	0.40	25.76	15.26	41.01	58.99
MAINTENANCE	8.15	3.19	2.82	0.27	14.42	12.19	26.61	73.39
IT	12.23	4.03	14.33	0.51	31.11	13.92	45.04	54.96
SERVICES	15.49	3.73	8.43	0.30	27.96	19.12	47.08	52.92
CSE	8.57	2.15	7.43	1.03	19.18	15.75	34.92	65.08
TOTAL	10.19	3.49	8.07	0.37	22.12	15.45	37.58	62.42

Source and Notes: See Table 2.17.

Table A4. Estimated Availability for MDOT (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	10.03	3.16	5.43	0.36	18.97	15.59	34.56	65.44
AE-CRS	10.42	3.85	11.32	0.40	25.99	15.64	41.63	58.37
MAINTENANCE	8.08	3.22	2.90	0.30	14.49	12.65	27.15	72.85
IT	11.51	4.03	13.75	0.50	29.80	13.89	43.69	56.31
SERVICES	15.69	3.45	8.50	0.28	27.92	19.85	47.77	52.23
CSE	8.57	2.15	7.43	1.03	19.18	15.75	34.92	65.08
TOTAL	10.36	3.41	7.64	0.38	21.79	15.69	37.47	62.53

Source and Notes: See Table 2.17.

D. Statistical Disparities in Minority and Female Business Formation and Business Owner Earnings

Chapter III demonstrates that current DBE availability levels in MDOT's market area, as measured in Chapter II, are substantially lower than those that we would expect to observe if commercial markets operated in a race- and gender-neutral manner and that these levels are statistically significant.⁵ In other words, minorities and women are substantially and significantly less likely to own their own businesses as the result of discrimination than would be expected based upon their observable characteristics, including age, education, geographic location, and industry. We find that these groups also suffer substantial and significant earnings disadvantages relative to comparable nonminority males, whether they work as employees or entrepreneurs.

For example, we found that annual average wages for African Americans (both genders) in 2006–2008, were 33 percent lower in the Maryland market area⁶ than for nonminority males who were otherwise similar in terms of geographic location, industry, age, and education. These differences are large and statistically significant. Large, adverse, and statistically significant wage disparities were also observed for Hispanics, Asians, Native Americans, persons of mixed race, and nonminority women. These disparities are consistent with the presence of market-wide discrimination. Observed disparities for these groups ranged from a low of -23 percent for Hispanics to a high of -33 percent for African Americans and nonminority women. Similar results were observed when the analysis was restricted to the Construction and AE-CRS sector or to the Goods and Services sector. That is, large, adverse, and statistically significant wage disparities were observed for all minority groups and for nonminority women. All wage and salary disparity analyses were then repeated to test whether observed disparities in the Maryland market area were different enough from elsewhere in the country or the economy to alter any of the basic conclusions regarding wage and salary disparity. They were not.

This analysis demonstrates that minorities and women earn substantially and significantly less than their nonminority male counterparts. Such disparities are symptoms of discrimination in the labor force that, in addition to its direct effect on workers, reduce the future availability of DBEs by stifling opportunities for minorities and women to progress through precisely those internal labor markets and occupational hierarchies that are most likely to lead to entrepreneurial opportunities. These disparities reflect more than mere "societal discrimination" because they demonstrate the nexus between discrimination in the job market and reduced entrepreneurial opportunities for minorities and women. Other things equal, these reduced entrepreneurial opportunities in turn lead to lower DBE availability levels than would be observed in a race- and gender-neutral market area.

⁵ Typically, for a given disparity statistic to be considered "statistically significant" there must be a substantial probability that the value of that statistic is unlikely to be due to chance alone. *See also fn. 72.*

⁶ The MDOT market area is contiguous with the Maryland market area.

Next, we analyzed race and gender disparities in business owner earnings. We observed large, adverse, and statistically significant business owner earnings disparities for African Americans, Hispanics, Asians, Native Americans, and nonminority women consistent with the presence of discrimination in these markets. Large, adverse, and statistically significant business owner earnings disparities were observed overall as well as in the Construction and AE-CRS sector and in the Goods and Services sector. As with the wage and salary disparity analysis, we enhanced our basic statistical model to test whether minority and female business owners in the Maryland market area differed significantly enough from business owners elsewhere in the U.S. economy to alter any of our basic conclusions regarding disparity. They did not.

As was the case for wage and salary earners, minority and female entrepreneurs earned substantially and significantly less from their efforts than similarly situated nonminority male entrepreneurs. These disparities are a symptom of discrimination in commercial markets that directly and adversely affects DBEs. Other things equal, if minorities and women cannot earn remuneration from their entrepreneurial efforts comparable to that of nonminority males, growth rates will slow, business failure rates will increase, and as demonstrated in this Chapter, business formation rates will decrease. Combined, these phenomena result in lower DBE availability levels than would otherwise be observed in a race- and gender-neutral market area.

Next, we analyzed race and gender disparities in business formation. As with earnings, in almost every case we observed large, adverse, and statistically significant disparities consistent with the presence of discrimination in these markets in the overall economy, in the Construction and AE-CRS sector, and in the Goods and Services sector.⁷ In every instance examined, business formation rates for African Americans, Hispanics, Asians, Native Americans, persons of mixed race, and nonminority women were substantially and statistically significantly lower than the corresponding nonminority male business formation rate.

Finally, as an additional check on the statistical findings in this Chapter, we examined evidence from the Census Bureau's *Survey of Business Owners and Self-Employed Persons* (SBO). These data show large, adverse, and statistically significant disparities between DBEs' share of overall revenues and their share of overall firms in the U.S. as a whole, and in the State of Maryland.⁸ The disparities facing minority- and women-owned firms in Maryland are, in general, adverse, large, and statistically significant. For example, although 20.1 percent of all firms in Maryland are owned by African Americans, they earned less than 3.5 percent of all sales and receipts. African American employer firms are 5.4 percent of the total but earned only 2.6 percent of sales and receipts. Disparities for women and for other minority groups are also very large in Maryland, as in the U.S. as a whole. Additionally, large, adverse, and statistically significant disparities are observed for each of these groups in the Construction and AE-CRS sector as well as in the Goods and Services sector.

⁷ The Construction and AE-CRS sectors were combined for the analyses in Chapter III, as were the Goods and Services sectors. Elsewhere in the Study they are analyzed separately.

⁸ It is, in general, not possible with the SBO dataset to examine geographic divisions below the state level.

E. Statistical Disparities in Credit/Capital Markets

In Chapter IV, we analyzed current and historical data from the Survey of Small Business Finances (“SSBF”), conducted by the Federal Reserve Board and the U.S. Small Business Administration, along with data from nine customized matching mail surveys we have conducted throughout the nation since 1999. This data examines whether discrimination exists in the small business credit market. Credit market discrimination can have an important effect on the likelihood that DBEs will succeed. Moreover, discrimination in the credit market might even prevent such businesses from opening in the first place. This analysis has been held by the courts to be probative of a public entity’s compelling interest in remedying discrimination. We provide qualitative and quantitative evidence supporting the view that DBE firms, particularly African American-owned firms, suffer discrimination in this market.

The results are as follows:

- Minority-owned firms were particularly likely to report that they did not apply for a loan over the preceding three years because they feared the loan would be denied.
- When minority-owned firms did apply for a loan, their requests were substantially more likely to be denied than other groups, even after accounting for differences in factors like size and credit history.
- When minority-owned firms did receive a loan, they paid higher interest rates than comparable nonminority-owned firms.
- Far more minority-owned firms report that credit market conditions are a serious concern than is the case for nonminority-owned firms.
- A greater share of minority-owned firms believed that the availability of credit was the most important issue likely to confront the firm in the near future.
- Judging from the analysis done using data from the SSBF, there is no reason to believe that evidence of discrimination in the market for credit is different in the Maryland market area than in the nation as a whole. The evidence from NERA’s own credit surveys in a variety of states and metropolitan areas across the country is entirely consistent with the results from the SSBF.

We conclude that there is evidence of discrimination against DBEs in the Maryland market area in the small business credit market. This discrimination is particularly acute for African American-owned firms.

F. DBE Public Sector Utilization vs. Availability in MDOT's Contracting and Procurement Markets

Chapter V analyzes the utilization of DBEs by MDOT from State Fiscal Years (“SFY”) 2005 through 2009 compared to their availability of DBEs in the relevant market area. Tables B1 through B4 provide summary the utilization findings by industry category and DBE type.

Table B1. DBE Utilization at MDOT (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.42	3.30	3.45	3.62	9.75	0.00	4.06
Hispanic	2.67	1.42	1.80	0.00	1.30	0.00	2.04
Asian	0.55	10.68	0.09	14.75	1.00	0.70	2.40
Native American	2.28	0.00	0.00	0.00	0.00	0.00	1.28
Minority	8.93	15.40	5.34	18.37	12.05	0.70	9.78
Nonminority Female	18.08	8.85	12.08	2.30	3.28	0.00	12.98
DBE	27.01	24.25	17.42	20.66	15.33	0.70	22.76
Non-DBE	72.99	75.75	82.58	79.34	84.67	99.30	77.24
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	3,075,432,112	879,183,452	444,026,504	78,236,702	725,617,784	293,136,663	5,495,633,217

Source: NERA Master Contract/Subcontract Database.

Table B2. DBE Utilization at MDOT (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.10	2.59	2.80	3.49	4.55	0.00	2.96
Hispanic	2.89	1.60	0.73	0.00	1.21	0.00	2.10
Asian	0.67	10.89	0.05	28.81	0.69	0.70	2.13
Native American	3.59	0.00	0.01	0.00	0.00	0.00	2.14
Minority	10.25	15.08	3.60	32.30	6.45	0.70	9.33
Nonminority Female	16.82	8.30	7.36	0.93	1.97	0.00	11.79
DBE	27.07	23.38	10.95	33.23	8.42	0.70	21.12
Non-DBE	72.93	76.62	89.05	66.77	91.58	99.30	78.88
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	2,261,152,910	418,487,243	316,620,043	51,483,005	459,433,787	293,136,663	3,800,313,651

Source: NERA Master Contract/Subcontract Database.

Table B3. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.31	3.38	2.30	6.19	8.30	0.00	3.73
Hispanic	2.04	1.36	0.91	0.00	0.68	0.00	1.56
Asian	0.55	11.09	0.10	18.92	0.84	0.77	2.65
Native American	2.58	0.00	0.00	0.00	0.00	0.00	1.51
Minority	8.49	15.84	3.32	25.11	9.82	0.77	9.46
Nonminority Female	19.58	8.87	18.18	4.13	3.08	0.00	14.27
DBE	28.06	24.71	21.50	29.24	12.91	0.77	23.73
Non-DBE	71.94	75.29	78.50	70.76	87.09	99.23	76.27
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	2,681,516,219	824,480,482	196,690,221	43,208,653	565,349,612	266,458,652	4,577,703,839

Source: NERA Master Contract/Subcontract Database.

Table B4. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	2.89	2.65	3.00	4.74	2.05	0.00	2.53
Hispanic	2.02	1.63	0.83	0.00	0.51	0.00	1.54
Asian	0.68	11.57	0.03	21.46	0.72	0.77	2.24
Native American	4.28	0.00	0.03	0.00	0.00	0.00	2.62
Minority	9.87	15.86	3.89	26.20	3.28	0.77	8.93
Nonminority Female	18.71	8.25	5.81	1.32	2.17	0.00	13.01
DBE	28.58	24.11	9.70	27.53	5.46	0.77	21.94
Non-DBE	71.42	75.89	90.30	72.47	94.54	99.23	78.06
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	1,882,836,340	377,959,231	147,766,024	35,167,198	367,542,921	266,458,652	3,077,730,366

Source: NERA Master Contract/Subcontract Database.

Comparable Tables for SHA, MTA, and MAA appear in Appendix III as Tables 5.1.A-5.4.A, 5.1.B-5.4.B, and 5.1.C-5.4.C, respectively.

Next, we compared MDOT's and its prime contractors' use of DBEs to our measure of DBE availability levels in the relevant market area. If DBE utilization is lower than measured availability in a given category, we report this result as a disparity. Tables C1 through C4 provide an executive level summary of our disparity findings for MDOT in Construction, AE-CRS, Maintenance, IT, Services, CSE, and overall contracting. We find substantial evidence of disparity in MDOT's contracting and procurement activity, despite the operation of the MBE and DBE programs.

Table C1. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.42	9.88	34.63 ****
Hispanic	2.67	3.20	83.43
Asian/Pacific Islander	0.55	4.88	11.35 ****
Native American	2.28	0.36	
Minority-owned	8.93	18.32	48.72 ****
Nonminority female	18.08	15.17	
DBE total	27.01	33.49	80.64
AE-CRS			
African American	3.30	10.19	32.40 ****
Hispanic	1.42	3.87	36.85 ****
Asian/Pacific Islander	10.68	11.40	93.68
Native American	0.00	0.40	0.00 ****
Minority-owned	15.40	25.85	59.58 ****
Nonminority female	8.85	15.42	57.41 ****
DBE total	24.25	41.27	58.77 ****
Maintenance			
African American	3.45	13.47	25.61 ****
Hispanic	1.80	4.84	37.15 ****
Asian/Pacific Islander	0.09	4.42	2.14 ****
Native American	0.00	0.27	0.00 ****
Minority-owned	5.34	23.01	23.23 ****
Nonminority female	12.08	14.92	80.97
DBE total	17.42	37.92	45.94 ****

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
IT			
African American	3.62	14.60	24.77 ****
Hispanic	0.00	3.82	0.00 ****
Asian/Pacific Islander	14.75	13.51	
Native American	0.00	0.52	0.00 ****
Minority-owned	18.37	32.45	56.60 ****
Nonminority female	2.30	16.31	14.08 ****
DBE total	20.66	48.76	42.38 ****
Services			
African American	9.75	15.49	62.96 ***
Hispanic	1.30	3.72	34.86 ****
Asian/Pacific Islander	1.00	8.56	11.67 ****
Native American	0.00	0.30	1.19 ****
Minority-owned	12.05	28.07	42.94 ****
Nonminority female	3.28	19.18	17.10 ****
DBE total	15.33	47.25	32.45 ****
CSE			
African American	0.00	8.51	0.00 ****
Hispanic	0.00	2.39	0.00 ****
Asian/Pacific Islander	0.70	8.43	8.28 ****
Native American	0.00	0.91	0.00 ****
Minority-owned	0.70	20.25	3.45 ****
Nonminority female	0.00	15.80	0.00 ****
DBE total	0.70	36.05	1.94 ****
All Contracting			
African American	4.06	10.66	38.11 ****
Hispanic	2.04	3.63	56.23 ****
Asian/Pacific Islander	2.40	7.89	30.48 ****
Native American	1.28	0.37	
Minority-owned	9.78	22.55	43.38 ****
Nonminority female	12.98	15.46	83.95 ****
DBE total	22.76	38.00	59.88 ****

Source: Calculations from NERA Master Contract/Subcontract Database and NERA Baseline Business Universe.

Note: (1) “*” indicates an adverse disparity that is statistically significant at the 15% level or better (85% confidence). “**” indicates the disparity is significant at a 10% level or better (90% confidence). “***” indicates significance at a 5% level or better (95% confidence). “****” indicates significance at a 1% level or better (99% confidence). (2) An empty cell in the Disparity Ratio column indicates that no adverse disparity was observed for that category.

Table C2. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.10	9.94	31.14 ****
Hispanic	2.89	3.29	87.98
Asian/Pacific Islander	0.67	5.15	13.07 ****
Native American	3.59	0.37	
Minority-owned	10.25	18.76	54.66 ****
Nonminority female	16.82	15.08	
DBE total	27.07	33.84	80.01 *
AE-CRS			
African American	2.59	10.52	24.60 ****
Hispanic	1.60	3.83	41.85 ***
Asian/Pacific Islander	10.89	11.33	96.11
Native American	0.00	0.40	0.00 ****
Minority-owned	15.08	26.08	57.82 ****
Nonminority female	8.30	15.74	52.74 ****
DBE total	23.38	41.82	55.91 ****
Maintenance			
African American	2.80	14.05	19.94 ****
Hispanic	0.73	5.09	14.39 ****
Asian/Pacific Islander	0.05	4.57	1.06 ****
Native American	0.01	0.27	5.44 ****
Minority-owned	3.60	23.97	15.00 ****
Nonminority female	7.36	15.25	48.23 ****
DBE total	10.95	39.22	27.92 ****
IT			
African American	3.49	13.36	26.15 ****
Hispanic	0.00	3.70	0.00 ****
Asian/Pacific Islander	28.81	13.19	
Native American	0.00	0.47	0.00 ****
Minority-owned	32.30	30.71	
Nonminority female	0.93	16.67	5.57 ****
DBE total	33.23	47.39	70.12 ****
Services			
African American	4.55	15.81	28.78 ****
Hispanic	1.21	3.43	35.25 ****
Asian/Pacific Islander	0.69	8.53	8.06 ****
Native American	0.00	0.28	1.01 ****
Minority-owned	6.45	28.05	22.99 ****
Nonminority female	1.97	19.84	9.93 ****
DBE total	8.42	47.89	17.58 ****

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.51	0.00 ****
Hispanic	0.00	2.39	0.00 ****
Asian/Pacific Islander	0.70	8.43	8.28 ****
Native American	0.00	0.91	0.00 ****
Minority-owned	0.70	20.25	3.45 ****
Nonminority female	0.00	15.80	0.00 ****
DBE total	0.70	36.05	1.94 ****
All Contracting			
African American	2.96	10.76	27.50 ****
Hispanic	2.10	3.60	58.44
Asian/Pacific Islander	2.13	7.37	28.92 ****
Native American	2.14	0.38	
Minority-owned	9.33	22.10	42.22 ****
Nonminority female	11.79	15.54	75.85
DBE total	21.12	37.64	56.10 ****

Source and Notes: See Table 5.5.

Table C3. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.31	9.97	33.23 ****
Hispanic	2.04	3.10	65.76
Asian/Pacific Islander	0.55	5.07	10.82 ****
Native American	2.58	0.36	
Minority-owned	8.49	18.49	45.88 ****
Nonminority female	19.58	15.57	
DBE total	28.06	34.07	82.38
AE-CRS			
African American	3.38	10.05	33.68 ****
Hispanic	1.36	3.90	35.01 ***
Asian/Pacific Islander	11.09	11.41	97.15
Native American	0.00	0.40	0.00 ****
Minority-owned	15.84	25.76	61.48 ****
Nonminority female	8.87	15.26	58.15 ***
DBE total	24.71	41.01	60.24 ****
Maintenance			
African American	2.30	8.15	28.25 ****
Hispanic	0.91	3.19	28.69 ****
Asian/Pacific Islander	0.10	2.82	3.58 ****
Native American	0.00	0.27	0.00 ****
Minority-owned	3.32	14.42	23.00 ****
Nonminority female	18.18	12.19	
DBE total	21.50	26.61	80.78
IT			
African American	6.19	12.23	50.62 ****
Hispanic	0.00	4.03	0.00 ****
Asian/Pacific Islander	18.92	14.33	
Native American	0.00	0.51	0.00 ****
Minority-owned	25.11	31.11	80.71
Nonminority female	4.13	13.92	29.65 ****
DBE total	29.24	45.04	64.92 ****
Services			
African American	8.30	15.49	53.56 ****
Hispanic	0.68	3.73	18.09 ****
Asian/Pacific Islander	0.84	8.43	10.00 ****
Native American	0.00	0.30	1.52 ****
Minority-owned	9.82	27.96	35.13 ****
Nonminority female	3.08	19.12	16.13 ****
DBE total	12.91	47.08	27.41 ****

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.57	0.00 ****
Hispanic	0.00	2.15	0.00 ****
Asian/Pacific Islander	0.77	7.43	10.34 ****
Native American	0.00	1.03	0.00 ****
Minority-owned	0.77	19.18	4.01 ****
Nonminority female	0.00	15.75	0.00 ****
DBE total	0.77	34.92	2.20 ****
All Contracting			
African American	3.73	10.19	36.61 ****
Hispanic	1.56	3.49	44.83 *
Asian/Pacific Islander	2.65	8.07	32.85 ****
Native American	1.51	0.37	
Minority-owned	9.46	22.12	42.76 ****
Nonminority female	14.27	15.45	92.33
DBE total	23.73	37.58	63.15 ****

Source and Notes: See Table 5.5.

Table C4. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	2.89	10.03	28.80 ****
Hispanic	2.02	3.16	63.95
Asian/Pacific Islander	0.68	5.43	12.58 ****
Native American	4.28	0.36	
Minority-owned	9.87	18.97	52.02 ****
Nonminority female	18.71	15.59	
DBE total	28.58	34.56	82.68
AE-CRS			
African American	2.65	10.42	25.42 ****
Hispanic	1.63	3.85	42.45 **
Asian/Pacific Islander	11.57	11.32	
Native American	0.00	0.40	0.00 ****
Minority-owned	15.86	25.99	61.01 ****
Nonminority female	8.25	15.64	52.77 ****
DBE total	24.11	41.63	57.92 ****
Maintenance			
African American	3.00	8.08	37.19 ****
Hispanic	0.83	3.22	25.69 ****
Asian/Pacific Islander	0.03	2.90	0.92 ****
Native American	0.03	0.30	10.46 *
Minority-owned	3.89	14.49	26.83 ****
Nonminority female	5.81	12.65	45.94 ****
DBE total	9.70	27.15	35.74 ****
IT			
African American	4.74	11.51	41.16 ****
Hispanic	0.00	4.03	0.00 ****
Asian/Pacific Islander	21.46	13.75	
Native American	0.00	0.50	0.00 ****
Minority-owned	26.20	29.80	87.93
Nonminority female	1.32	13.89	9.53 ****
DBE total	27.53	43.69	63.00 ****
Services			
African American	2.05	15.69	13.04 ****
Hispanic	0.51	3.45	14.83 ****
Asian/Pacific Islander	0.72	8.50	8.51 ****
Native American	0.00	0.28	1.26 ****
Minority-owned	3.28	27.92	11.76 ****
Nonminority female	2.17	19.85	10.94 ****
DBE total	5.46	47.77	11.42 ****

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.57	0.00 ****
Hispanic	0.00	2.15	0.00 ****
Asian/Pacific Islander	0.77	7.43	10.34 ****
Native American	0.00	1.03	0.00 ****
Minority-owned	0.77	19.18	4.01 ****
Nonminority female	0.00	15.75	0.00 ****
DBE total	0.77	34.92	2.20 ****
All Contracting			
African American	2.53	10.36	24.47 ****
Hispanic	1.54	3.41	45.07
Asian/Pacific Islander	2.24	7.64	29.30 ****
Native American	2.62	0.38	
Minority-owned	8.93	21.79	40.99 ****
Nonminority female	13.01	15.69	82.95
DBE total	21.94	37.47	58.55 ****

Source and Notes: See Table 5.5.

Comparable Tables for SHA, MTA, and MAA appear in Chapter V as Tables 5.9-5.12, 5.13-5.16, and 5.17-5.20, respectively.

Finally, Chapter V compares current levels of DBE availability in MDOT's market area with what we would expect to observe in a race- and gender-neutral market area. If there is full parity in the relevant market area, then the expected DBE availability rate (that is, the DBE availability level that would be observed in a non-discriminatory market area) will be equal to the actual current DBE availability rate. If there are adverse disparities facing DBEs in the relevant market area, however, as documented in Chapters III, IV, V, and VI of this Study, then expected availability will *exceed* actual current availability. Expected availability percentages for MDOT's overall contracting and by major procurement category exceed actual current availability in every case observed.

G. Anecdotal Evidence

Chapter VI presents the results of a large scale mail survey we conducted of DBEs and non-DBEs about their experiences and difficulties in obtaining contracts.⁹ The survey quantified and compared anecdotal evidence on the experiences of DBEs and non-DBEs as a method to examine whether any differences might be due to discrimination.

We found that DBEs that have been hired in the past by non-DBE prime contractors to work on public sector contracts with goals are rarely hired—or even solicited—by these prime contractors to work on projects without goals. The relative lack of DBE hiring and, moreover, the relative lack of solicitation of DBEs in the absence of affirmative efforts by MDOT and other public entities in the Maryland market area shows that business discrimination continues to fetter DBE business opportunities in MDOT’s relevant markets.

We found that DBEs in MDOT’s market area report suffering business-related discrimination in large numbers and with statistically significantly greater frequency than non-DBEs. These differences remain statistically significant when firm size and other “capacity-related” owner characteristics are held constant. We also find that DBEs in these markets are more likely than similarly situated non-DBEs to report that specific aspects of the regular business environment make it harder for them to conduct their businesses, and less likely than similarly situated non-DBEs to report that specific aspects of the regular business environment make it easier for them to conduct their businesses.

Chapter VI also presents the results from a series of in-depth personal interviews conducted with DBE and non-DBE business owners in the Maryland market area. Similar to the survey responses, the interviews strongly suggest that DBEs continue to suffer discriminatory barriers to full and fair access to State of Maryland, MDOT, SHA, MTA, MAA, other public sector, and private sector contracts. Participants reported stereotyping, negative perceptions of DBE incompetence; subjection to higher performance standards; exclusion from industry networks; discrimination in access to commercial loans; barriers to obtaining public sector prime contracts and subcontracts; and virtual exclusion from private sector opportunities to perform as either prime contractors or subcontractors.

We conclude that the statistical evidence presented in this report is consistent with these anecdotal accounts of contemporary business discrimination. The results of the surveys and the personal interviews are the types of anecdotal evidence that, especially in conjunction with the Study’s extensive statistical evidence, the courts have found to be highly probative of whether, without affirmative interventions, MDOT would be a passive participant in a discriminatory local market area. It is also highly relevant for narrowly tailoring any DBE goals for its federally-assisted contracts.

⁹ Note that we use the term “DBE” interchangeably with “MBE” and “M/WBE” throughout this report. See the discussion of this point below in Chapter II, Section A.

H. Conclusion

As summarized above, and based on the detailed findings below, we conclude that there is strong evidence of large, adverse, and frequently statistically significant disparities between minority and female participation in business enterprise activity in MDOT's relevant market area and the actual current availability of those businesses. We further conclude that these disparities cannot be explained solely, or even primarily, by differences between DBE and non-DBE business populations in factors untainted by discrimination, and that these differences therefore give rise to a strong inference of the continued presence of discrimination in MDOT's market area.

I. Defining the Relevant Markets

A. Preparing the Master Contract/Subcontract Database

1. Overview

In the *Croson* decision, the Supreme Court indicated that the *national* findings by Congress of minority business discrimination in construction and related industries were not specific enough, or “narrowly tailored” enough, standing alone, to support an MBE program in the City of Richmond. For this reason, the first step in our evaluation of Disadvantaged Business Enterprise (DBE) availability and participation for the Maryland Department of Transportation (MDOT) is to define the relevant market area for its contracting and procurement activity.

Markets have both a geographic dimension and a product, or industry, dimension. Both aspects of market definition are considered in this chapter.¹⁰ For this Study, we define the relevant geographic market area based on the historical contracting and subcontracting records of MDOT’s three modal administrations that receive funding from the U.S. Department of Transportation: the State Highway Administration (SHA), the Maryland Transit Administration (MTA), and the Maryland Aviation Administration (MAA).¹¹ This market dimension is determined empirically by examining the zip code distribution of utilized contractors and subcontractors at each modal administration.

Narrow tailoring also applies to product markets. The extent of disparity may differ from industry to industry just as among geographic locations.¹² Documenting the specific industries that are involved in MDOT’s contracting activities and the relative importance of each to overall spending is important. A careful product market definition allows for (1) implementation of more narrowly tailored availability estimation methods, (2) contract-level goal-setting, and (3) overall DBE availability estimates that are a weighted average of underlying industry-level availability estimates, rather than a simple average. The weights used are the proportion of dollars spent within each industry and allow the overall availability measure to be influenced more heavily by availability in those industries where more contracting dollars are spent, and less heavily by availability in those industries where relatively few contracting dollars are spent.

We define the product market dimension by estimating which North American Industrial Classification System (NAICS) codes¹³ best describe each identifiable contractor, subcontractor,

¹⁰ See, for example, Areeda, P., L. Kaplow, and A. Edlin (2004).

¹¹ In addition to the modes that receive federal funding, MDOT includes two additional modal administrations, the Maryland Port Administration (“MPA”) and the Motor Vehicle Administration (“MVA”), as well as the Maryland Transportation Authority (“MdTA”). MPA, MVA, and MdTA are part of the State’s 2011 Study, but they are not part of this Study.

¹² See Wainwright (2000), documenting that, in general, the similarities in the amount of discrimination present in different industries and geographic locations significantly outweighs the differences.

¹³ See Executive Office of the President, Office of Management and Budget (2007).

subconsultant, or supplier in those records. In both cases, the definitions are weighted according to how many dollars were spent with business establishments from each zip code or NAICS code, respectively, so that locations and industries receiving relatively more contracting dollars receive relatively more weight in the estimation of DBE availability. Once the geographic and industry parameters of the market area have been defined, we can restrict our subsequent analyses to business enterprises and other phenomena within this market area. Restricting our analyses in this manner narrowly tailors our findings to the specific contracting circumstances of MDOT and its modal administrations.

2. MDOT Contracting

With assistance from MDOT, NERA collected contract and purchase order data from SHA, MTA, and MAA on contracts that were active between July 1, 2004 and June 30, 2009¹⁴ in six major procurement categories: Construction; Architecture-Engineering and Other Construction-Related Professional Services (“AE-CRS”); Maintenance; Information Technology (“IT”); Services; and Commodities, Supplies, and Equipment (“CSE”).¹⁵ Thus, the study period covers State Fiscal Years (SFY) 2005-2009.¹⁶ The six major procurement categories were assigned based on the State of Maryland’s major procurement classification categories.

We restricted our analysis to contracts and purchase orders of \$25,000 or more.¹⁷ During the study period, there were 4,225 such contracts or purchase orders,¹⁸ distributed among the six major procurement categories and three modal administrations as shown in Table 1.1. Overall, Table 1.1 shows that of the 4,225 prime contracts in the study universe for MDOT, approximately 16 percent of the contracts were for Construction, 10 percent were for AE-CRS, 26 percent were for Maintenance, 5 percent were for IT, 9 percent were for Services, and 33 percent were for CSE.¹⁹ Table 1.1 also shows the distribution of contracts by major procurement category for SHA, MTA, and MAA.

¹⁴ Thus, the Study also includes some contracts that were initiated prior to July 2004 and were still active as of that time.

¹⁵ See COMAR 21.01.02.01.

¹⁶ These data were collected as part of the State of Maryland’s most recent Minority Business Enterprise availability and utilization disparity study. See NERA Economic Consulting (2011).

¹⁷ \$25,000 is the Category III Small Procurement threshold pursuant to COMAR 21.05.07.04.

¹⁸ A small number of contracts were excluded from this contract universe, either because no work was actually performed on them or because the prime contractor was another public entity.

¹⁹ Contracts for CSE typically do not have subcontracting opportunities. Nor is it common to see subcontracting activity on contracts valued at less than \$50,000.

Table 1.1. Distribution of MDOT Prime Contracts and Purchase Orders by Procurement Category

Procurement Category	MDOT		SHA		MTA		MAA	
	Number of Contracts	Percentage	Number of Contracts	Percentage	Number of Contracts	Percentage	Number of Contracts	Percentage
Construction	688	16.28	569	22.57	52	4.24	67	13.99
AE-CRS	441	10.44	358	14.20	46	3.76	37	7.72
Maintenance	1,104	26.13	941	37.33	99	8.08	64	13.36
IT	214	5.07	136	5.39	76	6.20	2	0.42
Services	375	8.88	146	5.79	130	10.61	99	20.67
CSE	1,403	33.21	371	14.72	822	67.10	210	43.84
TOTAL	4,225	100.00	2,521	100.00	1,225	100.00	479	100.00

For each contract or purchase order from the study period, we obtained available data including the prime contractor name, address, and telephone number; contract or purchase description; contract or purchase order number; contractor race/ethnicity and gender; contract award or purchase date; total contracted dollar amount; and total paid amount.

MDOT's modal administrations did not maintain records of subcontracting activity during the study period sufficient for the disparity study assessment, particularly in the case of non-DBE subcontractors, subconsultants, and suppliers. To obtain this information, we selected a sample of prime contracts and purchase orders from each modal administration, and then worked with each one to obtain all missing subcontractor information from the relevant prime contractors or vendors. Information collected included subcontractor name and address, subcontractor gender and ethnicity, description of work performed, final award amount, and final amount paid. Contracts for CSE and contracts valued at under \$50,000 were not included in the subcontracting data collection sample since they typically do not have subcontracting opportunities.

For MDOT, the distribution of prime contracts and purchase orders into those with and without subcontracting opportunities appears in Table 1.2.²⁰ Table 1.2 shows that 2,330 of the 4,225

²⁰ The first row of figures within each major procurement category is the number of contracts. The second row contains the row percentages. For example, in Construction, 95.49 percent of contracts were in the sample universe and 4.51 percent were not. The third row contains the column percentages. For example, of the records in the sample universe, 28.20 percent are in Construction, 18.76 percent are in AE-CRS, 37.85 percent are in Maintenance, 3.30 percent are in IT, 11.89 percent are in Services, and 0.00 percent are in CSE.

MDOT contracts and purchase orders during the study period potentially had subcontracting opportunities. In other words, these contracts and purchase orders were “In the Sample Universe.” The remaining 1,895 contracts and purchase orders, the majority of which were for CSE, were not in the sample universe. This does not mean these contracts were not studied, only that no subcontracting information had to be collected from the prime contractors and vendors for these contracts and purchase orders.²¹

Table 1.2. Distribution of MDOT Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities

Procurement Category	In the Sample Universe		Total
	No	Yes	
CONSTRUCTION	31	657	688
	4.51	95.49	100.00
	1.64	28.20	16.28
AE-CRS	4	437	441
	0.91	99.09	100.00
	0.21	18.76	10.44
MAINTENANCE	222	882	1,104
	20.11	79.89	100.00
	11.72	37.85	26.13
IT	137	77	214
	64.02	35.98	100.00
	7.23	3.30	5.07
SERVICES	98	277	375
	26.13	73.87	100.00
	5.17	11.89	8.88
CSE	1,403	0	1,403
	100.00	0.00	100.00
	74.04	0.00	33.21
TOTAL	1,895	2,330	4,225
	44.85	55.15	100.00
	100.00	100.00	100.00

The 2,330 contracts and purchase orders in the sample universe had a total awarded value, according to State records, of \$6.81B, and it was from this group of contracts and purchase orders that we drew our sample. We sampled the largest contracts and purchase orders with certainty, and sampled smaller contracts and purchase orders randomly with replacement. The

²¹ Tables 1.2.A, 1.2.B, and 1.2.C in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

sample drawn included 649 of the 2,330 contracts and purchase orders in the sample universe, or 28 percent of the total; and accounted for \$5.50B of \$6.81B dollars, or 81 percent of the total.²²

A companion sample of Commodities contracts, small contracts, and other contracts with a low likelihood of subcontracting activity was created from the remaining 1,895 contracts and purchase orders and included in the final file for analysis. These 1,895 contracts and purchase orders had a total awarded value of \$625.00M. Our sample from this group included 202 contracts, or 11 percent of the total, and \$485.22M, or 78 percent of the total.²³

After an intensive data collection effort, and with the assistance of personnel at SHA, MTA, and MAA, we were ultimately able to obtain the associated subcontract information for 567 prime contracts, or 87 percent of all prime contracts sampled, and 5,112 associated subcontracts. The total dollar value of the 567 prime contracts, according to State records, was \$5.21B, or 95 percent of all dollars in the sample. Dollar values reported by prime contractors did not always match State records exactly. According to prime-reported amounts, the total dollar value of the 567 prime contracts was \$5.01B. In order to achieve consistency with the subcontract dollar values we collected, we will use prime reported dollar amounts for the remainder of the analyses in this report.

These percentages are sufficiently large to be well representative of the entire universe of SHA, MTA, and MAA contracts and subcontracts being examined for this Study. As mentioned above, we also included an additional 202 contracts and purchase orders worth \$485.22M, representing CSE contracts and contracts under \$50,000. Therefore, the full sample of contracts and subcontracts for the Study contains 769 contracts and purchase orders and 5,112 associated subcontracts, with an awarded dollar value of \$5.50B. Of these 769 contracts and purchase orders, 489, or 64 percent, had federal assistance. The total awarded dollar value of federally-assisted contracts and purchase orders by MDOT was \$4.58B, or 83 percent of the total awarded dollar value.

Together, as shown below in Tables 1.3 and 1.4, these 769 prime contracts and 5,112 associated subcontracts comprise the Master MDOT Contract/Subcontract Database compiled for this Study. Table 1.3 shows total number of prime contracts, subcontracts, and contract dollars awarded during the entire study period, by major procurement category. Table 1.4 shows total number of federally-assisted prime contracts, subcontracts, and contract dollars awarded during the entire study period, by major procurement category.²⁴

²² “With replacement” means that it is possible for a given purchase order to be included in the sample more than once. In the present context, sampling with replacement has certain desirable statistical properties that sampling without replacement lacks. Of 637 contracts in the sample, 10 contracts were included twice, and one contract was included three times, raising the effective sample size to 649.

²³ This sample was drawn with replacement as well. Of 188 contracts in the sample, 12 were included twice, and one was included three times, bringing the effective sample size to 202.

²⁴ Tables 1.3.A-1.4.A, 1.3.B-1.4.B, and 1.3.C-1.4.C in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

Table 1.3. Summary of Master Contract/Subcontract Database: MDOT Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			3,075,432,112	1,680,895,166
<i>Prime Contracts</i>	213	202	1,733,782,289	898,702,619
<i>Subcontracts</i>	2,955	2,595	1,341,649,823	782,192,547
<i>AE-CRS</i>			879,183,452	334,312,523
<i>Prime Contracts</i>	200	193	588,215,162	243,443,977
<i>Subcontracts</i>	1,116	1,024	290,968,290	90,868,546
<i>MAINTENANCE</i>			444,026,504	303,476,864
<i>Prime Contracts</i>	160	145	372,753,404	243,115,975
<i>Subcontracts</i>	517	460	71,273,100	60,360,889
<i>IT</i>			78,236,702	38,189,058
<i>Prime Contracts</i>	28	26	63,806,644	31,879,580
<i>Subcontracts</i>	37	18	14,430,058	6,309,478
<i>SERVICES</i>			725,617,784	433,717,768
<i>Prime Contracts</i>	106	103	633,212,983	391,067,809
<i>Subcontracts</i>	487	474	92,404,801	42,649,959
<i>CSE</i>			293,136,663	293,136,663
<i>Prime Contracts</i>	62	62	293,136,663	293,136,663
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			5,495,633,217	3,083,728,042
<i>Prime Contracts</i>	769	731	3,684,907,145	2,101,346,623
<i>Subcontracts</i>	5,112	4,571	1,810,726,072	982,381,419

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

Table 1.4. Summary of Master Contract/Subcontract Database: Federally-Assisted MDOT Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			2,681,516,219	1,304,902,133
<i>Prime Contracts</i>	142	132	1,531,704,671	713,197,838
<i>Subcontracts</i>	2,023	1,682	1,149,811,548	591,704,295
<i>AE-CRS</i>			824,480,482	297,478,857
<i>Prime Contracts</i>	181	176	550,059,022	217,835,633
<i>Subcontracts</i>	889	819	274,421,460	79,643,224
<i>MAINTENANCE</i>			196,690,221	142,870,360
<i>Prime Contracts</i>	59	51	176,362,104	122,003,759
<i>Subcontracts</i>	237	201	20,328,117	20,866,601
<i>IT</i>			43,208,653	29,227,491
<i>Prime Contracts</i>	11	10	30,217,231	24,173,996
<i>Subcontracts</i>	25	7	12,991,422	5,053,495
<i>SERVICES</i>			565,349,612	343,017,226
<i>Prime Contracts</i>	55	53	506,213,053	320,097,299
<i>Subcontracts</i>	437	430	59,136,559	22,919,927
<i>CSE</i>			266,458,652	266,458,652
<i>Prime Contracts</i>	41	41	266,458,652	266,458,652
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			4,577,703,839	2,383,954,719
<i>Prime Contracts</i>	489	463	3,061,014,733	1,663,767,177
<i>Subcontracts</i>	3,611	3,139	1,516,689,106	720,187,542

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

B. Geographic Market Definition for Contracting and Procurement

To determine the geographic dimension of MDOT's contracting and procurement markets, we used the Master Contract/Subcontract Database to obtain the zip codes and thereby the county and state for each contractor and subcontractor establishment identified in our sample. Using this location information, we then calculated the percentage of contract and subcontract dollars awarded by MDOT to businesses by state and county during the study period.

The geographic market area is defined as that region which accounts for at least 75 percent of overall contracting and procurement spending by a given government entity. Contractors with locations within the States of Maryland, Delaware or within the balance of the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area (MSA) account for the vast majority of contracting and procurement expenditures by MDOT and its prime contractors during the study period.

As shown in Table 1.5, the overall share of MDOT expenditures inside this market area is 87.9 percent of dollars awarded and 83.8 percent of dollars paid.²⁵ In Construction, the shares are 90.9 percent and 87.5 percent, respectively. In AE-CRS, the shares are 90.7 percent and 92.1 percent, respectively. In Maintenance, the shares are 91.3 percent and 90.3 percent, respectively. In IT, the shares are 85.2 percent and 86.4 percent, respectively. In Services, the shares are 82.4 percent and 75.7 percent, respectively. In CSE, the share is 57.8 percent.²⁶

For the purpose of this Study, we therefore define the primary geographic market area to be the State of Maryland, the State of Delaware, the District of Columbia, and the balance of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA.²⁷

²⁵ Tables 1.5.A, 1.5.B, and 1.5.C in Appendix III show comparable results for SHA, MTA, and MAA, respectively.

²⁶ For informational purposes, Table 1.5 also shows the share of awards and payments inside and outside the State of Maryland.

²⁷ Outside of Maryland and District of Columbia, the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA includes Arlington County, VA; Clarke County, VA; Fairfax County, VA; Fauquier County, VA; Loudoun County, VA; Prince William County, VA; Spotsylvania County, VA; Stafford County, VA; Warren County, VA; Alexandria City, VA; Fairfax City, VA; Falls Church City, VA; Fredericksburg City, VA; Manassas City, VA; Manassas Park City, VA; and Jefferson County, WV.

Table 1.5. Distribution of MDOT Contracting and Procurement Dollars by Geographic Location

Location	Construc- tion (%)	AE-CRS (%)	Main- tenance (%)	IT (%)	Services (%)	CSE (%)	Overall (%)
	Awarded Dollars						
Inside MDOT Market Area	90.9	90.7	91.3	85.2	82.4	57.8	87.9
Outside MDOT Market Area	9.1	9.3	8.7	14.8	17.6	42.2	12.1
Inside State of Maryland	84.7	88.0	81.5	78.0	80.7	57.3	82.9
Outside State of Maryland	15.3	12.0	18.5	22.0	19.3	42.7	17.1
	Paid Dollars						
Inside MDOT Market Area	87.5	92.1	90.3	86.4	75.7	57.8	83.8
Outside MDOT Market Area	12.5	7.9	9.7	13.6	24.3	42.2	16.2
Inside State of Maryland	82.5	89.6	79.1	75.3	74.1	57.3	79.3
Outside State of Maryland	17.5	10.4	20.9	24.7	25.9	42.7	20.7

Source: See Table 1.3.

Within the market area, the geographic distribution of contract and procurement dollars across all procurement categories is shown in Table 1.6.²⁸

Table 1.6. Distribution of MDOT Prime Contract and Subcontract Award Dollars by State and County, 2005-2009

STATE	COUNTY	AMOUNT	PERCENT	CUMULATIVE PERCENT
MD	Baltimore City	\$1,018,003,908	30.02	30.02
MD	Baltimore	\$547,841,775	16.16	46.18
MD	Montgomery	\$467,433,954	13.79	59.96
MD	Anne Arundel	\$366,395,181	10.81	70.77
MD	Howard	\$256,357,418	7.56	78.33
MD	Frederick	\$148,230,816	4.37	82.70
MD	Prince Georges	\$137,532,223	4.06	86.76
MD	Kent	\$53,869,402	1.59	88.35
MD	Harford	\$44,814,401	1.32	89.67
MD	Carroll	\$44,481,559	1.31	90.98
MD	Wicomico	\$38,931,708	1.15	92.13
DC	District of Columbia	\$36,918,600	1.09	93.22
VA	Fairfax	\$32,189,067	0.95	94.16
MD	Charles	\$29,204,510	0.86	95.03
MD	Garrett	\$23,879,869	0.70	95.73
DE	New Castle	\$23,139,948	0.68	96.41
VA	Prince William	\$16,938,597	0.50	96.91
VA	Arlington	\$16,674,155	0.49	97.40
MD	Washington	\$16,491,728	0.49	97.89
MD	Allegany	\$14,932,514	0.44	98.33
VA	Falls Church City	\$8,837,942	0.26	98.59
VA	Loudoun	\$8,531,993	0.25	98.84
MD	Queen Annes	\$6,975,436	0.21	99.05
Balance (17 counties)		\$32,258,604	0.95	100.00

²⁸ Tables 1.6.A, 1.6.B, and 1.6.C in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

Outside the geographic market, areas that received a significant amount of MDOT spending activity (defined somewhat arbitrarily, as counties that accounted for more than approximately 0.25% of total spending among three or more vendors) included:

CONSTRUCTION

York County, PA
Lancaster County, PA
Allegheny County, PA
Chester County, PA

AE-CRS

Philadelphia County, PA
Hamilton County, OH
New York County, NY
Allegheny County, PA
Cook County, IL

MAINTENANCE

York County, PA
Henrico County, VA
Lauderdale County, AL
Cook County, IL

SERVICES

Canada
Essex County, NJ
Middlesex County, MA

For SHA, significant counties outside the market area included:

CONSTRUCTION

York County, PA
Lancaster County, PA
Chester County, PA
Allegheny County, PA

AE-CRS

Philadelphia County, PA
Allegheny County, PA

MAINTENANCE

York County, PA
Lauderdale County, AL
Fulton County, GA

SERVICES

Essex County, NJ
Mecklenberg County, NC

For MTA, significant counties outside the market area included:

CONSTRUCTION

Cook County, IL

AE-CRS

Philadelphia County, PA

SERVICES

Canada

Essex County, NJ

For MAA, significant counties outside the market area included:

AE-CRS

Hamilton County, OH

Cook County, IL

Tarrant County, TX

Middlesex County, MA

C. Product Market Definition for Contracting and Procurement

Using the major procurement categories for each prime contract and the primary NAICS codes assigned by NERA to each prime contractor and subcontractor in the Master Contract/Subcontract Database, we identified the most important Industry Sub-sectors within each contracting and procurement category, as measured by total dollars awarded.²⁹

The relevant NAICS codes and their associated dollar weights appear below in Tables 1.7 through 1.12 for Construction, AE-CRS, Maintenance, IT, Services, and CSE, respectively.³⁰ It is clear from these six tables that, although numerous Industry Sub-sectors play a role in MDOT’s contracting activities, actual contracting and subcontracting opportunities are not distributed evenly among them.

²⁹ Calculations were also made using dollars actually paid (as opposed to dollars awarded) as the measure. The results, not shown here, were similar.

³⁰ Tables 1.7.A-1.12.A, 1.7.B-1.12.B, and 1.7.C-1.12.C, in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

In Construction, for example, we see from Table 1.7 that four Industry Sub-sectors account for almost four-fifths of all contract and subcontract dollars, six Sub-sectors account for over 90 percent, and the remainder is distributed among 39 additional Industry Sub-sectors. In AE-CRS (Table 1.8), we see an even more concentrated pattern—one Industry Sub-sector (NAICS 541) accounts for over 97 percent of all contract and subcontract dollars, with the balance distributed among another 29 Sub-sectors. In Maintenance (Table 1.9), seven Industry Sub-sectors together account for four-fifths of all contract and subcontract dollars, 11 Sub-sectors account for 90 percent, and the balance is distributed among another 28 Sub-sectors. In IT (Table 1.10), two Sub-sectors accounts for more than 90 percent of all contract and subcontract dollars and the balance is distributed among 11 others. In Services (Table 1.11), two Industry Sub-sectors accounts for three-fourths of all contract and subcontract dollars, five Sub-sectors account for over 90 percent, and the balance is distributed among another 47 Sub-sectors. Finally, in CSE (Table 1.12), two Sub-sectors account for more than four-fifths of all contract and subcontract dollars, five Sub-sectors account for 90 percent, and the balance is distributed among another 12 Sub-sectors.

Each Industry Sub-sector (three-digit NAICS) identified in Tables 1.7 through 1.12 consists of several more detailed Industry Groups (four-digit NAICS) and Industries (five-digit and six-digit NAICS).

- Overall, MDOT contract and subcontract awards occur in 66 NAICS Industry Sub-sectors, 166 NAICS Industry Groups, and 329 NAICS Industries.
- In Construction, MDOT contracting and subcontracting occurs across 45 NAICS Industry Sub-sectors, 107 NAICS Industry Groups, and 187 NAICS Industries.
- In AE-CRS, MDOT contracting and subcontracting occurs across 36 NAICS Industry Sub-sectors, 68 NAICS Industry Groups, and 104 NAICS Industries.
- In Maintenance, MDOT contracting and subcontracting occurs across 39 NAICS Industry Sub-sectors, 83 NAICS Industry Groups, and 128 NAICS Industries.
- In IT, MDOT contracting and subcontracting occurs across 13 NAICS Industry Sub-sectors, 20 NAICS Industry Groups, and 25 NAICS Industries.
- In Services, MDOT contracting and subcontracting occurs across 52 NAICS Industry Sub-sectors, 103 NAICS Industry Groups, and 160 NAICS Industries.
- In CSE, MDOT contracting and subcontracting occurs across 17 NAICS Industry Sub-sectors, 27 NAICS Industry Groups, and 32 NAICS Industries.

The resulting percentage weights from these NAICS Industries are used in Chapter II to calculate average DBE availability figures for Construction, AE-CRS, Maintenance, IT, Services, and CSE.³¹

³¹ After re-normalizing the percentage weights to sum to 100.

Now that the geographic and industry parameters of MDOT's contracting and procurement market area have been established, we will restrict our subsequent analyses to business enterprises and other phenomena within this specific market area in order to narrowly tailor our findings to the specific contracting circumstances of MDOT and its modal administrations.

Table 1.7. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: Construction

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
237	Heavy and Civil Engineering Construction	46.71	46.71
238	Specialty Trade Contractors	14.59	61.30
236	Construction of Buildings	9.96	71.26
332	Fabricated Metal Product Manufacturing	9.38	80.64
541	Professional, Scientific, and Technical Services	6.31	86.95
327	Nonmetallic Mineral Product Manufacturing	4.24	91.19
561	Administrative and Support Services	2.62	93.81
423	Merchant Wholesalers, Durable Goods	1.80	95.60
484	Truck Transportation	1.64	97.24
531	Real Estate	0.44	97.68
339	Miscellaneous Manufacturing	0.40	98.08
518	Data Processing, Hosting and Related Services	0.34	98.43
444	Building Material and Garden Equipment and Supplies Dealers	0.28	98.71
324	Petroleum and Coal Products Manufacturing	0.23	98.94
115	Support Activities for Agriculture and Forestry	0.22	99.16
	Balance of industries (30 industry sub-sectors)	0.84	100.00
	<i>TOTAL - \$3,075,432,112</i>		

Source: See Table 1.3.

Table 1.8. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
541	Professional, Scientific, and Technical Services	97.24	97.24
238	Specialty Trade Contractors	0.83	98.06
561	Administrative and Support Services	0.48	98.54
334	Computer and Electronic Product Manufacturing	0.33	98.87
236	Construction of Buildings	0.28	99.15
	Balance of industries (31 industry sub-sectors)	0.85	100.00
	<i>TOTAL - \$879,183,452</i>		

Source: See Table 1.3.

Table 1.9. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
561	Administrative and Support Services	23.24	23.24
238	Specialty Trade Contractors	19.67	42.90
237	Heavy and Civil Engineering Construction	17.51	60.41
811	Repair and Maintenance	5.72	66.13
236	Construction of Buildings	5.71	71.85
485	Transit and Ground Passenger Transportation	5.47	77.31
541	Professional, Scientific, and Technical Services	3.59	80.90
336	Transportation Equipment Manufacturing	3.09	83.99
221	Utilities	2.71	86.70
488	Support Activities for Transportation	1.79	88.50
624	Social Assistance	1.66	90.15
339	Miscellaneous Manufacturing	1.65	91.80
562	Waste Management and Remediation Services	1.55	93.35
484	Truck Transportation	1.25	94.60
335	Electrical Equipment, Appliance, and Component Manufacturing	0.93	95.53
334	Computer and Electronic Product Manufacturing	0.92	96.46
423	Merchant Wholesalers, Durable Goods	0.83	97.29
447	Gasoline Stations	0.61	97.90
621	Ambulatory Health Care Services	0.57	98.47
812	Personal and Laundry Services	0.34	98.80
327	Nonmetallic Mineral Product Manufacturing	0.24	99.05
	Balance of industries (18 industry sub-sectors)	0.93	100.00
	<i>TOTAL - \$444,026,504</i>		

Source: See Table 1.3.

Table 1.10. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: IT

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
541	Professional, Scientific, and Technical Services	86.42	86.42
511	Publishing Industries (except Internet)	5.08	91.49
334	Computer and Electronic Product Manufacturing	4.37	95.87
423	Merchant Wholesalers, Durable Goods	2.00	97.87
453	Miscellaneous Store Retailers	0.83	98.69
443	Electronics and Appliance Stores	0.50	99.19
	Balance of industries (7 industry sub-sectors)	0.81	100.00
	<i>TOTAL - \$78,236,702</i>		

Source: See Table 1.3.

Table 1.11. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
485	Transit and Ground Passenger Transportation	52.95	52.95
482	Rail Transportation	22.04	74.99
541	Professional, Scientific, and Technical Services	8.74	83.73
561	Administrative and Support Services	5.95	89.68
532	Rental and Leasing Services	2.10	91.78
423	Merchant Wholesalers, Durable Goods	1.32	93.10
522	Credit Intermediation and Related Activities	1.08	94.18
424	Merchant Wholesalers, Nondurable Goods	0.71	94.89
488	Support Activities for Transportation	0.64	95.54
238	Specialty Trade Contractors	0.62	96.16
721	Accommodation	0.54	96.70
453	Miscellaneous Store Retailers	0.43	97.13
524	Insurance Carriers and Related Activities	0.39	97.52
811	Repair and Maintenance	0.39	97.91
624	Social Assistance	0.29	98.20
621	Ambulatory Health Care Services	0.28	98.48
221	Utilities	0.19	98.67
337	Furniture and Related Product Manufacturing	0.19	98.86
336	Transportation Equipment Manufacturing	0.15	99.01
	Balance of industries (33 industry sub-sectors)	0.99	100.00
	<i>TOTAL - \$725,617,784</i>		

Source: See Table 1.3.

Table 1.12. Distribution of MDOT Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
336	Transportation Equipment Manufacturing	74.75	74.75
441	Motor Vehicle and Parts Dealers	6.07	80.82
423	Merchant Wholesalers, Durable Goods	4.47	85.29
334	Computer and Electronic Product Manufacturing	2.54	87.84
541	Professional, Scientific, and Technical Services	1.91	89.75
811	Repair and Maintenance	1.86	91.61
448	Clothing and Clothing Accessories Stores	1.74	93.34
331	Primary Metal Manufacturing	1.30	94.64
333	Machinery Manufacturing	1.14	95.78
325	Chemical Manufacturing	0.97	96.75
532	Rental and Leasing Services	0.78	97.54
424	Merchant Wholesalers, Nondurable Goods	0.68	98.22
323	Printing and Related Support Activities	0.62	98.83
332	Fabricated Metal Product Manufacturing	0.41	99.24
	Balance of industries (3 industry sub-sectors)	0.76	100.00
	<i>TOTAL - \$293,136,663</i>		

Source: See Table 1.3.

II. DBE Availability in MDOT's Market Area

A. Introduction

Estimates of DBE availability are important elements of a disparity study since they provide benchmarks for assessing the effectiveness of efforts to encourage DBE participation in public contracting. Furthermore, they provide data that may help establish goals for DBE participation that are tailored to the relevant market area for MDOT's three federally-funded modal administrations: SHA, MTA, and MAA.

For this study, NERA used M/WBE availability as a proxy for DBE availability. The M/WBE and DBE populations have a high degree of correlation and overlap. There are two differences worth noting, however. First, to be certified as a DBE a business owner's personal net worth cannot exceed \$1,320,000, exclusive of equity in the owner's primary residence and in the business seeking certification.³² Hence, not all M/WBEs can become DBEs. In practice, however, very few households—especially minority households—have net worth levels in excess of \$1,320,000. According to the Federal Reserve's *2003 Survey of Small Business Finances* (the most recent available), about 1.4 percent of nonminority female-owned small businesses, and 4.2 percent of minority-owned small businesses have business equity in excess of \$1,320,000.³³ Census Bureau data from 2004 (the most recent available), for example, show that the median net worth of African American and Hispanic households is much less than the median for nonminority households. Very few African American or Hispanic households have net worth levels above even \$500,000. Only 3.2 percent of African American households and 4.0 percent of Hispanic households have a net worth greater than \$500,000—compared to a figure of 14.3 percent for nonminority households. Overall, the median net worth for nonminority households is over 11 times higher than that of African American households and over seven times higher than that of Hispanic households.³⁴ More recent data also document that the net worth of nonminority households is much greater than that of African American or Hispanic households. Furthermore, the recent recession has reduced minority household wealth disproportionately more than nonminority household wealth. According to a 2011 Pew Research Center Study, using data from the Census Bureau's *Survey of Income and Program Participation*, the median net worth of nonminority households fell 16.2 percent between 2005 and 2009. For African American households, the decline was 53.2 percent, while for Hispanic households the decline was 65.5 percent.³⁵

³² 49 C.F.R. § 26.67.

³³ Calculations by NERA from 2003 SSBF data.

³⁴ See U.S. Census Bureau (2004a) and (2004b).

³⁵ See Taylor, et al. (2011).

Second, it is possible for businesses owned by nonminority males to become certified DBEs if they can establish that they are socially and economically disadvantaged under the regulations.³⁶ Hence, not all DBEs are necessarily M/WBEs. On balance, since so few M/WBEs have net worth levels in excess of \$1,320,000 and since a significant number of businesses owned by socially and economically disadvantaged nonminority males could potentially seek DBE certification (e.g., disabled persons, nonminority residents of Labor Surplus Areas, nonminority residents of HUB Zones), NERA's method may actually understate DBE availability to a small degree.³⁷

NERA's approach to availability measurement reflects USDOT's own compliance advice. According to the USDOT's guidance, "... if you have data about the number of minority and women-owned businesses (regardless of whether they are certified as DBEs) in your market area, or DBEs in your market area that are in other recipients' Directories but not yours, you can supplement your Directory data with this information. *Doing so may provide a more complete picture of the availability of firms to work on your contracts than the data in your Directory alone.*"³⁸

Many approaches to estimating availability suffer from internal inconsistency since the data employed to construct the availability numerator (i.e., the total number of DBE establishments in the market area) are measured differently than the data employed to construct the availability denominator (i.e., the total number of establishments in the market area). For example, the numerator might be drawn from an agency's internal list of certified DBEs while the denominator might be drawn from Census data. Since the methods used to identify and certify firms as DBEs are different from the methods used by the Census Bureau to count business establishments, such approaches inevitably compare "apples to oranges."

In this Study, we employ a method for measuring availability that ensures an "apples to apples" comparison between the availability numerator and denominator. This "Custom Census" method was pioneered by NERA and has been favorably reviewed by each court that has examined it to date. The Tenth Circuit found the custom census approach to be "a more sophisticated method to calculate availability than the earlier studies."³⁹ Likewise, this method was successful in the defense of the DBE programs for Minnesota DOT⁴⁰ and Illinois DOT,⁴¹ as well as the M/WBE

³⁶ 49 C.F.R. § 26.67 and Appendix E.

³⁷ For ease of exposition, we shall use the term DBE throughout the remainder of the report.

³⁸ See INTERNET: <http://www.osdbu.dot.gov/dbeprogram/hottips.cfm> (emphasis added). This information was released as official guidance by USDOT at 49 C.F.R. §26.9. See also Wainwright and Holt (2010), pp. 33-44.

³⁹ *Concrete Works of Colorado, Inc. v. City and County of Denver*, 321 F.3d 950, 966 (10th Cir. 2003) ("*Concrete Works IV*"), cert. denied, 540 U.S. 1027 (2003).

⁴⁰ *Sherbrooke Turf, Inc. v. Minnesota Department of Transportation*, 345 F.3d 964 (8th Cir. 2003), cert. denied, 541 U.S. 1041 (2004).

⁴¹ *Northern Contracting, Inc. v. Illinois Department of Transportation*, 473 F.3d 715 (7th Cir. 2007).

construction program for the City of Chicago.⁴²

In addition to its favorable reception in the courts, when properly executed, NERA's Custom Census method is superior to other approaches for at least three reasons. First, it provides an internally consistent and rigorous "apples to apples" comparison between establishments in the availability numerator and those in the denominator. Second, it comports with the remedial nature of most DBE policies by measuring overall DBE availability in the relevant market area as opposed to only those businesses currently certified by an agency.⁴³ Third, when properly executed, the Custom Census is less likely to be tainted by the effects of past and present discrimination than other methods.⁴⁴

NERA's Custom Census method has seven steps. These are:

1. Create a database of representative, recent, and complete MDOT contracts and purchases;
2. Identify MDOT's relevant geographic market from this database;
3. Identify MDOT's relevant product market from this database;
4. Count all business establishments in the relevant market area;
5. Identify listed DBE establishments in the relevant market area;
6. Verify the ownership status of listed DBEs; and
7. Verify the ownership status of all other firms in the relevant market area.

Steps 1-3 were described above in Chapter I. Steps 4-7 are described in more detail below.

B. Identifying Businesses in the Relevant Markets

DBE availability is defined as the number of DBEs divided by the total number of businesses in MDOT's contracting market area—what we will refer to as the Baseline Business Universe—weighted by the dollars attributable to each detailed industry category.⁴⁵ Determining the total number of businesses in the relevant markets, however, is more straightforward than determining the number of minority- or women-owned businesses in those markets. The latter task has three main parts: (1) identify all listed DBEs in the relevant market; (2) verify the ownership status of

⁴² *Builders Association of Greater Chicago v. City of Chicago*, 298 F. Supp.2d 725 (N.D. Ill. 2003).

⁴³ *See Northern Contracting, Inc. v. Illinois Department of Transportation*, 473 F.3d 715 at 723 (7th Cir. 2007) ("We agree with the district court that the remedial nature of the federal scheme militates in favor of a method of DBE availability calculation that casts a broader net").

⁴⁴ *See* Section B.4., below, "Understanding 'Capacity'" for further discussion of this point.

⁴⁵ To yield a percentage, the resulting figure is multiplied by 100.

listed DBEs; and (3) estimate the number of unlisted DBEs in the relevant market. This section describes how these tasks were accomplished.

It is important to note that NERA's availability analysis is free from variables tainted by discrimination. Our approach recognizes that discrimination may impact many of the variables that contribute to a firm's success in obtaining work as a prime or a subcontractor. "Capacity" factors such as firm size, time in business, qualifications, and experience are all adversely affected by discrimination if it is present in the market area. Despite the obvious relationship, some commentators argue that disparities should only be assessed between firms with similar "capacities."⁴⁶ However, courts in our view have properly refused to make the results of discrimination the benchmarks for non-discrimination. They have acknowledged that DBEs may be smaller, newer, and otherwise less competitive than non-DBEs because of the very discrimination sought to be remedied by race-conscious contracting programs.⁴⁷ Racial and gender differences in these capacity factors are the *outcomes* of discrimination and it is therefore inappropriate as a matter of economics and statistics to use them as control variables in a disparity study.⁴⁸

1. Estimate the Total Number of Businesses in the Market

We used data supplied by Dun & Bradstreet's Hoover's subsidiary to determine the total number of businesses operating in the relevant geographic and product markets (these markets were discussed in the previous section). Dun & Bradstreet produces the most comprehensive publicly available database of businesses in the U.S. This database contains over 15 million records and is updated continuously. Each record in Dun & Bradstreet represents a business or business establishment and includes the business name, address, telephone number, NAICS code, SIC code, business type, DUNS Number (a unique number assigned to each establishment by Dun & Bradstreet) and other descriptive information. Dun & Bradstreet gathers and verifies information from many different sources. These sources include, among others, annual management interviews, payment experiences, bank account information, filings for suits, liens, judgments and bankruptcies, news items, the U. S. Postal Service, utility and telephone service, business registrations, corporate charters, Uniform Commercial Code filings, and records of the Small Business Administration and other governmental agencies.

⁴⁶ See, e.g., La Noue (2006). Most of La Noue's expert report in *Gross Seed Company v. Nebraska Department of Roads*, No. 02-3016 (D. Neb. 2002), including his views on "capacity," was rejected by the court on the basis that it was legal opinion and not expert analysis. According to the court, "[legal analysis] is an issue solely for the Court and not for the presentation of expert testimony...." (see Defendants-Appellees' Brief, *Gross Seed Company v. Nebraska Department of Roads*, on appeal to the Eight Circuit Court of Appeals).

⁴⁷ *Concrete Works of Colorado, Inc. v. City and County of Denver*, 321 F.3d 950, 981, 983 (10th Cir. 2003), *cert. denied*, 124 S.Ct. 556 (2003) (emphasis in the original) ("MWBE construction firms are generally smaller and less experienced because of discrimination.... Additionally, we do not read *Croscon* to require disparity studies that measure whether construction firms are able to perform a particular contract.")

⁴⁸ See also, Wainwright and Holt (2010), Appendix B "Understanding Capacity."

We used the Dun & Bradstreet database to determine the total number of businesses in each NAICS code that was identified as part of the MDOT product market. Table 2.1 shows the number of businesses identified in each NAICS sub-sector within the Construction category, along with the associated industry weight according to dollars awarded. Tables 2.2 through 2.6 repeat this information, respectively, for AE-CRS, Maintenance, IT, Services, and CSE.⁴⁹

Table 2.1. Construction—Number of Businesses and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	872	45.39	45.39
2362	Nonresidential Building Construction	3007	9.32	54.72
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	306	8.93	63.65
2381	Foundation, Structure, and Building Exterior Contractors	5046	6.37	70.02
5413	Architectural, Engineering, and Related Services	9207	5.66	75.68
2382	Building Equipment Contractors	9373	5.33	81.01
3273	Cement and Concrete Product Manufacturing	247	4.20	85.21
5614	Business Support Services	16807	1.94	87.15
2389	Other Specialty Trade Contractors	5383	1.92	89.07
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	246	1.32	90.39
2371	Utility System Construction	531	1.24	91.63
4842	Specialized Freight Trucking	855	1.03	92.66
2383	Building Finishing Contractors	5931	0.98	93.63
2361	Residential Building Construction	16765	0.64	94.27
4841	General Freight Trucking	3643	0.61	94.88
5416	Management, Scientific, and Technical Consulting Services	30840	0.60	95.48
5312	Offices of Real Estate Agents and Brokers	10717	0.43	95.91
3323	Architectural and Structural Metals Manufacturing	471	0.43	96.34
5617	Services to Buildings and Dwellings	9843	0.43	96.77
3399	Other Miscellaneous Manufacturing	1083	0.40	97.17
5182	Data Processing, Hosting, and Related Services	1340	0.34	97.51
4442	Lawn and Garden Equipment and Supplies Stores	474	0.27	97.78
4233	Lumber and Other Construction Materials Merchant Wholesalers	1399	0.27	98.05
3241	Petroleum and Coal Products Manufacturing	102	0.23	98.28
1151	Support Activities for Crop Production	74	0.22	98.50
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.12	98.61
5612	Facilities Support Services	311	0.11	98.73
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	2459	0.11	98.84

⁴⁹ Tables 2.1.A-2.6.A, 2.1.B-2.6.B, and 2.1.C-2.6.C in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2123	Nonmetallic Mineral Mining and Quarrying	85	0.08	98.91
5619	Other Support Services	1147	0.07	98.99
8111	Automotive Repair and Maintenance	4675	0.07	99.06
4889	Other Support Activities for Transportation	1164	0.07	99.13
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.06	99.19
3351	Electric Lighting Equipment Manufacturing	21	0.05	99.25
8114	Personal and Household Goods Repair and Maintenance	3000	0.05	99.30
2372	Land Subdivision	1480	0.05	99.35
5616	Investigation and Security Services	2115	0.05	99.40
3344	Semiconductor and Other Electronic Component Manufacturing	202	0.05	99.45
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.04	99.49
8112	Electronic and Precision Equipment Repair and Maintenance	691	0.04	99.53
5415	Computer Systems Design and Related Services	12903	0.03	99.56
4543	Direct Selling Establishments	308	0.03	99.59
3271	Clay Product and Refractory Manufacturing	12	0.03	99.61
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.02	99.64
3339	Other General Purpose Machinery Manufacturing	128	0.02	99.66
3279	Other Nonmetallic Mineral Product Manufacturing	76	0.02	99.68
5622	Waste Treatment and Disposal	300	0.02	99.70
2379	Other Heavy and Civil Engineering Construction	118	0.02	99.72
5629	Remediation and Other Waste Management Services	382	0.02	99.74
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	439	0.02	99.76
4471	Gasoline Stations	1925	0.02	99.78
4539	Other Miscellaneous Store Retailers	3201	0.02	99.80
4441	Building Material and Supplies Dealers	1807	0.02	99.81
3365	Railroad Rolling Stock Manufacturing	13	0.01	99.83
4246	Chemical and Allied Products Merchant Wholesalers	282	0.01	99.84
5418	Advertising, Public Relations, and Related Services	891	0.01	99.85
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	597	0.01	99.86
3311	Iron and Steel Mills and Ferroalloy Manufacturing	53	0.01	99.87
3372	Office Furniture (including Fixtures) Manufacturing	26	0.01	99.88
5311	Lessors of Real Estate	4578	0.01	99.89
4239	Miscellaneous Durable Goods Merchant Wholesalers	972	0.01	99.90
4422	Home Furnishings Stores	792	0.01	99.91
3329	Other Fabricated Metal Product Manufacturing	79	0.01	99.92
5322	Consumer Goods Rental	383	0.01	99.92
5613	Employment Services	2505	0.01	99.93
5419	Other Professional, Scientific, and Technical Services	4015	0.01	99.93
3325	Hardware Manufacturing	35	0.00	99.94
8139	Business, Professional, Labor, Political, and Similar Organizations	1733	0.00	99.94

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3315	Foundries	4	0.00	99.95
4884	Support Activities for Road Transportation	853	0.00	99.95
6211	Offices of Physicians	15872	0.00	99.96
5179	Other Telecommunications	1387	0.00	99.96
3332	Industrial Machinery Manufacturing	37	0.00	99.97
3219	Other Wood Product Manufacturing	16	0.00	99.97
2211	Electric Power Generation, Transmission and Distribution	38	0.00	99.97
3353	Electrical Equipment Manufacturing	46	0.00	99.98
3149	Other Textile Product Mills	78	0.00	99.98
5172	Wireless Telecommunications Carriers (except Satellite)	756	0.00	99.98
4242	Drugs and Druggists' Sundries Merchant Wholesalers	312	0.00	99.98
5321	Automotive Equipment Rental and Leasing	417	0.00	99.98
5414	Specialized Design Services	1717	0.00	99.99
1119	Other Crop Farming	2303	0.00	99.99
4232	Furniture and Home Furnishing Merchant Wholesalers	897	0.00	99.99
3231	Printing and Related Support Activities	1206	0.00	99.99
5242	Agencies, Brokerages, and Other Insurance Related Activities	5011	0.00	99.99
3326	Spring and Wire Product Manufacturing	31	0.00	99.99
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	127	0.00	99.99
4532	Office Supplies, Stationery, and Gift Stores	386	0.00	99.99
5221	Depository Credit Intermediation	488	0.00	100.00
5171	Wired Telecommunications Carriers	124	0.00	100.00
2213	Water, Sewage and Other Systems	142	0.00	100.00
3362	Motor Vehicle Body and Trailer Manufacturing	21	0.00	100.00
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	29	0.00	100.00
3331	Agriculture, Construction, and Mining Machinery Manufacturing	56	0.00	100.00
3335	Metalworking Machinery Manufacturing	29	0.00	100.00
5152	Cable and Other Subscription Programming	257	0.00	100.00
2212	Natural Gas Distribution	87	0.00	100.00
5621	Waste Collection	190	0.00	100.00
3261	Plastics Product Manufacturing	139	0.00	100.00
4241	Paper and Paper Product Merchant Wholesalers	332	0.00	100.00
8129	Other Personal Services	9147	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	89	0.00	100.00
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	13	0.00	100.00

Source: Dun & Bradstreet/Hoover's; DBE business directory information compiled by NERA; Master Contract/Subcontract Database. Note: the dollar-based industry weight and cumulative industry weight are expressed as percentages.

Table 2.2. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	9463	81.60	81.60
5416	Management, Scientific, and Technical Consulting Services	34151	12.16	93.76
5415	Computer Systems Design and Related Services	13366	2.25	96.01
2382	Building Equipment Contractors	9288	0.75	96.76
5418	Advertising, Public Relations, and Related Services	2550	0.66	97.41
5614	Business Support Services	16807	0.44	97.85
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	183	0.31	98.16
2362	Nonresidential Building Construction	385	0.28	98.45
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	4999	0.25	98.69
2371	Utility System Construction	420	0.18	98.87
5411	Legal Services	14396	0.15	99.02
5419	Other Professional, Scientific, and Technical Services	5748	0.14	99.17
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	21	0.11	99.28
8134	Civic and Social Organizations	4249	0.06	99.34
3231	Printing and Related Support Activities	911	0.06	99.40
4885	Freight Transportation Arrangement	598	0.05	99.45
2389	Other Specialty Trade Contractors	5383	0.05	99.51
5629	Remediation and Other Waste Management Services	349	0.05	99.55
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1611	0.04	99.60
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.04	99.64
2373	Highway, Street, and Bridge Construction	872	0.04	99.68
2381	Foundation, Structure, and Building Exterior Contractors	1015	0.03	99.71
5417	Scientific Research and Development Services	3568	0.03	99.73
8114	Personal and Household Goods Repair and Maintenance	1333	0.02	99.76
4532	Office Supplies, Stationery, and Gift Stores	386	0.02	99.78
5182	Data Processing, Hosting, and Related Services	1340	0.02	99.80
5613	Employment Services	1184	0.02	99.82
4821	Rail Transportation	55	0.02	99.83
3341	Computer and Peripheral Equipment Manufacturing	123	0.01	99.85
5616	Investigation and Security Services	1444	0.01	99.86
5611	Office Administrative Services	1035	0.01	99.87
5622	Waste Treatment and Disposal	300	0.01	99.88
4812	Nonscheduled Air Transportation	84	0.01	99.89
4246	Chemical and Allied Products Merchant Wholesalers	282	0.01	99.90
4431	Electronics and Appliance Stores	1303	0.01	99.91
4841	General Freight Trucking	2725	0.01	99.92
6215	Medical and Diagnostic Laboratories	539	0.01	99.93
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	565	0.01	99.93
5313	Activities Related to Real Estate	800	0.01	99.94

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.01	99.95
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	858	0.01	99.95
5112	Software Publishers	1070	0.01	99.96
5322	Consumer Goods Rental	383	0.01	99.96
4236	Electrical and Electronic Goods Merchant Wholesalers	1188	0.01	99.97
6117	Educational Support Services	812	0.00	99.97
5612	Facilities Support Services	311	0.00	99.98
2123	Nonmetallic Mineral Mining and Quarrying	34	0.00	99.98
4543	Direct Selling Establishments	205	0.00	99.98
3271	Clay Product and Refractory Manufacturing	12	0.00	99.98
2383	Building Finishing Contractors	3272	0.00	99.99
8111	Automotive Repair and Maintenance	940	0.00	99.99
3329	Other Fabricated Metal Product Manufacturing	11	0.00	99.99
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.00	99.99
1151	Support Activities for Crop Production	74	0.00	99.99
3273	Cement and Concrete Product Manufacturing	215	0.00	100.00
3342	Communications Equipment Manufacturing	67	0.00	100.00
6211	Offices of Physicians	15872	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	893	0.00	100.00
5619	Other Support Services	1147	0.00	100.00
4244	Grocery and Related Product Merchant Wholesalers	612	0.00	100.00
7115	Independent Artists, Writers, and Performers	1269	0.00	100.00
2131	Support Activities for Mining	18	0.00	100.00
4854	School and Employee Bus Transportation	164	0.00	100.00
3219	Other Wood Product Manufacturing	16	0.00	100.00
5617	Services to Buildings and Dwellings	3782	0.00	100.00
4239	Miscellaneous Durable Goods Merchant Wholesalers	972	0.00	100.00
4441	Building Material and Supplies Dealers	501	0.00	100.00
3399	Other Miscellaneous Manufacturing	9	0.00	100.00

Source: See Table 2.1.

Table 2.3. Maintenance—Number of Businesses and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5617	Services to Buildings and Dwellings	11251	18.42	18.42
2373	Highway, Street, and Bridge Construction	872	17.14	35.56
2382	Building Equipment Contractors	9373	12.47	48.04
4851	Urban Transit Systems	150	5.46	53.49
2362	Nonresidential Building Construction	3007	4.21	57.71
2381	Foundation, Structure, and Building Exterior Contractors	1148	3.44	61.15
8114	Personal and Household Goods Repair and Maintenance	1333	3.12	64.27
3365	Railroad Rolling Stock Manufacturing	13	3.09	67.36
5616	Investigation and Security Services	2007	2.79	70.15
5416	Management, Scientific, and Technical Consulting Services	32120	2.72	72.87
2211	Electric Power Generation, Transmission and Distribution	4	2.71	75.58
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	2.45	78.03
2383	Building Finishing Contractors	4109	2.22	80.26
4881	Support Activities for Air Transportation	63	1.79	82.04
3399	Other Miscellaneous Manufacturing	608	1.65	83.69
6241	Individual and Family Services	589	1.54	85.23
2389	Other Specialty Trade Contractors	5383	1.53	86.76
2361	Residential Building Construction	16365	1.50	88.26
5622	Waste Treatment and Disposal	46	1.49	89.75
4841	General Freight Trucking	3639	1.25	91.00
5613	Employment Services	2532	0.97	91.97
3351	Electric Lighting Equipment Manufacturing	51	0.93	92.90
5611	Office Administrative Services	1035	0.90	93.79
5413	Architectural, Engineering, and Related Services	7420	0.64	94.44
3342	Communications Equipment Manufacturing	343	0.63	95.07
4471	Gasoline Stations	1925	0.61	95.68
6212	Offices of Dentists	5627	0.56	96.24
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1967	0.51	96.75
3344	Semiconductor and Other Electronic Component Manufacturing	202	0.29	97.04
2371	Utility System Construction	531	0.28	97.32
8129	Other Personal Services	299	0.25	97.57
3339	Other General Purpose Machinery Manufacturing	130	0.20	97.77
5415	Computer Systems Design and Related Services	12903	0.19	97.96
3271	Clay Product and Refractory Manufacturing	12	0.18	98.14
4233	Lumber and Other Construction Materials Merchant Wholesalers	1399	0.18	98.32
1151	Support Activities for Crop Production	74	0.16	98.48
5619	Other Support Services	1147	0.14	98.62

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
8111	Automotive Repair and Maintenance	4524	0.14	98.76
6243	Vocational Rehabilitation Services	783	0.11	98.87
4821	Rail Transportation	55	0.11	98.98
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	1443	0.11	99.09
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.09	99.18
2379	Other Heavy and Civil Engineering Construction	118	0.09	99.27
8123	Drycleaning and Laundry Services	31	0.08	99.35
3259	Other Chemical Product and Preparation Manufacturing	89	0.08	99.43
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	306	0.06	99.49
3273	Cement and Concrete Product Manufacturing	215	0.06	99.55
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	29	0.06	99.61
5629	Remediation and Other Waste Management Services	274	0.06	99.66
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	246	0.05	99.72
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.05	99.76
2123	Nonmetallic Mineral Mining and Quarrying	77	0.04	99.81
4431	Electronics and Appliance Stores	1144	0.03	99.83
5614	Business Support Services	16807	0.02	99.86
5418	Advertising, Public Relations, and Related Services	151	0.02	99.88
8112	Electronic and Precision Equipment Repair and Maintenance	39	0.02	99.90
4921	Couriers and Express Delivery Services	249	0.01	99.91
4451	Grocery Stores	3432	0.01	99.92
4842	Specialized Freight Trucking	336	0.01	99.92
4543	Direct Selling Establishments	560	0.01	99.93
4884	Support Activities for Road Transportation	75	0.01	99.94
4853	Taxi and Limousine Service	664	0.01	99.95
5171	Wired Telecommunications Carriers	124	0.01	99.95
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.01	99.96
5322	Consumer Goods Rental	383	0.01	99.96
5417	Scientific Research and Development Services	1781	0.01	99.97
3323	Architectural and Structural Metals Manufacturing	84	0.00	99.97
5242	Agencies, Brokerages, and Other Insurance Related Activities	5011	0.00	99.98
5241	Insurance Carriers	250	0.00	99.98
6211	Offices of Physicians	15872	0.00	99.99
7211	Traveler Accommodation	2047	0.00	99.99
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	70	0.00	99.99
3353	Electrical Equipment Manufacturing	46	0.00	99.99
4441	Building Material and Supplies Dealers	501	0.00	99.99

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5179	Other Telecommunications	782	0.00	100.00
5321	Automotive Equipment Rental and Leasing	417	0.00	100.00
4539	Other Miscellaneous Store Retailers	3201	0.00	100.00
5323	General Rental Centers	14	0.00	100.00
4532	Office Supplies, Stationery, and Gift Stores	386	0.00	100.00
3221	Pulp, Paper, and Paperboard Mills	16	0.00	100.00
3255	Paint, Coating, and Adhesive Manufacturing	25	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	269	0.00	100.00

Source: See Table 2.1.

Table 2.4. IT—Number of Businesses and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5415	Computer Systems Design and Related Services	13062	60.04	60.04
5416	Management, Scientific, and Technical Consulting Services	12573	15.88	75.91
5413	Architectural, Engineering, and Related Services	7312	10.50	86.41
5112	Software Publishers	1070	5.08	91.48
3342	Communications Equipment Manufacturing	253	4.23	95.72
4236	Electrical and Electronic Goods Merchant Wholesalers	569	1.27	96.98
4532	Office Supplies, Stationery, and Gift Stores	386	0.83	97.81
4431	Electronics and Appliance Stores	1303	0.50	98.31
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	833	0.50	98.81
4232	Furniture and Home Furnishing Merchant Wholesalers	398	0.23	99.04
4821	Rail Transportation	55	0.20	99.24
3353	Electrical Equipment Manufacturing	46	0.19	99.43
5613	Employment Services	1184	0.15	99.58
3341	Computer and Peripheral Equipment Manufacturing	94	0.14	99.72
3333	Commercial and Service Industry Machinery Manufacturing	50	0.09	99.81
5614	Business Support Services	16807	0.08	99.89
3323	Architectural and Structural Metals Manufacturing	317	0.07	99.96
4543	Direct Selling Establishments	457	0.02	99.99
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2441	0.01	100.00

Source: See Table 2.1.

Table 2.5. Services—Number of Businesses and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4851	Urban Transit Systems	150	26.62	26.62
4821	Rail Transportation	55	22.04	48.66
4859	Other Transit and Ground Passenger Transportation	361	12.69	61.35
4855	Charter Bus Industry	143	8.82	70.17
5613	Employment Services	2505	5.60	75.77
4854	School and Employee Bus Transportation	164	3.64	79.41
5413	Architectural, Engineering, and Related Services	9207	2.99	82.39
5418	Advertising, Public Relations, and Related Services	3100	2.15	84.54
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	860	2.08	86.63
5416	Management, Scientific, and Technical Consulting Services	33957	1.83	88.46
5415	Computer Systems Design and Related Services	13207	1.49	89.95
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	267	1.30	91.25
4853	Taxi and Limousine Service	370	1.18	92.43
5221	Depository Credit Intermediation	2782	1.08	93.51
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.70	94.22
4885	Freight Transportation Arrangement	598	0.58	94.80
2381	Foundation, Structure, and Building Exterior Contractors	2338	0.55	95.35
7211	Traveler Accommodation	2047	0.54	95.89
4532	Office Supplies, Stationery, and Gift Stores	2781	0.42	96.31
5242	Agencies, Brokerages, and Other Insurance Related Activities	5011	0.39	96.70
8111	Automotive Repair and Maintenance	5464	0.37	97.07
6213	Offices of Other Health Practitioners	2528	0.28	97.35
6242	Community Food and Housing, and Emergency and Other Relief Services	15	0.28	97.63
5617	Services to Buildings and Dwellings	8129	0.20	97.83
2212	Natural Gas Distribution	87	0.19	98.01
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	57	0.18	98.20
5419	Other Professional, Scientific, and Technical Services	3057	0.15	98.35
3365	Railroad Rolling Stock Manufacturing	13	0.15	98.50
2362	Nonresidential Building Construction	3007	0.14	98.64
3231	Printing and Related Support Activities	1478	0.11	98.75
4543	Direct Selling Establishments	205	0.11	98.86
5616	Investigation and Security Services	925	0.09	98.95
4471	Gasoline Stations	1925	0.08	99.03
2373	Highway, Street, and Bridge Construction	872	0.07	99.10
5417	Scientific Research and Development Services	3568	0.07	99.16
4889	Other Support Activities for Transportation	1164	0.06	99.22
2382	Building Equipment Contractors	9288	0.06	99.28
5614	Business Support Services	17099	0.05	99.33
4921	Couriers and Express Delivery Services	249	0.05	99.38
3353	Electrical Equipment Manufacturing	95	0.04	99.43

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2441	0.04	99.47
4812	Nonscheduled Air Transportation	84	0.04	99.51
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	239	0.04	99.54
5121	Motion Picture and Video Industries	1644	0.03	99.58
5622	Waste Treatment and Disposal	168	0.03	99.61
8129	Other Personal Services	299	0.02	99.63
5311	Lessors of Real Estate	3726	0.02	99.65
5191	Other Information Services	812	0.02	99.67
5322	Consumer Goods Rental	867	0.02	99.69
3399	Other Miscellaneous Manufacturing	640	0.02	99.72
8139	Business, Professional, Labor, Political, and Similar Organizations	3582	0.02	99.73
2389	Other Specialty Trade Contractors	5383	0.02	99.75
4236	Electrical and Electronic Goods Merchant Wholesalers	1188	0.02	99.77
3271	Clay Product and Refractory Manufacturing	1	0.01	99.78
5171	Wired Telecommunications Carriers	124	0.01	99.80
6243	Vocational Rehabilitation Services	783	0.01	99.81
3133	Textile and Fabric Finishing and Fabric Coating Mills	230	0.01	99.82
8112	Electronic and Precision Equipment Repair and Maintenance	691	0.01	99.83
2371	Utility System Construction	420	0.01	99.84
3351	Electric Lighting Equipment Manufacturing	51	0.01	99.86
5111	Newspaper, Periodical, Book, and Directory Publishers	982	0.01	99.87
8114	Personal and Household Goods Repair and Maintenance	1164	0.01	99.88
5411	Legal Services	14396	0.01	99.89
5172	Wireless Telecommunications Carriers (except Satellite)	756	0.01	99.90
5414	Specialized Design Services	2265	0.01	99.90
5511	Management of Companies and Enterprises	1001	0.01	99.91
4842	Specialized Freight Trucking	406	0.01	99.92
6113	Colleges, Universities, and Professional Schools	1040	0.01	99.93
4441	Building Material and Supplies Dealers	1684	0.01	99.94
4431	Electronics and Appliance Stores	1685	0.01	99.94
4539	Other Miscellaneous Store Retailers	3201	0.01	99.95
5122	Sound Recording Industries	419	0.01	99.95
3372	Office Furniture (including Fixtures) Manufacturing	53	0.01	99.96
2213	Water, Sewage and Other Systems	6	0.01	99.97
8123	Drycleaning and Laundry Services	31	0.01	99.97
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1249	0.00	99.98
7223	Special Food Services	960	0.00	99.98
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	122	0.00	99.98
3359	Other Electrical Equipment and Component Manufacturing	14	0.00	99.99
4241	Paper and Paper Product Merchant Wholesalers	112	0.00	99.99
5179	Other Telecommunications	1387	0.00	99.99

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3323	Architectural and Structural Metals Manufacturing	33	0.00	99.99
7111	Performing Arts Companies	1081	0.00	99.99
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	269	0.00	100.00
5239	Other Financial Investment Activities	2194	0.00	100.00
5223	Activities Related to Credit Intermediation	166	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	89	0.00	100.00
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	69	0.00	100.00
3363	Motor Vehicle Parts Manufacturing	7	0.00	100.00
5615	Travel Arrangement and Reservation Services	1624	0.00	100.00
3341	Computer and Peripheral Equipment Manufacturing	94	0.00	100.00
7115	Independent Artists, Writers, and Performers	1269	0.00	100.00
3219	Other Wood Product Manufacturing	161	0.00	100.00
2383	Building Finishing Contractors	837	0.00	100.00
3315	Foundries	5	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	893	0.00	100.00
3339	Other General Purpose Machinery Manufacturing	100	0.00	100.00
4232	Furniture and Home Furnishing Merchant Wholesalers	499	0.00	100.00
3369	Other Transportation Equipment Manufacturing	15	0.00	100.00
3326	Spring and Wire Product Manufacturing	3	0.00	100.00
3329	Other Fabricated Metal Product Manufacturing	1	0.00	100.00
4246	Chemical and Allied Products Merchant Wholesalers	282	0.00	100.00

Source: See Table 2.1.

Table 2.6. CSE—Number of Businesses and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3362	Motor Vehicle Body and Trailer Manufacturing	19	42.31	42.31
3365	Railroad Rolling Stock Manufacturing	13	30.70	73.01
4411	Automobile Dealers	1267	5.20	78.21
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1741	2.71	80.92
3342	Communications Equipment Manufacturing	343	2.54	83.46
8111	Automotive Repair and Maintenance	3735	1.86	85.32
4481	Clothing Stores	793	1.74	87.06
5413	Architectural, Engineering, and Related Services	5431	1.48	88.54
3311	Iron and Steel Mills and Ferroalloy Manufacturing	53	1.30	89.84
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	893	1.24	91.08
3369	Other Transportation Equipment Manufacturing	15	1.06	92.14
4413	Automotive Parts, Accessories, and Tire Stores	1051	0.88	93.02
3259	Other Chemical Product and Preparation Manufacturing	89	0.72	93.73
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	54	0.68	94.42
4241	Paper and Paper Product Merchant Wholesalers	332	0.68	95.10
3363	Motor Vehicle Parts Manufacturing	67	0.68	95.78
3231	Printing and Related Support Activities	911	0.62	96.40
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	181	0.60	97.00
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	833	0.51	97.51
3331	Agriculture, Construction, and Mining Machinery Manufacturing	56	0.45	97.97
5416	Management, Scientific, and Technical Consulting Services	219	0.43	98.39
3329	Other Fabricated Metal Product Manufacturing	5	0.41	98.80
5179	Other Telecommunications	1387	0.29	99.10
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	69	0.26	99.35
2362	Nonresidential Building Construction	2622	0.25	99.60
4811	Scheduled Air Transportation	85	0.21	99.82
5321	Automotive Equipment Rental and Leasing	413	0.18	100.00

Source: See Table 2.1.

2. Identify Listed DBEs

While extensive, Dun & Bradstreet does not sufficiently identify all businesses owned by minorities or women. Although many such businesses *are* correctly identified in Dun & Bradstreet, experience has demonstrated that many are also missed. For this reason, several

additional steps were required to identify the appropriate percentage of DBEs in the relevant market.

First, NERA completed an intensive regional search for information on minority-owned and woman-owned businesses in Maryland and surrounding states. Beyond the information already in Dun & Bradstreet/Hoover's, NERA collected lists of minority- and women-owned firms from other public and private entities. Specifically, directories were included from: Maryland Department of Transportation, American Minority Contractors & Businesses Association, Anne Arundel County, Baltimore County Chamber of Commerce, Business Research Services, Calvert County Minority Business Alliance, Carroll County, Charles County, City of Baltimore, Delaware DOT, Diversity Business.com, Diversity Information Resources, Frederick County Department of Human Relations, Garrett County, Governor's Commission on Asian Pacific American Affairs, Hagerstown/Washington Economic Development Commission, Howard County, Maryland Governor's Office of Minority Affairs, Maryland R*STARS Database, Maryland Washington Minority Contractors Association, Maryland-National Capital Park & Planning Commission, Metro Washington, Metropolitan Washington Airports Authority, U.S. Department of Commerce Minority Business Development Agency, Minority Business Network, Montgomery County, National Association of Women in Construction, National Center for American Indian Enterprise Development, Richmond International Airport, Small Business Administration Dynamic Small Business Search, Tri-County Council of Southern Maryland, UIDA Business Services, Virginia Department of Minority Business Enterprise, West Virginia Department of Transportation, and Women's Business Enterprise National Council.⁵⁰

The DBEs identified in this manner are referred to as "listed" DBEs. Table 2.7 shows the number of listed DBEs identified in each NAICS sub-sector within the Construction category, along with the associated industry weight according to dollars awarded—the same industry weight as used in corresponding Table 2.1. Comparable data for AE-CRS, Maintenance, IT, Services, and CSE appear in Tables 2.8–2.12, respectively.⁵¹

If the listed DBEs identified in the Tables 2.7–2.12 are, in fact, *all* DBEs and are the *only* DBEs among all the businesses identified in Tables 2.1-2.6, then an estimate of "listed" DBE availability is simply the number of listed DBEs divided by the total number of businesses in the relevant market. However, as we shall see below, neither of these two conditions holds true in practice and this is therefore *not* an appropriate method for measuring DBE availability.

⁵⁰ We also obtained information from certain entities that was duplicative of either Dun & Bradstreet or one or more of the other sources listed above. These entities are listed below in Appendix II. We were unable to obtain relevant lists or directories from a number of entities. The reasons for this include: (1) the entity did not have a list or the entity's list did not include race and sex information; (2) the entity was unresponsive to repeated attempts at contacts; or, (3) the entity simply declined to provide us the list. These entities, as well, are listed in Appendix II.

⁵¹ Tables 2.7.A-2.12.A, 2.7.B-2.12.B, and 2.7.C-2.12.C in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

There are two reasons for this. First, it is likely that some of the DBEs listed in Tables 2.7–2.12 are not actually minority-owned or woman-owned. Second, it is likely that there are additional “unlisted” DBEs among all the businesses included in Tables 2.1–2.6. Such businesses may not appear in any of the directories we gathered and are therefore not included among the listed DBEs. Additional steps are required to test these two conditions and to arrive at a more accurate representation of DBE availability within the Baseline Business Universe. We discuss these steps in Sections 3.A and 3.B below.

Table 2.7. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	135	45.39	45.39
2362	Nonresidential Building Construction	618	9.32	54.72
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	46	8.93	63.65
2381	Foundation, Structure, and Building Exterior Contractors	562	6.37	70.02
5413	Architectural, Engineering, and Related Services	1667	5.66	75.68
2382	Building Equipment Contractors	885	5.33	81.01
3273	Cement and Concrete Product Manufacturing	21	4.20	85.21
5614	Business Support Services	1989	1.94	87.15
2389	Other Specialty Trade Contractors	525	1.92	89.07
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	21	1.32	90.39
2371	Utility System Construction	68	1.24	91.63
4842	Specialized Freight Trucking	160	1.03	92.66
2383	Building Finishing Contractors	607	0.98	93.63
2361	Residential Building Construction	1029	0.64	94.27
4841	General Freight Trucking	494	0.61	94.88
5416	Management, Scientific, and Technical Consulting Services	8380	0.60	95.48
5312	Offices of Real Estate Agents and Brokers	1138	0.43	95.91
3323	Architectural and Structural Metals Manufacturing	57	0.43	96.34
5617	Services to Buildings and Dwellings	1884	0.43	96.77
3399	Other Miscellaneous Manufacturing	226	0.40	97.17
5182	Data Processing, Hosting, and Related Services	379	0.34	97.51
4442	Lawn and Garden Equipment and Supplies Stores	69	0.27	97.78
4233	Lumber and Other Construction Materials Merchant Wholesalers	122	0.27	98.05
3241	Petroleum and Coal Products Manufacturing	10	0.23	98.28
1151	Support Activities for Crop Production	13	0.22	98.50
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.12	98.61
5612	Facilities Support Services	118	0.11	98.73
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	279	0.11	98.84
2123	Nonmetallic Mineral Mining and Quarrying	7	0.08	98.91
5619	Other Support Services	269	0.07	98.99
8111	Automotive Repair and Maintenance	261	0.07	99.06

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4889	Other Support Activities for Transportation	118	0.07	99.13
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.06	99.19
3351	Electric Lighting Equipment Manufacturing	5	0.05	99.25
8114	Personal and Household Goods Repair and Maintenance	322	0.05	99.30
2372	Land Subdivision	62	0.05	99.35
5616	Investigation and Security Services	428	0.05	99.40
3344	Semiconductor and Other Electronic Component Manufacturing	27	0.05	99.45
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.04	99.49
8112	Electronic and Precision Equipment Repair and Maintenance	67	0.04	99.53
5415	Computer Systems Design and Related Services	4564	0.03	99.56
4543	Direct Selling Establishments	25	0.03	99.59
3271	Clay Product and Refractory Manufacturing	3	0.03	99.61
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.02	99.64
3339	Other General Purpose Machinery Manufacturing	9	0.02	99.66
3279	Other Nonmetallic Mineral Product Manufacturing	12	0.02	99.68
5622	Waste Treatment and Disposal	41	0.02	99.70
2379	Other Heavy and Civil Engineering Construction	25	0.02	99.72
5629	Remediation and Other Waste Management Services	59	0.02	99.74
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	79	0.02	99.76
4471	Gasoline Stations	138	0.02	99.78
4539	Other Miscellaneous Store Retailers	393	0.02	99.80
4441	Building Material and Supplies Dealers	154	0.02	99.81
3365	Railroad Rolling Stock Manufacturing	3	0.01	99.83
4246	Chemical and Allied Products Merchant Wholesalers	36	0.01	99.84
5418	Advertising, Public Relations, and Related Services	227	0.01	99.85
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	61	0.01	99.86
3311	Iron and Steel Mills and Ferroalloy Manufacturing	4	0.01	99.87
3372	Office Furniture (including Fixtures) Manufacturing	12	0.01	99.88
5311	Lessors of Real Estate	222	0.01	99.89
4239	Miscellaneous Durable Goods Merchant Wholesalers	120	0.01	99.90
4422	Home Furnishings Stores	168	0.01	99.91
3329	Other Fabricated Metal Product Manufacturing	9	0.01	99.92
5322	Consumer Goods Rental	46	0.01	99.92
5613	Employment Services	706	0.01	99.93
5419	Other Professional, Scientific, and Technical Services	519	0.01	99.93
3325	Hardware Manufacturing	2	0.00	99.94
8139	Business, Professional, Labor, Political, and Similar Organizations	12	0.00	99.94
3315	Foundries	0	0.00	99.95
4884	Support Activities for Road Transportation	63	0.00	99.95
6211	Offices of Physicians	1232	0.00	99.96

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5179	Other Telecommunications	154	0.00	99.96
3332	Industrial Machinery Manufacturing	3	0.00	99.97
3219	Other Wood Product Manufacturing	2	0.00	99.97
2211	Electric Power Generation, Transmission and Distribution	0	0.00	99.97
3353	Electrical Equipment Manufacturing	6	0.00	99.98
3149	Other Textile Product Mills	22	0.00	99.98
5172	Wireless Telecommunications Carriers (except Satellite)	33	0.00	99.98
4242	Drugs and Druggists' Sundries Merchant Wholesalers	65	0.00	99.98
5321	Automotive Equipment Rental and Leasing	11	0.00	99.98
5414	Specialized Design Services	811	0.00	99.99
1119	Other Crop Farming	76	0.00	99.99
4232	Furniture and Home Furnishing Merchant Wholesalers	149	0.00	99.99
3231	Printing and Related Support Activities	228	0.00	99.99
5242	Agencies, Brokerages, and Other Insurance Related Activities	466	0.00	99.99
3326	Spring and Wire Product Manufacturing	3	0.00	99.99
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	20	0.00	99.99
4532	Office Supplies, Stationery, and Gift Stores	93	0.00	99.99
5221	Depository Credit Intermediation	0	0.00	100.00
5171	Wired Telecommunications Carriers	14	0.00	100.00
2213	Water, Sewage and Other Systems	5	0.00	100.00
3362	Motor Vehicle Body and Trailer Manufacturing	5	0.00	100.00
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	0	0.00	100.00
3331	Agriculture, Construction, and Mining Machinery Manufacturing	4	0.00	100.00
3335	Metalworking Machinery Manufacturing	6	0.00	100.00
5152	Cable and Other Subscription Programming	13	0.00	100.00
2212	Natural Gas Distribution	4	0.00	100.00
5621	Waste Collection	33	0.00	100.00
3261	Plastics Product Manufacturing	15	0.00	100.00
4241	Paper and Paper Product Merchant Wholesalers	114	0.00	100.00
8129	Other Personal Services	1430	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	14	0.00	100.00
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2	0.00	100.00

Source: See Table 2.1.

Table 2.8. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	1683	81.60	81.60
5416	Management, Scientific, and Technical Consulting Services	9310	12.16	93.76
5415	Computer Systems Design and Related Services	4737	2.25	96.01
2382	Building Equipment Contractors	870	0.75	96.76
5418	Advertising, Public Relations, and Related Services	665	0.66	97.41
5614	Business Support Services	1989	0.44	97.85
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	34	0.31	98.16
2362	Nonresidential Building Construction	54	0.28	98.45
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	922	0.25	98.69
2371	Utility System Construction	46	0.18	98.87
5411	Legal Services	1078	0.15	99.02
5419	Other Professional, Scientific, and Technical Services	830	0.14	99.17
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	2	0.11	99.28
8134	Civic and Social Organizations	26	0.06	99.34
3231	Printing and Related Support Activities	171	0.06	99.40
4885	Freight Transportation Arrangement	106	0.05	99.45
2389	Other Specialty Trade Contractors	525	0.05	99.51
5629	Remediation and Other Waste Management Services	50	0.05	99.55
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	169	0.04	99.60
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.04	99.64
2373	Highway, Street, and Bridge Construction	135	0.04	99.68
2381	Foundation, Structure, and Building Exterior Contractors	144	0.03	99.71
5417	Scientific Research and Development Services	669	0.03	99.73
8114	Personal and Household Goods Repair and Maintenance	181	0.02	99.76
4532	Office Supplies, Stationery, and Gift Stores	93	0.02	99.78
5182	Data Processing, Hosting, and Related Services	379	0.02	99.80
5613	Employment Services	286	0.02	99.82
4821	Rail Transportation	1	0.02	99.83
3341	Computer and Peripheral Equipment Manufacturing	29	0.01	99.85
5616	Investigation and Security Services	291	0.01	99.86
5611	Office Administrative Services	180	0.01	99.87
5622	Waste Treatment and Disposal	41	0.01	99.88
4812	Nonscheduled Air Transportation	7	0.01	99.89
4246	Chemical and Allied Products Merchant Wholesalers	36	0.01	99.90
4431	Electronics and Appliance Stores	197	0.01	99.91
4841	General Freight Trucking	357	0.01	99.92
6215	Medical and Diagnostic Laboratories	59	0.01	99.93

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	39	0.01	99.93
5313	Activities Related to Real Estate	102	0.01	99.94
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.01	99.95
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	216	0.01	99.95
5112	Software Publishers	166	0.01	99.96
5322	Consumer Goods Rental	46	0.01	99.96
4236	Electrical and Electronic Goods Merchant Wholesalers	153	0.01	99.97
6117	Educational Support Services	291	0.00	99.97
5612	Facilities Support Services	118	0.00	99.98
2123	Nonmetallic Mineral Mining and Quarrying	1	0.00	99.98
4543	Direct Selling Establishments	19	0.00	99.98
3271	Clay Product and Refractory Manufacturing	3	0.00	99.98
2383	Building Finishing Contractors	354	0.00	99.99
8111	Automotive Repair and Maintenance	70	0.00	99.99
3329	Other Fabricated Metal Product Manufacturing	0	0.00	99.99
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.00	99.99
1151	Support Activities for Crop Production	13	0.00	99.99
3273	Cement and Concrete Product Manufacturing	18	0.00	100.00
3342	Communications Equipment Manufacturing	7	0.00	100.00
6211	Offices of Physicians	1232	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	66	0.00	100.00
5619	Other Support Services	269	0.00	100.00
4244	Grocery and Related Product Merchant Wholesalers	92	0.00	100.00
7115	Independent Artists, Writers, and Performers	518	0.00	100.00
2131	Support Activities for Mining	2	0.00	100.00
4854	School and Employee Bus Transportation	42	0.00	100.00
3219	Other Wood Product Manufacturing	2	0.00	100.00
5617	Services to Buildings and Dwellings	307	0.00	100.00
4239	Miscellaneous Durable Goods Merchant Wholesalers	120	0.00	100.00
4441	Building Material and Supplies Dealers	33	0.00	100.00
3399	Other Miscellaneous Manufacturing	4	0.00	100.00

Source: See Table 2.1.

Table 2.9. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5617	Services to Buildings and Dwellings	2033	18.42	18.42
2373	Highway, Street, and Bridge Construction	135	17.14	35.56
2382	Building Equipment Contractors	885	12.47	48.04
4851	Urban Transit Systems	33	5.46	53.49
2362	Nonresidential Building Construction	618	4.21	57.71
2381	Foundation, Structure, and Building Exterior Contractors	171	3.44	61.15
8114	Personal and Household Goods Repair and Maintenance	181	3.12	64.27
3365	Railroad Rolling Stock Manufacturing	3	3.09	67.36
5616	Investigation and Security Services	465	2.79	70.15
5416	Management, Scientific, and Technical Consulting Services	8865	2.72	72.87
2211	Electric Power Generation, Transmission and Distribution	0	2.71	75.58
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	2.45	78.03
2383	Building Finishing Contractors	462	2.22	80.26
4881	Support Activities for Air Transportation	4	1.79	82.04
3399	Other Miscellaneous Manufacturing	133	1.65	83.69
6241	Individual and Family Services	13	1.54	85.23
2389	Other Specialty Trade Contractors	525	1.53	86.76
2361	Residential Building Construction	993	1.50	88.26
5622	Waste Treatment and Disposal	4	1.49	89.75
4841	General Freight Trucking	494	1.25	91.00
5613	Employment Services	719	0.97	91.97
3351	Electric Lighting Equipment Manufacturing	11	0.93	92.90
5611	Office Administrative Services	180	0.90	93.79
5413	Architectural, Engineering, and Related Services	1336	0.64	94.44
3342	Communications Equipment Manufacturing	61	0.63	95.07
4471	Gasoline Stations	138	0.61	95.68
6212	Offices of Dentists	488	0.56	96.24
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	208	0.51	96.75
3344	Semiconductor and Other Electronic Component Manufacturing	27	0.29	97.04
2371	Utility System Construction	68	0.28	97.32
8129	Other Personal Services	48	0.25	97.57
3339	Other General Purpose Machinery Manufacturing	16	0.20	97.77
5415	Computer Systems Design and Related Services	4564	0.19	97.96
3271	Clay Product and Refractory Manufacturing	3	0.18	98.14
4233	Lumber and Other Construction Materials Merchant Wholesalers	122	0.18	98.32
1151	Support Activities for Crop Production	13	0.16	98.48
5619	Other Support Services	269	0.14	98.62
8111	Automotive Repair and Maintenance	244	0.14	98.76
6243	Vocational Rehabilitation Services	77	0.11	98.87
4821	Rail Transportation	1	0.11	98.98

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	169	0.11	99.09
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.09	99.18
2379	Other Heavy and Civil Engineering Construction	25	0.09	99.27
8123	Drycleaning and Laundry Services	5	0.08	99.35
3259	Other Chemical Product and Preparation Manufacturing	14	0.08	99.43
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	46	0.06	99.49
3273	Cement and Concrete Product Manufacturing	18	0.06	99.55
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	0	0.06	99.61
5629	Remediation and Other Waste Management Services	26	0.06	99.66
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	21	0.05	99.72
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.05	99.76
2123	Nonmetallic Mineral Mining and Quarrying	7	0.04	99.81
4431	Electronics and Appliance Stores	97	0.03	99.83
5614	Business Support Services	1989	0.02	99.86
5418	Advertising, Public Relations, and Related Services	26	0.02	99.88
8112	Electronic and Precision Equipment Repair and Maintenance	2	0.02	99.90
4921	Couriers and Express Delivery Services	51	0.01	99.91
4451	Grocery Stores	324	0.01	99.92
4842	Specialized Freight Trucking	79	0.01	99.92
4543	Direct Selling Establishments	101	0.01	99.93
4884	Support Activities for Road Transportation	8	0.01	99.94
4853	Taxi and Limousine Service	69	0.01	99.95
5171	Wired Telecommunications Carriers	14	0.01	99.95
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.01	99.96
5322	Consumer Goods Rental	46	0.01	99.96
5417	Scientific Research and Development Services	322	0.01	99.97
3323	Architectural and Structural Metals Manufacturing	7	0.00	99.97
5242	Agencies, Brokerages, and Other Insurance Related Activities	466	0.00	99.98
5241	Insurance Carriers	18	0.00	99.98
6211	Offices of Physicians	1232	0.00	99.99
7211	Traveler Accommodation	159	0.00	99.99
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	17	0.00	99.99
3353	Electrical Equipment Manufacturing	6	0.00	99.99
4441	Building Material and Supplies Dealers	33	0.00	99.99
5179	Other Telecommunications	81	0.00	100.00
5321	Automotive Equipment Rental and Leasing	11	0.00	100.00
4539	Other Miscellaneous Store Retailers	393	0.00	100.00
5323	General Rental Centers	2	0.00	100.00
4532	Office Supplies, Stationery, and Gift Stores	93	0.00	100.00
3221	Pulp, Paper, and Paperboard Mills	1	0.00	100.00

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3255	Paint, Coating, and Adhesive Manufacturing	2	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	35	0.00	100.00

Source: See Table 2.1.

Table 2.10. IT—Number of Listed DBEs and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5415	Computer Systems Design and Related Services	4618	60.04	60.04
5416	Management, Scientific, and Technical Consulting Services	3684	15.88	75.91
5413	Architectural, Engineering, and Related Services	1309	10.50	86.41
5112	Software Publishers	166	5.08	91.48
3342	Communications Equipment Manufacturing	48	4.23	95.72
4236	Electrical and Electronic Goods Merchant Wholesalers	83	1.27	96.98
4532	Office Supplies, Stationery, and Gift Stores	93	0.83	97.81
4431	Electronics and Appliance Stores	197	0.50	98.31
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	214	0.50	98.81
4232	Furniture and Home Furnishing Merchant Wholesalers	77	0.23	99.04
4821	Rail Transportation	1	0.20	99.24
3353	Electrical Equipment Manufacturing	6	0.19	99.43
5613	Employment Services	286	0.15	99.58
3341	Computer and Peripheral Equipment Manufacturing	13	0.14	99.72
3333	Commercial and Service Industry Machinery Manufacturing	7	0.09	99.81
5614	Business Support Services	1989	0.08	99.89
3323	Architectural and Structural Metals Manufacturing	44	0.07	99.96
4543	Direct Selling Establishments	95	0.02	99.99
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	279	0.01	100.00

Source: See Table 2.1.

Table 2.11. Services—Number of Listed DBEs and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4851	Urban Transit Systems	33	26.62	26.62
4821	Rail Transportation	1	22.04	48.66
4859	Other Transit and Ground Passenger Transportation	94	12.69	61.35
4855	Charter Bus Industry	43	8.82	70.17
5613	Employment Services	706	5.60	75.77
4854	School and Employee Bus Transportation	42	3.64	79.41
5413	Architectural, Engineering, and Related Services	1667	2.99	82.39
5418	Advertising, Public Relations, and Related Services	784	2.15	84.54
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	62	2.08	86.63
5416	Management, Scientific, and Technical Consulting Services	9283	1.83	88.46
5415	Computer Systems Design and Related Services	4683	1.49	89.95
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	16	1.30	91.25
4853	Taxi and Limousine Service	29	1.18	92.43
5221	Depository Credit Intermediation	25	1.08	93.51
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.70	94.22
4885	Freight Transportation Arrangement	106	0.58	94.80
2381	Foundation, Structure, and Building Exterior Contractors	300	0.55	95.35
7211	Traveler Accommodation	159	0.54	95.89
4532	Office Supplies, Stationery, and Gift Stores	738	0.42	96.31
5242	Agencies, Brokerages, and Other Insurance Related Activities	466	0.39	96.70
8111	Automotive Repair and Maintenance	314	0.37	97.07
6213	Offices of Other Health Practitioners	543	0.28	97.35
6242	Community Food and Housing, and Emergency and Other Relief Services	2	0.28	97.63
5617	Services to Buildings and Dwellings	1646	0.20	97.83
2212	Natural Gas Distribution	4	0.19	98.01
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	10	0.18	98.20
5419	Other Professional, Scientific, and Technical Services	553	0.15	98.35
3365	Railroad Rolling Stock Manufacturing	3	0.15	98.50
2362	Nonresidential Building Construction	618	0.14	98.64
3231	Printing and Related Support Activities	304	0.11	98.75
4543	Direct Selling Establishments	19	0.11	98.86
5616	Investigation and Security Services	194	0.09	98.95
4471	Gasoline Stations	138	0.08	99.03
2373	Highway, Street, and Bridge Construction	135	0.07	99.10
5417	Scientific Research and Development Services	669	0.07	99.16
4889	Other Support Activities for Transportation	118	0.06	99.22
2382	Building Equipment Contractors	870	0.06	99.28
5614	Business Support Services	2024	0.05	99.33
4921	Couriers and Express Delivery Services	51	0.05	99.38
3353	Electrical Equipment Manufacturing	13	0.04	99.43

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	279	0.04	99.47
4812	Nonscheduled Air Transportation	7	0.04	99.51
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	27	0.04	99.54
5121	Motion Picture and Video Industries	370	0.03	99.58
5622	Waste Treatment and Disposal	27	0.03	99.61
8129	Other Personal Services	48	0.02	99.63
5311	Lessors of Real Estate	130	0.02	99.65
5191	Other Information Services	41	0.02	99.67
5322	Consumer Goods Rental	75	0.02	99.69
3399	Other Miscellaneous Manufacturing	145	0.02	99.72
8139	Business, Professional, Labor, Political, and Similar Organizations	26	0.02	99.73
2389	Other Specialty Trade Contractors	525	0.02	99.75
4236	Electrical and Electronic Goods Merchant Wholesalers	153	0.02	99.77
3271	Clay Product and Refractory Manufacturing	0	0.01	99.78
5171	Wired Telecommunications Carriers	14	0.01	99.80
6243	Vocational Rehabilitation Services	77	0.01	99.81
3133	Textile and Fabric Finishing and Fabric Coating Mills	94	0.01	99.82
8112	Electronic and Precision Equipment Repair and Maintenance	67	0.01	99.83
2371	Utility System Construction	46	0.01	99.84
3351	Electric Lighting Equipment Manufacturing	11	0.01	99.86
5111	Newspaper, Periodical, Book, and Directory Publishers	136	0.01	99.87
8114	Personal and Household Goods Repair and Maintenance	73	0.01	99.88
5411	Legal Services	1078	0.01	99.89
5172	Wireless Telecommunications Carriers (except Satellite)	33	0.01	99.90
5414	Specialized Design Services	852	0.01	99.90
5511	Management of Companies and Enterprises	31	0.01	99.91
4842	Specialized Freight Trucking	72	0.01	99.92
6113	Colleges, Universities, and Professional Schools	4	0.01	99.93
4441	Building Material and Supplies Dealers	138	0.01	99.94
4431	Electronics and Appliance Stores	150	0.01	99.94
4539	Other Miscellaneous Store Retailers	393	0.01	99.95
5122	Sound Recording Industries	93	0.01	99.95
3372	Office Furniture (including Fixtures) Manufacturing	11	0.01	99.96
2213	Water, Sewage and Other Systems	1	0.01	99.97
8123	Drycleaning and Laundry Services	5	0.01	99.97
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	143	0.00	99.98
7223	Special Food Services	228	0.00	99.98
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	25	0.00	99.98
3359	Other Electrical Equipment and Component Manufacturing	1	0.00	99.99
4241	Paper and Paper Product Merchant Wholesalers	13	0.00	99.99
5179	Other Telecommunications	154	0.00	99.99

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3323	Architectural and Structural Metals Manufacturing	2	0.00	99.99
7111	Performing Arts Companies	193	0.00	99.99
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	35	0.00	100.00
5239	Other Financial Investment Activities	116	0.00	100.00
5223	Activities Related to Credit Intermediation	11	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	14	0.00	100.00
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	20	0.00	100.00
3363	Motor Vehicle Parts Manufacturing	0	0.00	100.00
5615	Travel Arrangement and Reservation Services	376	0.00	100.00
3341	Computer and Peripheral Equipment Manufacturing	13	0.00	100.00
7115	Independent Artists, Writers, and Performers	518	0.00	100.00
3219	Other Wood Product Manufacturing	20	0.00	100.00
2383	Building Finishing Contractors	108	0.00	100.00
3315	Foundries	0	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	66	0.00	100.00
3339	Other General Purpose Machinery Manufacturing	8	0.00	100.00
4232	Furniture and Home Furnishing Merchant Wholesalers	72	0.00	100.00
3369	Other Transportation Equipment Manufacturing	2	0.00	100.00
3326	Spring and Wire Product Manufacturing	0	0.00	100.00
3329	Other Fabricated Metal Product Manufacturing	0	0.00	100.00
4246	Chemical and Allied Products Merchant Wholesalers	36	0.00	100.00

Source: See Table 2.1.

Table 2.12. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3362	Motor Vehicle Body and Trailer Manufacturing	2	42.31	42.31
3365	Railroad Rolling Stock Manufacturing	3	30.70	73.01
4411	Automobile Dealers	51	5.20	78.21
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	217	2.71	80.92
3342	Communications Equipment Manufacturing	61	2.54	83.46
8111	Automotive Repair and Maintenance	191	1.86	85.32
4481	Clothing Stores	186	1.74	87.06
5413	Architectural, Engineering, and Related Services	1087	1.48	88.54
3311	Iron and Steel Mills and Ferroalloy Manufacturing	4	1.30	89.84
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	56	1.24	91.08
3369	Other Transportation Equipment Manufacturing	2	1.06	92.14
4413	Automotive Parts, Accessories, and Tire Stores	60	0.88	93.02
3259	Other Chemical Product and Preparation Manufacturing	14	0.72	93.73
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	8	0.68	94.42
4241	Paper and Paper Product Merchant Wholesalers	114	0.68	95.10
3363	Motor Vehicle Parts Manufacturing	4	0.68	95.78
3231	Printing and Related Support Activities	171	0.62	96.40
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	14	0.60	97.00
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	214	0.51	97.51
3331	Agriculture, Construction, and Mining Machinery Manufacturing	4	0.45	97.97
5416	Management, Scientific, and Technical Consulting Services	44	0.43	98.39
3329	Other Fabricated Metal Product Manufacturing	2	0.41	98.80
5179	Other Telecommunications	154	0.29	99.10
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	20	0.26	99.35
2362	Nonresidential Building Construction	564	0.25	99.60
4811	Scheduled Air Transportation	1	0.21	99.82
5321	Automotive Equipment Rental and Leasing	11	0.18	100.00

Source: See Table 2.1.

3. Verify Listed DBEs and Estimate Unlisted DBEs

It is likely that information on minority and female ownership from Dun & Bradstreet and other directories is not correct in all instances. Phenomena such as ownership changes, associate status, mentor status, recording errors, or even misrepresentation will lead to businesses being listed as DBEs in a particular directory even though they may actually be owned by nonminority males.

Other things equal, this type of error would cause our availability estimate to be biased upward from the actual availability number.

The second likelihood that must be addressed is that not all DBE businesses are necessarily listed—either in Dun & Bradstreet or in any of the other directories we collected. Such firms may appear to be non-DBEs when, in fact, they are not. Such phenomena as geographic relocation, ownership changes, directory compilation errors, fear of discrimination, and limitations in DBE outreach could all lead to DBEs being unlisted. Other things equal, this type of error would cause our availability estimate to be biased downward from the actual availability number.

In our experience, we have found that both types of bias are not uncommon. We corrected for the effect of these biases using statistical sampling procedures. We surveyed a large, stratified random sample of 8,500 establishments drawn from the Baseline Business Universe and measured how often they were misclassified (or unclassified) by race and/or gender.⁵²

Strata were defined according to NAICS sub-sectors code and listed DBE status.⁵³ In the phone survey, up to 10 attempts were made to reach each business and speak with an appropriate respondent. Attempts were scheduled for a mix of day and evening, weekdays and weekends, and appointments were scheduled for callbacks when necessary. Of the 8,500 firms in our sample, 4,590 (54.0%) were listed DBEs and 3,910 (46.0%) were unclassified by race or gender. Of these 8,500 firms, however, 674 were excluded as “unable to contact.” Exclusions resulted primarily from firms that were no longer in business.⁵⁴ Of the remaining 7,826 firms, 4,265 (54.5%) were listed DBEs and the remaining 3,561 establishments (45.5%) were unclassified.

The first part of the survey tested whether our sample of listed DBEs was correctly classified by race and/or gender. The second part of the survey tested whether the unclassified firms could all be properly classified as non-DBEs. Both elements of the survey are described in more detail below.

⁵² A similar method was employed by the Federal Reserve Board to deal with similar problems in designing and implementing the National Surveys of Small Business Finances for 1993 and 1998. See Catherine Haggerty, Karen Grigorian, Rachel Harter and John D. Wolken. “The 1998 Survey of Small Business Finances: Sampling and Level of Effort Associated with Gaining Cooperation from Minority-Owned Business,” *Proceedings of the Second International Conference on Establishment Surveys*, Buffalo, NY, June 17-21, 2000.

⁵³ Eighteen separate industry strata were created based on NAICS code and on whether a particular NAICS code was among those NAICS codes accounting for the top 90 percent of state contract and subcontract spending or not. All 18 strata were then split according to listed DBE status to create a total of 36 strata. Generally, listed DBEs were sampled at a higher rate than unclassified establishments.

⁵⁴ A Fisher’s Exact Test to check if putative DBEs were more likely to be affected by this than non-DBEs was not statistically significant.

a. Survey of Listed DBEs

We selected a stratified random sample of 4,590 listed DBEs to verify the race and gender status of their owner(s). Of these, 325 (7.1%) were excluded as “unable to contact.” Of the 4,265 remaining establishments, we obtained complete interviews from 1,979, for a response rate of 46.4 percent.

Of the 1,979 establishments interviewed, 256 (12.9 percent) were owned by nonminority males. Misclassification was observed in every NAICS stratum, ranging from a high of 40.0 percent in NAICS 11 and 22 (Agriculture and Utilities, Group A) to a low of 5.5 percent in NAICS 8 (Other Services, Group B) as shown in Table 2.13. As shown in Table 2.14, misclassification varied by putative race and gender as well.⁵⁵ It was highest among putative Native American firms, followed by Hispanics, nonminority women, Asians, and finally African Americans.⁵⁶

The race and gender status of the listed DBEs responding to the survey was changed, if necessary, according to the survey results. For example, if a business originally listed as a nonminority female-owned was actually nonminority male-owned, then that business was counted as nonminority male-owned for purposes of calculating DBE availability. But what about the remaining putatively nonminority female-owned establishments that we did not interview? For these businesses, we estimate the race and gender of their ownership based on the amount of misclassification we observed among the nonminority female-owned firms that we did interview. In this example, our interviews show that 71.8 percent of these firms are indeed actually nonminority female-owned, 16.6 percent are actually nonminority male-owned, and 11.6 percent are actually minority-owned (see Table 2.14). Therefore, we assign each of the remaining putative nonminority female firms a 71.8 percent probability of actually being nonminority female-owned, a 16.6 percent probability of actually being nonminority male-owned, and a 11.6 percent probability of being minority-owned. We repeated this procedure within each sample stratum and for all putative race and gender categories.

b. Survey of Unclassified Businesses

In a manner exactly analogous to our survey of listed DBEs, in the second part of our survey we examined unclassified businesses, *i.e.* any business that was not originally identified as a DBE, either in Dun & Bradstreet/Hoover's or in one or more of the other directories, and that would otherwise appear to be a non-DBE.

⁵⁵ By “putative,” we mean the race and gender that we initially assigned to each firm based on the information provided in State records, by Dun & Bradstreet/Hoover's, by our master DBE directory, or from other sources.

⁵⁶ For this study, “Black” or “African American” refers to an individual having origins in any of the Black racial groups of Africa; “Hispanic” refers to an individual of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race; “Asian” refers to an individual having origins in the Far East, Southeast Asia, or the Indian subcontinent; “Native American” refers to an individual having origins in any of the original peoples of North America other than Eskimos or Aleuts.

We selected a stratified random sample of 3,910 unclassified businesses from the Baseline Business Universe to verify the race and gender status of their owner(s). Of these, 349 (8.9%) were excluded as “unable to contact.” Of the 3,561 remaining establishments, we obtained 1,437 complete interviews, for a response rate of 40.4 percent.

Of the 1,437 establishments interviewed, 1,059 (73.7%) were owned by nonminority males, 166 (11.6%) by nonminority females, and 212 (14.8%) by minorities, as shown in Table 2.16. A similar phenomenon was observed within each industry stratum, as shown in Table 2.15.

As with the survey of listed DBEs, the race and gender status of unclassified businesses was changed, if necessary, according to the survey results. For example, if an interviewed business that was originally unclassified indicated that it was actually nonminority male-owned, then that business was counted as nonminority male-owned for purposes of the DBE availability calculation. If it indicated it was nonminority female-owned, it was counted as nonminority female, and so on. For unclassified businesses that were not interviewed, we assigned probability values (probability actually nonminority male-owned, probability actually nonminority female-owned, probability actually African American-owned, etc.) based on the interview responses. We again carried out the probability assignment procedure within each stratum.

Clearly, a large majority of unclassified businesses in the Baseline Business Universe (73.7 percent overall) are nonminority male-owned. Nevertheless, this means that 26.3 percent were *not* nonminority male-owned. Among the latter, the largest group was nonminority female-owned, with descending size shares accounted for by African American-owned, Asian-owned, Hispanic-owned, and finally Native American-owned. Table 2.16 shows the unclassified business survey results by race and gender.

Table 2.13. Listed DBE Survey—Amount of Misclassification, by NAICS Code Grouping

Listed DBE By NAICS Code Grouping	Misclassification (Percentage Nonminority Male)	Percentage Actually DBE-owned	Number of Businesses Interviewed
NAICS 236-A	13.5	86.5	222
NAICS 237-A	13.7	86.3	139
NAICS 238-A	18.2	81.8	236
NAICS 30 or 42-A	15.8	84.2	133
NAICS 48-49-A	8.9	91.1	112
NAICS 44-45-A	14.4	85.6	97
NAICS 54-A	10.2	89.8	216
NAICS 5 but not 54-A	6.0	94.0	100
NAICS 6-7-A	6.5	93.5	108
NAICS 8-A	13.4	86.6	134
NAICS 11 or 22-A	40.0	60.0	5
NAICS 1 or 2-B	22.6	77.4	62
NAICS 3 or 42-B	19.7	80.3	66
NAICS 44-45-B	12.1	87.9	58
NAICS 48-49-B	17.4	82.6	86
NAICS 5-B	7.8	92.2	64
NAICS 6-7-B	8.8	91.2	68
NAICS 8-B	5.5	94.5	73
All NAICS Codes	12.9	87.1	1,979

Source: NERA telephone surveys.

Note: Two groupings of strata, A and B, were created. NAICS codes reflecting approximately 90 percent of all contract and subcontract spending were stratified into group A with the balance stratified into group B.

Table 2.14. Listed DBE Survey—Amount of Misclassification, by Putative DBE Type

Putative Race/Gender	Misclassification (Percentage Nonminority Male)	Misclassification (Percentage Other DBE Type)	Percentage Correctly Classified	Number of Businesses Interviewed
African American (either gender)	3.4	4.4	92.2	499
Hispanic (either gender)	19.2	10.3	70.4	203
Asian (either gender)	10.6	7.7	81.7	246
Native American (either gender)	23.8	21.4	54.8	42
Nonminority Female	16.6	11.6	71.8	989
All DBE Types	12.9	9.4	77.7	1,979

Source and Notes: See Table 2.13. Similar calculations, not shown here, were performed for each stratum.

Table 2.15. Unclassified Businesses Survey —By NAICS Code Grouping

Listed DBE By SIC Code Grouping	Percentage Actually Nonminority Male-owned	Percentage DBE	Number of Businesses Interviewed
NAICS 236-A	79.8	20.2	173
NAICS 237-A	87.4	12.6	167
NAICS 238-A	83.3	16.7	168
NAICS 30 or 42-A	73.4	26.6	128
NAICS 48-49-A	56.7	43.3	90
NAICS 44-45-A	64.8	35.2	105
NAICS 54-A	73.3	26.7	146
NAICS 5 but not 54-A	68.0	32.0	50
NAICS 6-7-A	58.8	41.2	51
NAICS 8-A	75.3	24.7	73
NAICS 11 or 22-A	86.8	13.2	38
NAICS 1 or 2-B	82.1	17.9	39
NAICS 3 or 42-B	72.1	27.9	43
NAICS 44-45-B	56.8	43.2	37
NAICS 48-49-B	68.6	31.4	35
NAICS 5-B	59.5	40.5	37
NAICS 6-7-B	61.0	39.0	41
NAICS 8-B	50.0	50.0	16
All NAICS Codes	73.7	26.3	1,437

Source and Notes: See Table 2.13.

Table 2.16. Unclassified Businesses Survey—By Race and Gender

Verified Race/Gender	Number of Businesses Interviewed	Percentage of Total
Nonminority male	1,059	73.7
Nonminority female	166	11.6
African American (either gender)	104	7.2
Hispanic (either gender)	36	2.5
Asian (either gender)	68	4.7
Native American (either gender)	4	0.3
TOTAL	1,437	100.0

Source and Notes: See Table 2.13. Similar calculations, not shown here, were performed within each stratum.

4. Understanding “Capacity”

As noted in the beginning of this chapter, some observers, primarily opponents of efforts to address discrimination in contracting, have argued that, in order to be accurate, availability estimates must be adjusted for “capacity.” These assertions are rarely accompanied by specific suggestions about how such adjustments could be made consistent with professional social science standards. This Study does adjust for certain appropriate characteristics of firms related to capacity (such as industry affiliation, geographic location, owner labor market experience, and educational attainment), however, we are careful to not adjust for capacity factors that are themselves likely to be influenced by discrimination. In our view, all of the “capacity” indicators recommended by program opponents (*e.g.*, firm age, revenues, number of employees, largest contract received, bonding limits) are subject to the impact of discrimination.

Further, the reality is that large, adverse statistical disparities between minority-owned or women-owned businesses and nonminority male-owned businesses have been documented in numerous research studies and reports since *Croson*.⁵⁷ Business outcomes, however, can be influenced by multiple factors, and it is important that disparity studies examine the likelihood of whether discrimination is an important contributing factor to observed disparities.

⁵⁷ Enchautegui, et al. (1996). More recently, see Wainwright (2012), Wainwright (2010).

Moreover, terms such as “capacity,” “qualifications,” and “ability” are not well defined in any statistical sense. Does “capacity” mean revenue level, employment size, bonding limits, or number of contracts bid or awarded? Does “qualified” or “able” mean possession of a business license, certain amounts of training, types of work experience, or the number of contracts a firm can perform at a given moment? What mix of business attributes properly reflects “capacity”? Does the meaning of such terms differ from industry to industry, locality to locality, or through time? Where and how might such data be reliably gathered? Even if capacity is well-defined and adequate data are gathered, when measuring the existence of discrimination, the statistical method used should not improperly limit the availability measure by incorporating factors that are themselves impacted by discrimination, such as firm age, revenues, bonding limits, or number of employees.

Consider an extreme example where discrimination has prevented the emergence of any minority owned firms. Suppose that racial discrimination was ingrained in a state’s construction market. As a result, few minority construction employees are given the opportunity to gain managerial experience in the business; minorities who do end up starting construction firms are denied the opportunity to work as subcontractors for nonminority prime contractors; and nonminority prime contractors place pressure on unions not to work with minority firms and on bonding companies and banks to prevent minority owned construction firms from securing bonding and capital. In this example, discrimination has prevented the emergence of a minority highway construction industry with “capacity.” Those DBEs that exist at all will be smaller and less experienced and have lower revenues, bonding limits, and employees—that is, “capacity”—because of discrimination than firms that have benefited from the exclusionary system.

Using revenue as the measure of qualifications illustrates the point. If DBEs are subject to marketplace discrimination, their revenues will be smaller than nonminority, male-owned businesses because they will be less successful at obtaining work. Revenue measures the extent to which a firm has succeeded in the marketplace, perhaps in spite of discrimination—it does not measure the ability to succeed in the absence of discrimination and should not be used to evaluate the effects of discrimination.

Therefore, focusing on the “capacity” of businesses in terms of employment, revenue, bonding limits, number of trucks, and so forth is simply wrong as a matter of economics because it can obscure the existence of discrimination. A truly “effective” discriminatory system would lead to a finding of no “capacity,” and under the “capacity” approach, a finding of no discrimination. Excluding firms from an availability measure based on their “capacity” in a discriminatory market merely affirms the results of discrimination rather than ameliorating them. A capacity requirement could preclude MDOT from doing anything to rectify its passive participation through public dollars in a clearly discriminatory system. The capacity argument fails to acknowledge that discrimination has obstructed the emergence of “qualified, willing, and able” minority firms. Without such firms, there can be no statistical disparity.

Further, in dynamic business environments, and especially in the construction sector, such “qualifications” or “capacity” can be obtained relatively easily. It is well known that small construction companies can expand rapidly as needs arise by hiring workers and renting

equipment, and many general contractors subcontract the majority of a project. Firms grow quickly when demand increases and shrink quickly when demand decreases. Subcontracting is one important source of this elasticity, as has been noted by several academic studies.⁵⁸ Other industry sectors, especially in this era of Internet commerce and independent contractors, can also quickly grow or shrink in response to demand.

Finally, even where “capacity”-type factors have been controlled for in statistical analyses, results consistent with business discrimination are still typically observed. For example, large and statistically significant differences in commercial loan denial rates between minority and nonminority firms are evident throughout the country, even when detailed balance sheet and creditworthiness measures are held constant.⁵⁹ Similarly, economists using decennial census data have demonstrated that statistically significant disparities in business formation and business owner earnings between minorities and non-minorities remain even after controlling for a host of additional relevant factors, including educational achievement, labor market experience, marital status, disability status, veteran status, interest and dividend income, labor market attachment, industry, geographic location, and local labor market variables such as the unemployment rate, population growth rate, government employment rate, or per capita income.⁶⁰

To summarize, the statistical analysis of the availability of minority firms compared to nonminority firms to examine the existence and effects of discrimination in disparity studies should not adjust for inappropriate “capacity” factors because:

- “Capacity” has been ill-defined; and reliable data for measurement are generally unavailable;
- Small firms, particularly in the construction industry, are highly elastic with regard to ability to perform;
- Many disparity studies have shown that even when “capacity” and “qualifications”-type factors are held constant in statistical analyses, evidence of disparate impact against DBE firms persists; and
- Most important, identifiable indicators of “capacity” are themselves impacted by discrimination.

⁵⁸ Bourdon and Levitt (1980); *see also* Eccles (1981); *and* Gould (1980).

⁵⁹ *See* Wainwright (2008).

⁶⁰ Wainwright (2000).

C. Estimates of DBE Availability by Detailed Race, Gender, and Industry

Tables 2.17-2.22 present detailed estimates of DBE availability in MDOT's market area by race, gender, and detailed NAICS industry for each major procurement category: Construction, AE-CRS, Maintenance, IT, Services, and CSE. These estimates have been statistically corrected to adjust for misclassification and non-classification bias in the Baseline Business Universe as described above.

Tables 2.23 and 2.24 provide summary level estimates of availability for each major procurement category and overall. Tables 2.25 and 2.26 provide summary level estimates of availability for each major procurement category and overall restricted to federally-assisted contracts. Summary level estimates are weighted averages with weights in Tables 2.23 and 2.25 based on dollars awarded in each industry category, as described in the previous chapter. Weights in Tables 2.24 and 2.26 are based on dollars paid in each industry category.⁶¹

Overall:

DBE availability in Construction is estimated to be 33.49 percent when weighted by award dollars and 33.84 percent when weighted by paid dollars. On federally-assisted contracts, the figures are 34.07 and 34.56, respectively.

DBE availability in AE-CRS is estimated to be 41.27 percent when weighted by award dollars and 41.82 percent when weighted by paid dollars. On federally-assisted contracts, the figures are 41.01 and 41.63, respectively.

DBE availability in Maintenance is estimated to be 37.92 percent when weighted by award dollars and 39.22 percent when weighted by paid dollars. On federally-assisted contracts, the figures are 26.61 and 27.15, respectively.

DBE availability in IT is estimated to be 48.76 percent when weighted by award dollars and 47.39 percent when weighted by paid dollars. On federally-assisted contracts, the figures are 45.04 and 43.69, respectively.

DBE availability in Services is estimated to be 47.25 percent when weighted by award dollars and 47.89 percent when weighted by paid dollars. On federally-assisted contracts, the figures are 47.08 and 47.77, respectively.

DBE availability in CSE is estimated to be 36.05 percent when weighted by award dollars and 36.05 percent when weighted by paid dollars. On federally-assisted contracts, the figures are 34.92 and 34.92, respectively.

⁶¹ Tables 2.17.A-2.26.A, 2.17.B-2.26.B, and 2.17.C-2.26.C in Appendix III show comparable results for SHA, MTA, and MAA, respectively.

DBE availability across all six major procurement categories is estimated to be 38.00 percent when weighted by award dollars and 37.64 percent when weighted by paid dollars. On federally-assisted contracts, the figures are 37.58 and 37.47, respectively.

Table 2.17. Detailed DBE Availability—Construction

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Other Crop Farming (NAICS 1119)	2.63	2.58	0.02	0.00	14.08	19.32	80.68
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.73	0.56	0.00	0.00	16.66	17.95	82.05
Electric Power Generation, Transmission and Distribution (NAICS 2211)	2.56	2.56	0.00	0.00	12.82	17.95	82.05
Natural Gas Distribution (NAICS 2212)	4.71	2.53	0.00	0.00	13.54	20.77	79.23
Water, Sewage and Other Systems (NAICS 2213)	2.60	2.60	0.00	0.00	14.19	19.38	80.62
Residential Building Construction (NAICS 2361)	4.30	3.41	0.37	0.19	13.43	21.70	78.30
Nonresidential Building Construction (NAICS 2362)	10.38	4.93	3.11	0.84	13.17	32.43	67.57
Utility System Construction (NAICS 2371)	6.79	2.23	0.40	0.49	10.32	20.22	79.78
Land Subdivision (NAICS 2372)	7.17	1.35	0.00	0.02	7.41	15.94	84.06
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Other Heavy and Civil Engineering Construction (NAICS 2379)	14.21	3.30	0.85	0.08	11.70	30.13	69.87
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	8.32	3.48	2.68	0.33	12.74	27.54	72.46
Building Equipment Contractors (NAICS 2382)	7.60	2.82	2.77	0.19	10.90	24.27	75.73
Building Finishing Contractors (NAICS 2383)	5.75	3.48	2.59	0.06	11.17	23.03	76.97
Other Specialty Trade Contractors (NAICS 2389)	6.37	3.05	2.53	0.16	11.10	23.20	76.80
Other Textile Product Mills (NAICS 3149)	10.72	0.00	9.46	2.44	21.25	43.86	56.14
Other Wood Product Manufacturing (NAICS 3219)	3.42	0.00	7.20	0.68	23.17	34.47	65.53
Printing and Related Support Activities (NAICS 3231)	5.72	0.33	9.56	1.05	21.29	37.96	62.04
Petroleum and Coal Products Manufacturing (NAICS 3241)	5.89	0.56	7.60	1.11	16.66	31.82	68.18

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing (NAICS 3252)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Plastics Product Manufacturing (NAICS 3261)	7.90	0.00	9.11	2.31	14.29	33.62	66.38
Clay Product and Refractory Manufacturing (NAICS 3271)	14.07	0.00	7.48	2.25	19.60	43.40	56.60
Cement and Concrete Product Manufacturing (NAICS 3273)	6.03	0.19	7.51	0.74	14.96	29.43	70.57
Other Nonmetallic Mineral Product Manufacturing (NAICS 3279)	6.19	1.32	11.02	2.47	15.81	36.81	63.19
Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 3311)	8.39	0.94	8.66	2.21	10.03	30.23	69.77
Foundries (NAICS 3315)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Architectural and Structural Metals Manufacturing (NAICS 3323)	5.87	0.90	7.96	0.83	17.05	32.62	67.38
Hardware Manufacturing (NAICS 3325)	6.75	0.00	8.94	2.37	13.10	31.16	68.84
Spring and Wire Product Manufacturing (NAICS 3326)	6.50	0.00	10.75	2.30	13.29	32.83	67.17
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing (NAICS 3327)	7.12	1.31	8.50	2.27	15.30	34.49	65.51
Other Fabricated Metal Product Manufacturing (NAICS 3329)	6.77	0.00	9.35	2.40	11.55	30.06	69.94
Agriculture, Construction, and Mining Machinery Manufacturing (NAICS 3331)	3.56	0.77	7.27	0.71	17.47	29.77	70.23
Industrial Machinery Manufacturing (NAICS 3332)	6.57	0.00	10.87	2.30	12.64	32.39	67.61
Metalworking Machinery Manufacturing (NAICS 3335)	12.53	0.00	12.54	1.95	9.99	37.01	62.99
Other General Purpose Machinery Manufacturing (NAICS 3339)	6.18	0.00	9.81	1.63	14.88	32.49	67.51
Semiconductor and Other Electronic Component Manufacturing (NAICS 3344)	7.39	0.38	9.08	1.73	15.60	34.18	65.82
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	5.56	0.00	11.39	2.38	19.43	38.75	61.25

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Electric Lighting Equipment Manufacturing (NAICS 3351)	5.89	0.00	11.07	3.03	21.52	41.51	58.49
Electrical Equipment Manufacturing (NAICS 3353)	5.21	0.93	8.07	0.68	17.90	32.79	67.21
Motor Vehicle Body and Trailer Manufacturing (NAICS 3362)	9.56	0.00	7.52	2.20	22.67	41.96	58.04
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Household and Institutional Furniture and Kitchen Cabinet Manufacturing (NAICS 3371)	6.37	0.00	8.34	2.43	19.53	36.67	63.33
Office Furniture (including Fixtures) Manufacturing (NAICS 3372)	17.92	2.97	10.70	1.86	14.99	48.45	51.55
Other Miscellaneous Manufacturing (NAICS 3399)	5.57	0.65	7.94	0.81	24.56	39.53	60.47
Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232)	5.88	0.08	8.79	0.80	22.69	38.24	61.76
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	5.36	0.34	8.10	0.71	17.74	32.25	67.75
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	5.68	0.17	8.73	0.99	19.43	35.00	65.00
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	5.44	0.00	8.59	0.71	17.15	31.89	68.11
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	4.95	0.00	8.61	0.74	17.19	31.50	68.50
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.52	0.51	8.03	0.75	17.53	32.34	67.66
Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239)	5.30	0.10	7.66	0.79	20.56	34.41	65.59
Paper and Paper Product Merchant Wholesalers (NAICS 4241)	12.55	0.69	9.24	0.80	24.43	47.71	52.29
Drugs and Druggists' Sundries Merchant Wholesalers (NAICS 4242)	8.08	0.32	9.39	2.55	18.61	38.95	61.05
Chemical and Allied Products Merchant Wholesalers (NAICS 4246)	5.23	0.73	8.70	0.67	17.71	33.04	66.96

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10
Home Furnishings Stores (NAICS 4422)	7.49	2.72	13.86	0.87	29.83	54.78	45.22
Building Material and Supplies Dealers (NAICS 4441)	8.24	2.65	9.61	0.65	21.72	42.87	57.13
Lawn and Garden Equipment and Supplies Stores (NAICS 4442)	8.90	2.55	4.22	1.01	26.06	42.74	57.26
Gasoline Stations (NAICS 4471)	5.65	2.70	17.60	0.19	20.43	46.57	53.43
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Other Miscellaneous Store Retailers (NAICS 4539)	7.28	2.54	15.40	0.51	23.24	48.98	51.02
Direct Selling Establishments (NAICS 4543)	6.50	2.55	16.53	0.15	20.41	46.12	53.88
General Freight Trucking (NAICS 4841)	23.16	9.51	5.91	0.22	10.54	49.34	50.66
Specialized Freight Trucking (NAICS 4842)	29.94	8.64	5.07	0.40	11.07	55.12	44.88
Support Activities for Road Transportation (NAICS 4884)	12.04	3.58	8.10	0.00	12.75	36.46	63.54
Other Support Activities for Transportation (NAICS 4889)	24.09	7.98	6.08	0.13	9.84	48.12	51.88
Cable and Other Subscription Programming (NAICS 5152)	13.50	6.55	4.33	0.00	10.64	35.02	64.98
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Wireless Telecommunications Carriers (except Satellite) (NAICS 5172)	14.35	6.06	4.73	0.40	9.32	34.86	65.14
Other Telecommunications (NAICS 5179)	13.09	0.83	5.53	0.07	26.80	46.32	53.68
Data Processing, Hosting, and Related Services (NAICS 5182)	15.48	6.45	7.77	0.30	19.44	49.44	50.56
Depository Credit Intermediation (NAICS 5221)	10.81	0.00	5.41	0.00	24.32	40.54	59.46
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	11.27	0.64	5.24	0.00	28.09	45.24	54.76
Lessors of Real Estate (NAICS 5311)	14.29	5.16	4.24	0.05	13.23	36.95	63.05
Offices of Real Estate Agents and Brokers (NAICS 5312)	12.07	0.58	5.17	0.02	28.08	45.92	54.08
Automotive Equipment Rental and Leasing (NAICS 5321)	13.70	5.75	4.50	0.00	10.10	34.05	65.95
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.41	6.24	4.26	0.10	11.54	36.56	63.44
Architectural, Engineering, and Related Services (NAICS 5413)	8.58	4.28	12.00	0.40	12.90	38.16	61.84
Specialized Design Services (NAICS 5414)	11.07	2.61	3.20	0.00	46.97	63.85	36.15
Computer Systems Design and Related Services (NAICS 5415)	13.08	3.95	16.54	0.52	13.91	48.00	52.00
Management, Scientific, and Technical Consulting Services (NAICS 5416)	14.81	1.58	7.41	0.31	29.36	53.46	46.54
Advertising, Public Relations, and Related Services (NAICS 5418)	8.84	4.04	8.29	0.26	21.41	42.84	57.16
Other Professional, Scientific, and Technical Services (NAICS 5419)	12.52	0.68	5.28	0.01	27.92	46.40	53.60
Facilities Support Services (NAICS 5612)	25.91	7.12	10.78	0.96	12.26	57.03	42.97
Employment Services (NAICS 5613)	18.84	6.02	6.00	0.38	18.69	49.92	50.08
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	17.89	3.74	5.85	0.77	21.36	49.61	50.39
Services to Buildings and Dwellings (NAICS 5617)	15.04	6.47	4.45	0.18	11.87	38.02	61.98
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Waste Collection (NAICS 5621)	20.84	6.31	4.20	0.00	11.89	43.24	56.76
Waste Treatment and Disposal (NAICS 5622)	17.50	6.38	4.75	0.30	11.94	40.88	59.12
Remediation and Other Waste Management Services (NAICS 5629)	15.66	9.81	8.29	1.12	18.07	52.95	47.05
Offices of Physicians (NAICS 6211)	14.90	2.74	7.86	0.02	17.41	42.94	57.06
Automotive Repair and Maintenance (NAICS 8111)	23.38	5.91	6.92	0.18	13.67	50.06	49.94
Electronic and Precision Equipment Repair and Maintenance (NAICS 8112)	13.83	3.03	7.20	0.81	13.82	38.68	61.32
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Personal and Household Goods Repair and Maintenance (NAICS 8114)	15.31	3.53	7.60	0.67	17.10	44.22	55.78
Other Personal Services (NAICS 8129)	25.88	5.89	7.19	0.12	17.93	57.00	43.00
Business, Professional, Labor, Political, and Similar Organizations (NAICS 8139)	25.09	6.26	6.35	0.00	12.62	50.33	49.67

Source: See Table 2.1. Note: Figures are expressed as percentages of all business establishments in the respective category and market area.

Table 2.18. Detailed DBE Availability—AE-CRS

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.26	0.26	0.00	0.00	17.43	17.96	82.04
Support Activities for Mining (NAICS 2131)	2.66	2.66	0.00	0.00	17.14	22.47	77.53
Nonresidential Building Construction (NAICS 2362)	7.36	3.68	1.88	0.52	14.94	28.38	71.62
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	6.63	5.56	2.59	0.05	10.24	25.06	74.94
Building Equipment Contractors (NAICS 2382)	7.82	2.82	2.77	0.20	10.98	24.59	75.41
Building Finishing Contractors (NAICS 2383)	5.82	3.51	2.57	0.03	11.31	23.24	76.76
Other Specialty Trade Contractors (NAICS 2389)	6.27	3.03	2.67	0.15	10.79	22.90	77.10
Other Wood Product Manufacturing (NAICS 3219)	3.42	0.00	7.20	0.68	23.17	34.47	65.53
Printing and Related Support Activities (NAICS 3231)	5.17	0.27	9.65	0.82	22.02	37.93	62.07
Clay Product and Refractory Manufacturing (NAICS 3271)	14.07	0.00	7.48	2.25	19.60	43.40	56.60
Cement and Concrete Product Manufacturing (NAICS 3273)	5.35	0.85	7.64	0.71	17.57	32.12	67.88
Other Fabricated Metal Product Manufacturing (NAICS 3329)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 3334)	6.60	0.00	8.70	2.39	15.63	33.33	66.67
Computer and Peripheral Equipment Manufacturing (NAICS 3341)	9.97	1.22	12.04	2.38	14.74	40.34	59.66
Communications Equipment Manufacturing (NAICS 3342)	7.62	0.00	10.70	2.26	12.85	33.44	66.56
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	10.37	1.40	9.39	1.98	16.67	39.83	60.17
Other Miscellaneous Manufacturing (NAICS 3399)	15.66	0.00	5.84	1.97	22.00	45.47	54.53
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	4.30	0.15	8.17	0.79	17.64	31.05	68.95

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	9.99	0.38	11.41	1.89	10.80	34.47	65.53
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.61	0.42	7.83	0.85	18.49	33.19	66.81
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	4.56	0.00	8.88	0.73	16.18	30.36	69.64
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.74	0.38	8.10	0.69	18.18	33.09	66.91
Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239)	5.30	0.10	7.66	0.79	20.56	34.41	65.59
Grocery and Related Product Merchant Wholesalers (NAICS 4244)	8.97	0.16	9.41	2.38	15.29	36.21	63.79
Chemical and Allied Products Merchant Wholesalers (NAICS 4246)	5.23	0.73	8.70	0.67	17.71	33.04	66.96
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10
Electronics and Appliance Stores (NAICS 4431)	8.79	2.98	16.48	0.74	21.54	50.52	49.48
Building Material and Supplies Dealers (NAICS 4441)	9.32	2.64	4.92	0.94	20.60	38.42	61.58
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Direct Selling Establishments (NAICS 4543)	7.56	2.45	15.18	1.21	21.39	47.80	52.20
Nonscheduled Air Transportation (NAICS 4812)	10.40	5.12	8.77	0.04	12.94	37.27	62.73
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
General Freight Trucking (NAICS 4841)	23.65	9.66	5.82	0.25	10.58	49.96	50.04
School and Employee Bus Transportation (NAICS 4854)	11.29	2.48	7.07	0.00	21.93	42.77	57.23
Freight Transportation Arrangement (NAICS 4885)	13.71	3.81	8.94	0.00	15.00	41.47	58.53
Software Publishers (NAICS 5112)	14.20	6.26	8.86	0.19	12.35	41.86	58.14
Data Processing, Hosting, and Related Services (NAICS 5182)	15.48	6.45	7.77	0.30	19.44	49.44	50.56
Activities Related to Real Estate (NAICS 5313)	11.03	0.74	4.84	0.00	30.26	46.87	53.13

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.15	6.53	3.99	0.03	11.69	36.39	63.61
Legal Services (NAICS 5411)	5.86	4.00	8.71	0.06	12.77	31.41	68.59
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.21	3.91	8.66	0.11	14.23	34.11	65.89
Architectural, Engineering, and Related Services (NAICS 5413)	8.68	4.27	12.16	0.41	12.95	38.48	61.52
Computer Systems Design and Related Services (NAICS 5415)	15.64	4.05	15.46	0.62	14.21	49.97	50.03
Management, Scientific, and Technical Consulting Services (NAICS 5416)	15.30	1.73	7.09	0.31	28.37	52.81	47.19
Scientific Research and Development Services (NAICS 5417)	9.49	2.45	9.47	0.26	23.38	45.04	54.96
Advertising, Public Relations, and Related Services (NAICS 5418)	11.74	2.28	5.83	0.10	29.49	49.44	50.56
Other Professional, Scientific, and Technical Services (NAICS 5419)	12.67	1.16	5.34	0.05	30.47	49.69	50.31
Office Administrative Services (NAICS 5611)	17.66	5.97	5.56	0.19	13.57	42.95	57.05
Facilities Support Services (NAICS 5612)	25.91	7.12	10.78	0.96	12.26	57.03	42.97
Employment Services (NAICS 5613)	17.19	5.86	5.03	0.25	18.39	46.72	53.28
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	17.56	3.27	5.97	0.84	22.76	50.39	49.61
Services to Buildings and Dwellings (NAICS 5617)	14.64	6.39	4.37	0.19	11.55	37.13	62.87
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Waste Treatment and Disposal (NAICS 5622)	17.82	6.46	4.91	0.19	13.13	42.50	57.50
Remediation and Other Waste Management Services (NAICS 5629)	16.02	10.80	9.24	1.33	18.99	56.38	43.62
Educational Support Services (NAICS 6117)	19.59	2.99	7.32	0.57	26.46	56.94	43.06
Offices of Physicians (NAICS 6211)	14.90	2.74	7.86	0.02	17.41	42.94	57.06
Medical and Diagnostic Laboratories (NAICS 6215)	8.45	0.51	5.26	0.23	31.84	46.28	53.72

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Independent Artists, Writers, and Performers (NAICS 7115)	16.29	2.88	7.51	0.18	31.83	58.69	41.31
Automotive Repair and Maintenance (NAICS 8111)	25.45	6.55	6.86	0.03	14.00	52.89	47.11
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Personal and Household Goods Repair and Maintenance (NAICS 8114)	15.23	3.49	7.60	0.68	17.12	44.11	55.89
Civic and Social Organizations (NAICS 8134)	22.13	5.15	6.37	0.23	12.08	45.96	54.04

Source and Notes: See Table 2.17.

Table 2.19. Detailed DBE Availability—Maintenance

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	2.10	0.79	0.00	0.00	14.99	17.89	82.11
Electric Power Generation, Transmission and Distribution (NAICS 2211)	2.56	2.56	0.00	0.00	12.82	17.95	82.05
Residential Building Construction (NAICS 2361)	4.32	3.41	0.38	0.19	13.42	21.72	78.28
Nonresidential Building Construction (NAICS 2362)	11.16	5.25	3.42	0.93	12.71	33.47	66.53
Utility System Construction (NAICS 2371)	6.75	2.22	0.37	0.49	10.29	20.11	79.89
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Other Heavy and Civil Engineering Construction (NAICS 2379)	14.21	3.30	0.85	0.08	11.70	30.13	69.87
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	7.06	5.05	2.61	0.12	10.87	25.71	74.29
Building Equipment Contractors (NAICS 2382)	7.89	2.85	2.77	0.19	11.21	24.91	75.09
Building Finishing Contractors (NAICS 2383)	5.83	3.51	2.57	0.03	11.31	23.25	76.75
Other Specialty Trade Contractors (NAICS 2389)	6.46	3.06	2.39	0.16	11.39	23.47	76.53
Pulp, Paper, and Paperboard Mills (NAICS 3221)	12.79	0.00	8.72	2.18	8.72	32.41	67.59
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing (NAICS 3252)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Paint, Coating, and Adhesive Manufacturing (NAICS 3255)	6.66	0.00	8.80	2.38	14.62	32.46	67.54
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Clay Product and Refractory Manufacturing (NAICS 3271)	14.07	0.00	7.48	2.25	19.60	43.40	56.60
Cement and Concrete Product Manufacturing (NAICS 3273)	5.15	1.04	7.68	0.70	18.31	32.87	67.13
Architectural and Structural Metals Manufacturing (NAICS 3323)	5.92	0.40	7.73	0.71	15.98	30.74	69.26
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing (NAICS 3327)	7.12	1.31	8.50	2.27	15.30	34.49	65.51

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Other General Purpose Machinery Manufacturing (NAICS 3339)	20.67	0.00	7.15	1.89	11.99	41.71	58.29
Communications Equipment Manufacturing (NAICS 3342)	7.52	1.41	9.09	0.91	17.44	36.37	63.63
Semiconductor and Other Electronic Component Manufacturing (NAICS 3344)	7.39	0.38	9.08	1.73	15.60	34.18	65.82
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	10.43	1.43	9.34	2.01	16.66	39.86	60.14
Electric Lighting Equipment Manufacturing (NAICS 3351)	8.65	0.00	8.48	2.41	18.32	37.86	62.14
Electrical Equipment Manufacturing (NAICS 3353)	5.21	0.93	8.07	0.68	17.90	32.79	67.21
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Other Miscellaneous Manufacturing (NAICS 3399)	5.51	0.67	7.93	0.77	24.69	39.56	60.44
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	5.87	0.26	7.80	0.70	18.72	33.35	66.65
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	5.44	0.00	8.59	0.71	17.15	31.89	68.11
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	7.70	0.00	9.41	2.79	15.41	35.32	64.68
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.38	0.65	7.98	0.73	18.40	33.14	66.86
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10
Miscellaneous Nondurable Goods Merchant Wholesalers (NAICS 4249)	5.42	0.06	7.99	0.73	15.99	30.20	69.80
Electronics and Appliance Stores (NAICS 4431)	8.83	3.10	10.75	0.68	19.28	42.63	57.37
Building Material and Supplies Dealers (NAICS 4441)	9.32	2.64	4.92	0.94	20.60	38.42	61.58
Grocery Stores (NAICS 4451)	5.73	2.89	17.01	0.23	21.60	47.46	52.54
Gasoline Stations (NAICS 4471)	5.65	2.70	17.60	0.19	20.43	46.57	53.43
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Other Miscellaneous Store Retailers (NAICS 4539)	7.28	2.54	15.40	0.51	23.24	48.98	51.02
Direct Selling Establishments (NAICS 4543)	7.13	2.54	14.61	0.24	21.62	46.14	53.86
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
General Freight Trucking (NAICS 4841)	23.59	9.42	5.84	0.24	10.99	50.09	49.91
Specialized Freight Trucking (NAICS 4842)	29.98	8.64	5.06	0.40	11.07	55.15	44.85
Urban Transit Systems (NAICS 4851)	42.45	5.97	4.44	0.08	8.79	61.72	38.28
Taxi and Limousine Service (NAICS 4853)	22.29	8.15	6.45	0.21	11.02	48.12	51.88
Support Activities for Air Transportation (NAICS 4881)	8.17	2.81	8.30	0.00	14.57	33.85	66.15
Support Activities for Road Transportation (NAICS 4884)	14.38	3.94	7.77	0.00	11.83	37.93	62.07
Couriers and Express Delivery Services (NAICS 4921)	15.57	3.94	8.93	0.00	13.73	42.17	57.83
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Other Telecommunications (NAICS 5179)	15.67	6.30	5.86	0.13	10.67	38.62	61.38
Insurance Carriers (NAICS 5241)	11.69	2.05	4.71	0.00	23.00	41.45	58.55
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	11.27	0.64	5.24	0.00	28.09	45.24	54.76
Automotive Equipment Rental and Leasing (NAICS 5321)	13.70	5.75	4.50	0.00	10.10	34.05	65.95
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88
General Rental Centers (NAICS 5323)	12.78	5.40	3.95	0.00	18.03	40.16	59.84
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.33	6.33	4.17	0.08	11.59	36.50	63.50
Architectural, Engineering, and Related Services (NAICS 5413)	8.09	4.30	10.93	0.39	13.45	37.16	62.84
Computer Systems Design and Related Services (NAICS 5415)	11.22	3.79	17.50	0.45	13.85	46.82	53.18
Management, Scientific, and Technical Consulting Services (NAICS 5416)	17.79	2.15	6.33	0.28	30.01	56.56	43.44
Scientific Research and Development Services (NAICS 5417)	8.64	3.35	10.10	0.26	18.95	41.29	58.71
Advertising, Public Relations, and Related Services (NAICS 5418)	12.87	1.27	6.46	0.00	28.96	49.56	50.44

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
5418)							
Office Administrative Services (NAICS 5611)	17.66	5.97	5.56	0.19	13.57	42.95	57.05
Employment Services (NAICS 5613)	18.73	5.97	5.88	0.43	18.84	49.85	50.15
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	20.41	5.36	5.62	0.55	15.31	47.25	52.75
Services to Buildings and Dwellings (NAICS 5617)	19.58	7.00	5.48	0.19	17.17	49.42	50.58
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Waste Treatment and Disposal (NAICS 5622)	18.37	7.65	3.65	0.00	8.24	37.91	62.09
Remediation and Other Waste Management Services (NAICS 5629)	14.70	6.29	4.56	0.00	12.26	37.82	62.18
Offices of Physicians (NAICS 6211)	14.90	2.74	7.86	0.02	17.41	42.94	57.06
Offices of Dentists (NAICS 6212)	15.05	2.63	7.56	0.02	18.06	43.32	56.68
Individual and Family Services (NAICS 6241)	7.97	0.05	3.88	0.04	30.27	42.21	57.79
Vocational Rehabilitation Services (NAICS 6243)	11.22	0.61	3.71	0.35	30.25	46.14	53.86
Traveler Accommodation (NAICS 7211)	14.23	2.63	10.11	0.07	16.24	43.27	56.73
Automotive Repair and Maintenance (NAICS 8111)	8.35	1.15	7.38	1.30	11.14	29.32	70.68
Electronic and Precision Equipment Repair and Maintenance (NAICS 8112)	12.87	2.27	6.70	0.84	13.64	36.33	63.67
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Personal and Household Goods Repair and Maintenance (NAICS 8114)	15.23	3.49	7.60	0.68	17.12	44.11	55.89
Drycleaning and Laundry Services (NAICS 8123)	28.05	5.24	8.45	0.00	15.20	56.95	43.05
Other Personal Services (NAICS 8129)	24.02	5.78	8.05	0.33	18.77	56.96	43.04

Source and Notes: See Table 2.17.

Table 2.20. Detailed DBE Availability—IT

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Architectural and Structural Metals Manufacturing (NAICS 3323)	5.58	1.15	8.28	1.08	18.14	34.23	65.77
Commercial and Service Industry Machinery Manufacturing (NAICS 3333)	7.90	0.00	8.30	2.30	15.58	34.08	65.92
Computer and Peripheral Equipment Manufacturing (NAICS 3341)	9.97	0.53	8.90	2.28	11.24	32.93	67.07
Communications Equipment Manufacturing (NAICS 3342)	7.42	1.69	9.29	0.98	17.60	36.98	63.02
Electrical Equipment Manufacturing (NAICS 3353)	5.21	0.93	8.07	0.68	17.90	32.79	67.21
Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232)	5.73	0.08	8.68	0.63	23.33	38.44	61.56
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	8.59	1.64	12.02	1.06	18.16	41.47	58.53
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	4.98	0.90	8.68	0.84	19.86	35.27	64.73
Electronics and Appliance Stores (NAICS 4431)	8.79	2.98	16.48	0.74	21.54	50.52	49.48
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Direct Selling Establishments (NAICS 4543)	10.51	2.52	4.50	0.72	27.99	46.24	53.76
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
Software Publishers (NAICS 5112)	14.20	6.26	8.86	0.19	12.35	41.86	58.14
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.12	3.92	8.67	0.11	14.10	33.91	66.09
Architectural, Engineering, and Related Services (NAICS 5413)	8.72	4.29	12.32	0.42	12.75	38.50	61.50
Computer Systems Design and Related Services (NAICS 5415)	16.44	3.64	14.39	0.59	16.35	51.41	48.59
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.71	1.92	7.23	0.17	26.50	52.52	47.48
Employment Services (NAICS 5613)	17.19	5.86	5.03	0.25	18.39	46.72	53.28
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24

Source and Notes: See Table 2.17.

Table 2.21. Detailed DBE Availability—Services

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Natural Gas Distribution (NAICS 2212)	4.71	2.53	0.00	0.00	13.54	20.77	79.23
Water, Sewage and Other Systems (NAICS 2213)	0.00	0.00	0.00	0.00	10.96	10.96	89.04
Nonresidential Building Construction (NAICS 2362)	7.91	3.91	2.10	0.58	14.62	29.12	70.88
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	6.44	5.02	2.77	0.07	10.46	24.75	75.25
Building Equipment Contractors (NAICS 2382)	6.74	2.79	2.77	0.15	10.45	22.91	77.09
Building Finishing Contractors (NAICS 2383)	7.45	3.57	2.66	0.18	11.03	24.90	75.10
Other Specialty Trade Contractors (NAICS 2389)	6.36	3.04	2.53	0.15	11.09	23.18	76.82
Textile and Fabric Finishing and Fabric Coating Mills (NAICS 3133)	7.91	0.43	7.89	2.52	32.46	51.20	48.80
Other Wood Product Manufacturing (NAICS 3219)	7.49	0.31	8.83	2.41	15.62	34.66	65.34
Printing and Related Support Activities (NAICS 3231)	5.69	0.26	9.45	0.99	22.12	38.50	61.50
Soap, Cleaning Compound, and Toilet Preparation Manufacturing (NAICS 3256)	15.63	0.00	8.10	2.18	19.78	45.69	54.31
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Clay Product and Refractory Manufacturing (NAICS 3271)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Foundries (NAICS 3315)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Architectural and Structural Metals Manufacturing (NAICS 3323)	3.67	0.00	7.51	0.73	18.48	30.40	69.60
Spring and Wire Product Manufacturing (NAICS 3326)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Other Fabricated Metal Product Manufacturing (NAICS 3329)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Other General Purpose Machinery Manufacturing (NAICS 3339)	6.13	0.00	10.04	1.54	14.71	32.41	67.59
Computer and Peripheral Equipment Manufacturing (NAICS 3341)	9.97	0.53	8.90	2.28	11.24	32.93	67.07

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	6.23	0.91	7.99	1.47	15.02	31.61	68.39
Electric Lighting Equipment Manufacturing (NAICS 3351)	9.31	0.00	7.85	2.27	17.55	36.98	63.02
Electrical Equipment Manufacturing (NAICS 3353)	5.24	0.92	8.10	0.69	17.89	32.83	67.17
Other Electrical Equipment and Component Manufacturing (NAICS 3359)	6.48	0.00	13.74	3.18	8.64	32.04	67.96
Motor Vehicle Parts Manufacturing (NAICS 3363)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Other Transportation Equipment Manufacturing (NAICS 3369)	6.25	0.00	8.26	2.22	19.78	36.51	63.49
Household and Institutional Furniture and Kitchen Cabinet Manufacturing (NAICS 3371)	9.34	0.00	8.10	2.34	18.30	38.08	61.92
Office Furniture (including Fixtures) Manufacturing (NAICS 3372)	9.38	0.00	9.34	2.30	18.81	39.83	60.17
Other Miscellaneous Manufacturing (NAICS 3399)	5.53	0.67	7.92	0.78	24.69	39.60	60.40
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (NAICS 4231)	5.93	0.16	7.34	0.73	16.42	30.57	69.43
Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232)	7.55	0.00	10.03	2.66	15.80	36.04	63.96
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	4.30	0.15	8.17	0.79	17.64	31.05	68.95
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.22	0.72	8.35	0.84	19.34	34.47	65.53
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	7.70	0.00	9.41	2.79	15.41	35.32	64.68
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.60	0.83	8.02	0.68	17.97	33.10	66.90
Paper and Paper Product Merchant Wholesalers (NAICS 4241)	5.77	0.38	7.04	0.68	19.41	33.29	66.71
Apparel, Piece Goods, and Notions Merchant Wholesalers (NAICS 4243)	5.97	1.23	10.19	2.51	17.95	37.85	62.15

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Chemical and Allied Products Merchant Wholesalers (NAICS 4246)	5.23	0.73	8.70	0.67	17.71	33.04	66.96
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10
Electronics and Appliance Stores (NAICS 4431)	8.08	2.98	12.31	0.56	20.22	44.16	55.84
Building Material and Supplies Dealers (NAICS 4441)	8.23	2.70	9.95	0.63	21.99	43.50	56.50
Gasoline Stations (NAICS 4471)	5.65	2.70	17.60	0.19	20.43	46.57	53.43
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	9.32	2.30	3.81	0.80	32.40	48.63	51.37
Other Miscellaneous Store Retailers (NAICS 4539)	7.28	2.54	15.40	0.51	23.24	48.98	51.02
Direct Selling Establishments (NAICS 4543)	7.56	2.45	15.18	1.21	21.39	47.80	52.20
Nonscheduled Air Transportation (NAICS 4812)	10.40	5.12	8.77	0.04	12.94	37.27	62.73
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
Specialized Freight Trucking (NAICS 4842)	24.60	8.06	6.39	0.12	12.38	51.55	48.45
Urban Transit Systems (NAICS 4851)	42.76	5.94	4.39	0.08	8.79	61.96	38.04
Taxi and Limousine Service (NAICS 4853)	19.86	8.92	6.31	0.06	10.85	46.00	54.00
School and Employee Bus Transportation (NAICS 4854)	11.29	2.48	7.07	0.00	21.93	42.77	57.23
Charter Bus Industry (NAICS 4855)	27.19	7.25	7.69	0.05	11.71	53.89	46.11
Other Transit and Ground Passenger Transportation (NAICS 4859)	31.83	7.15	5.69	0.12	11.21	56.00	44.00
Freight Transportation Arrangement (NAICS 4885)	13.71	3.81	8.94	0.00	15.00	41.47	58.53
Other Support Activities for Transportation (NAICS 4889)	24.09	7.98	6.08	0.13	9.84	48.12	51.88
Couriers and Express Delivery Services (NAICS 4921)	15.57	3.94	8.93	0.00	13.73	42.17	57.83
Newspaper, Periodical, Book, and Directory Publishers (NAICS 5111)	11.10	0.85	6.86	0.03	28.62	47.46	52.54
Motion Picture and Video Industries (NAICS 5121)	13.87	1.78	5.53	0.24	30.78	52.19	47.81
Sound Recording Industries (NAICS 5122)	13.88	2.11	7.45	0.00	30.74	54.18	45.82
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Wireless Telecommunications Carriers (except Satellite) (NAICS 5172)	14.35	6.06	4.73	0.40	9.32	34.86	65.14
Other Telecommunications (NAICS 5179)	13.09	0.83	5.53	0.07	26.80	46.32	53.68
Other Information Services (NAICS 5191)	11.30	0.92	6.42	0.00	28.46	47.11	52.89
Depository Credit Intermediation (NAICS 5221)	11.20	0.02	5.35	0.00	24.39	40.96	59.04
Activities Related to Credit Intermediation (NAICS 5223)	12.15	0.30	5.62	0.00	25.85	43.94	56.06
Other Financial Investment Activities (NAICS 5239)	13.18	0.28	5.44	0.00	24.49	43.39	56.61
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	11.27	0.64	5.24	0.00	28.09	45.24	54.76
Lessors of Real Estate (NAICS 5311)	14.10	5.36	4.21	0.00	11.44	35.10	64.90
Consumer Goods Rental (NAICS 5322)	11.62	2.07	5.43	0.00	23.25	42.36	57.64
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.00	6.66	3.85	0.00	11.79	36.31	63.69
Legal Services (NAICS 5411)	5.86	4.00	8.71	0.06	12.77	31.41	68.59
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.12	3.92	8.67	0.11	14.10	33.91	66.09
Architectural, Engineering, and Related Services (NAICS 5413)	8.57	4.10	11.35	0.37	14.00	38.40	61.60
Specialized Design Services (NAICS 5414)	13.14	2.22	5.32	0.13	38.74	59.55	40.45
Computer Systems Design and Related Services (NAICS 5415)	12.90	3.80	17.21	0.54	13.90	48.35	51.65
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.51	1.97	7.18	0.24	27.36	53.26	46.74
Scientific Research and Development Services (NAICS 5417)	10.05	1.86	9.06	0.25	26.26	47.48	52.52
Advertising, Public Relations, and Related Services (NAICS 5418)	9.55	3.48	7.88	0.21	22.94	44.06	55.94
Other Professional, Scientific, and Technical Services (NAICS 5419)	11.54	1.10	5.06	0.03	31.12	48.85	51.15
Management of Companies and Enterprises (NAICS 5511)	11.14	0.10	5.94	0.00	24.98	42.15	57.85
Employment Services (NAICS 5613)	19.83	6.12	6.58	0.45	18.86	51.84	48.16

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Business Support Services (NAICS 5614)	13.38	0.73	5.83	0.06	26.77	46.78	53.22
Travel Arrangement and Reservation Services (NAICS 5615)	13.92	5.63	5.24	0.00	20.99	45.78	54.22
Investigation and Security Services (NAICS 5616)	17.54	3.16	6.01	0.86	22.97	50.55	49.45
Services to Buildings and Dwellings (NAICS 5617)	15.73	6.63	4.60	0.18	12.43	39.58	60.42
Waste Treatment and Disposal (NAICS 5622)	18.36	7.35	4.09	0.00	10.20	40.00	60.00
Colleges, Universities, and Professional Schools (NAICS 6113)	14.80	2.44	7.30	0.00	14.70	39.23	60.77
Offices of Other Health Practitioners (NAICS 6213)	9.34	0.49	3.93	0.50	38.10	52.37	47.63
Community Food and Housing, and Emergency and Other Relief Services (NAICS 6242)	7.13	0.28	3.42	0.28	34.03	45.14	54.86
Vocational Rehabilitation Services (NAICS 6243)	11.22	0.61	3.71	0.35	30.25	46.14	53.86
Performing Arts Companies (NAICS 7111)	18.19	3.06	7.48	0.20	19.78	48.71	51.29
Independent Artists, Writers, and Performers (NAICS 7115)	16.29	2.88	7.51	0.18	31.83	58.69	41.31
Traveler Accommodation (NAICS 7211)	14.23	2.63	10.11	0.07	16.24	43.27	56.73
Special Food Services (NAICS 7223)	17.92	2.94	7.33	0.28	22.51	50.98	49.02
Automotive Repair and Maintenance (NAICS 8111)	24.61	5.48	6.61	0.18	12.95	49.83	50.17
Electronic and Precision Equipment Repair and Maintenance (NAICS 8112)	13.83	3.03	7.20	0.81	13.82	38.68	61.32
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Personal and Household Goods Repair and Maintenance (NAICS 8114)	14.90	3.32	7.01	0.82	12.80	38.85	61.15
Drycleaning and Laundry Services (NAICS 8123)	28.05	5.24	8.45	0.00	15.20	56.95	43.05
Other Personal Services (NAICS 8129)	24.02	5.78	8.05	0.33	18.77	56.96	43.04
Business, Professional, Labor, Political, and Similar Organizations (NAICS 8139)	25.13	6.23	6.32	0.00	12.66	50.34	49.66

Source and Notes: See Table 2.17.

Table 2.22. Detailed DBE Availability—CSE

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Nonresidential Building Construction (NAICS 2362)	12.10	5.64	3.81	1.03	12.16	34.74	65.26
Printing and Related Support Activities (NAICS 3231)	5.17	0.27	9.65	0.82	22.02	37.93	62.07
Soap, Cleaning Compound, and Toilet Preparation Manufacturing (NAICS 3256)	15.63	0.00	8.10	2.18	19.78	45.69	54.31
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 3311)	8.39	0.94	8.66	2.21	10.03	30.23	69.77
Other Fabricated Metal Product Manufacturing (NAICS 3329)	5.40	0.00	6.79	2.61	35.88	50.68	49.32
Agriculture, Construction, and Mining Machinery Manufacturing (NAICS 3331)	3.56	0.77	7.27	0.71	17.47	29.77	70.23
Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 3334)	9.57	0.93	10.42	2.31	12.14	35.37	64.63
Communications Equipment Manufacturing (NAICS 3342)	7.45	1.60	9.22	0.96	17.55	36.78	63.22
Motor Vehicle Body and Trailer Manufacturing (NAICS 3362)	15.72	0.00	8.32	2.08	8.32	34.44	65.56
Motor Vehicle Parts Manufacturing (NAICS 3363)	6.75	0.59	8.97	2.32	11.55	30.18	69.82
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Other Transportation Equipment Manufacturing (NAICS 3369)	6.25	0.00	8.26	2.22	19.78	36.51	63.49
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (NAICS 4231)	6.55	0.16	8.19	1.48	14.46	30.83	69.17
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	8.59	1.64	12.02	1.06	18.16	41.47	58.53
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.83	0.63	8.17	0.98	18.07	33.68	66.32
Paper and Paper Product Merchant Wholesalers (NAICS 4241)	12.55	0.69	9.24	0.80	24.43	47.71	52.29
Automobile Dealers (NAICS 4411)	9.16	2.90	4.55	0.91	19.59	37.11	62.89

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Automotive Parts, Accessories, and Tire Stores (NAICS 4413)	6.38	2.63	15.74	0.27	20.56	45.58	54.42
Clothing Stores (NAICS 4481)	10.56	2.65	6.53	0.90	27.06	47.70	52.30
Scheduled Air Transportation (NAICS 4811)	9.65	2.82	8.47	0.00	11.29	32.24	67.76
Other Telecommunications (NAICS 5179)	13.09	0.83	5.53	0.07	26.80	46.32	53.68
Automotive Equipment Rental and Leasing (NAICS 5321)	11.07	0.33	5.49	0.00	24.95	41.84	58.16
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.01	6.68	3.85	0.00	11.77	36.30	63.70
Architectural, Engineering, and Related Services (NAICS 5413)	8.73	4.29	12.33	0.42	12.75	38.52	61.48
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.49	1.31	7.06	0.00	26.53	51.39	48.61
Automotive Repair and Maintenance (NAICS 8111)	7.08	0.81	7.45	1.39	11.00	27.72	72.28

Source and Notes: See Table 2.17.

Table 2.23. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.88	3.20	4.88	0.36	18.32	15.17	33.49	66.51
AE-CRS	10.19	3.87	11.40	0.40	25.85	15.42	41.27	58.73
MAINTENANCE	13.47	4.84	4.42	0.27	23.01	14.92	37.92	62.08
IT	14.60	3.82	13.51	0.52	32.45	16.31	48.76	51.24
SERVICES	15.49	3.72	8.56	0.30	28.07	19.18	47.25	52.75
CSE	8.51	2.39	8.43	0.91	20.25	15.80	36.05	63.95
TOTAL	10.66	3.63	7.89	0.37	22.55	15.46	38.00	62.00

Source and Notes: See Table 2.17.

Table 2.24. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.94	3.29	5.15	0.37	18.76	15.08	33.84	66.16
AE-CRS	10.52	3.83	11.33	0.40	26.08	15.74	41.82	58.18
MAINTENANCE	14.05	5.09	4.57	0.27	23.97	15.25	39.22	60.78
IT	13.36	3.70	13.19	0.47	30.71	16.67	47.39	52.61
SERVICES	15.81	3.43	8.53	0.28	28.05	19.84	47.89	52.11
CSE	8.51	2.39	8.43	0.91	20.25	15.80	36.05	63.95
TOTAL	10.76	3.60	7.37	0.38	22.10	15.54	37.64	62.36

Source and Notes: See Table 2.17.

Table 2.25. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.97	3.10	5.07	0.36	18.49	15.57	34.07	65.93
AE-CRS	10.05	3.90	11.41	0.40	25.76	15.26	41.01	58.99
MAINTENANCE	8.15	3.19	2.82	0.27	14.42	12.19	26.61	73.39
IT	12.23	4.03	14.33	0.51	31.11	13.92	45.04	54.96
SERVICES	15.49	3.73	8.43	0.30	27.96	19.12	47.08	52.92
CSE	8.57	2.15	7.43	1.03	19.18	15.75	34.92	65.08
TOTAL	10.19	3.49	8.07	0.37	22.12	15.45	37.58	62.42

Source and Notes: See Table 2.17.

Table 2.26. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	10.03	3.16	5.43	0.36	18.97	15.59	34.56	65.44
AE-CRS	10.42	3.85	11.32	0.40	25.99	15.64	41.63	58.37
MAINTENANCE	8.08	3.22	2.90	0.30	14.49	12.65	27.15	72.85
IT	11.51	4.03	13.75	0.50	29.80	13.89	43.69	56.31
SERVICES	15.69	3.45	8.50	0.28	27.92	19.85	47.77	52.23
CSE	8.57	2.15	7.43	1.03	19.18	15.75	34.92	65.08
TOTAL	10.36	3.41	7.64	0.38	21.79	15.69	37.47	62.53

Source and Notes: See Table 2.17.

[This page intentionally left blank]

III. Statistical Disparities in Minority and Female Business Formation and Business Owner Earnings

A. Review of Relevant Literature

In this chapter we examine disparities in business formation and earnings principally in the private sector, where contracting activities are generally *not* subject to DBE or other affirmative action requirements. Statistical examination of disparities in the private sector of the relevant geographic market area is important for several reasons. First, to the extent that discriminatory practices by contractors, suppliers, insurers, lenders, customers, and others limit the ability of DBEs to compete, those practices will impact the larger private sector as well as the public sector. Second, examining the utilization of DBEs in the private sector provides an indicator of the extent to which DBEs are used in the absence of race- and gender-conscious efforts, since few firms in the private sector make such efforts. Third, the Supreme Court in *Croson* and other courts acknowledged that state and local governments have the constitutional authority not to contribute to the perpetuation of discrimination in the private sector of their relevant geographic and product markets.⁶²

After years of comparative neglect, research on the economics of entrepreneurship—especially upon self-employment—has expanded in recent years.⁶³ There is a good deal of agreement in the literature on the micro-economic correlates of self-employment.⁶⁴ In the U.S., it appears that self-employment rises with age, is higher among men than women and higher among non-minorities than African Americans. The least educated have the highest probability of being self-employed. However, evidence is also found in the U.S. that the most highly educated also have relatively high probabilities. On average, however, increases in educational attainment are generally found to lead to increases in the probability of being self-employed. A higher number of children in the family increases the likelihood of (male) self-employment. Workers in agriculture and construction are also especially likely to be self-employed.

⁶² *Croson*, 488 U.S. at 492.

⁶³ Microeconomic work includes Fuchs (1982), Borjas and Bronars (1989), Evans and Jovanovic (1989), Evans and Leighton (1989), Fairlie and Meyer (1996, 1998), Reardon (1998), Fairlie (1999), Wainwright (2000), Blanchflower and Wainwright (2005), and Blanchflower (2009) for the United States, Rees and Shah (1986), Pickles and O'Farrell (1987), Blanchflower and Oswald (1990, 1998), Meager (1992), Taylor (1996), Robson (1998a, 1998b), and Blanchflower and Shadforth (2007) for the UK, DeWit and van Winden (1990) for the Netherlands, Alba-Ramirez (1994) for Spain, Bernhardt (1994), Schuetze (1998), Arai (1997), Lentz and Laband (1990), and Kuhn and Schuetze (1998) for Canada, Laferrere and McEntee (1995) for France, Blanchflower and Meyer (1994) and Kidd (1993) for Australia, and Foti and Vivarelli (1994) for Italy. There are also several theoretical papers including Kihlstrom and Laffont (1979), Kanbur (1990), Holmes and Schmitz (1990), Coate and Tennyson (1992), and Cagetti and DeNardi (2006), plus a few papers that draw comparisons across countries, *i.e.*, Schuetze (1998) for Canada and the U.S., Blanchflower and Meyer (1994) for Australia and the U.S., Alba-Ramirez (1994) for Spain and the United States, and Acs and Evans (1994), Blanchflower (2000), Blanchflower, Oswald, and Stutzer (2001), and Blanchflower and Oswald (2008) for many countries.

⁶⁴ Parker (2004) and Aronson (1991) provide good overviews.

There has been relatively less work on how institutional factors influence self-employment. Such work that has been conducted includes examining the role of minimum wage legislation (Blau, 1987), immigration (Fairlie and Meyer, 1998; 2003; Olson, Zuiker and Montalto, 2000; Mora and Dávila 2006; Robles and Cordero-Guzmán, 2007),⁶⁵ immigration policy (Borjas and Bronars, 1989), and retirement policies (Quinn, 1980). Studies by Long (1982), and Blau (1987), and more recently by Schuetze (1998), have considered the role of taxes.⁶⁶ A number of other studies have also considered the cyclical aspects of self-employment and in particular how movements of self-employment are correlated with movements in unemployment. Meager (1992), provides a useful summary of much of this work.⁶⁷

Blanchflower, Oswald and Stutzer (2001) found that there is a strikingly large latent desire to own a business. There exists frustrated entrepreneurship on a huge scale in the U.S. and other Organization for Economic Co-operation and Development (OECD) countries.⁶⁸ In the U.S., 7 out of 10 people say they would prefer to be self-employed. This compares to an actual proportion of self-employed people in 2001 of 7.3 percent of the civilian labor force, which also shows that the proportion of the labor force that is self-employed has declined steadily since 1990 following a small increase in the rate from 1980 to 1990. This raises an important question. Why do so few individuals in the U.S. and OECD countries manage to translate their preferences

⁶⁵ Fairlie and Meyer (1998) found that immigration had no statistically significant impact at all on African American self-employment. In a subsequent paper Fairlie and Meyer (2003), found that self-employed immigrants did displace self-employed native non-African Americans. They found that immigration has a large negative effect on the probability of self-employment among native non-African Americans, although, surprisingly, they found that immigrants increase native self-employment earnings.

⁶⁶ In an interesting study pooling individual level data for the U.S. and Canada from the Current Population Survey and the Survey of Consumer Finances, respectively, Schuetze (1998) finds that increases in income taxes have large and positive effects on the male self-employment rate. He found that a 30 percent increase in taxes generated a rise of 0.9 to 2.0 percentage points in the male self-employment rate in Canada compared with a rise of 0.8 to 1.4 percentage points in the U.S. over 1994 levels.

⁶⁷ Evans and Leighton (1989) found that nonminority men who are unemployed are nearly twice as likely as wage workers to enter self-employment. Bogenhold and Staber (1991) also find evidence that unemployment and self-employment are positively correlated. Blanchflower and Oswald (1990) found a strong negative relationship between regional unemployment and self-employment for the period 1983-1989 in the U.K. using a pooled cross-section time-series data set. Blanchflower and Oswald (1998) confirmed this result, finding that the log of the county unemployment rate entered negatively in a cross-section self-employment model for young people age 23 in 1981 and for the same people aged 33 in 1991. Taylor (1996) confirmed this result using data from the British Household Panel Study of 1991, showing that the probability of being self-employed rises when expected self-employment earnings increase relative to employee earnings, *i.e.*, when unemployment is low. Acs and Evans (1994) found evidence from an analysis of a panel of countries that the unemployment rate entered negatively in a fixed effect and random effects formulation. However, Schuetze (1998) found that for the U.S. and Canada the elasticity of the male self-employment rate with respect to the unemployment rate was considerably smaller than found for the effect from taxes discussed above. The elasticity of self-employment associated with the unemployment rate is about 0.1 in both countries using 1994 figures. A decrease of 5 percentage points in the unemployment rate in the U.S. (about the same decline occurred from 1983-1989) leads to about a 1 percentage point decrease in self-employment. Blanchflower (2000) found that there is generally a negative relationship between the self-employment rate and the unemployment rate. It does seem then that there is some disagreement in the literature on whether high unemployment acts to discourage self-employment because of the lack of available opportunities or encourage it because of the lack of viable alternatives.

⁶⁸ The OECD is an international organization of those developed countries that accept the principles of representative democracy and a free market economy. There are currently 30 full members.

into action? Lack of start-up capital is one likely explanation. This factor is commonly cited by small-business managers themselves (Blanchflower and Oswald, 1998). There is also econometric evidence that confirms this barrier. Holding other influences constant, people who inherit cash, who win the lottery, or who have large family assets, are all more likely both to set up and sustain a lasting small business. By contrast, childhood personality test-scores turn out to have almost no predictive power about which persons will be running their own businesses as adults (Blanchflower and Oswald, 1998).

One primary impediment to entrepreneurship among minorities is lack of capital. In work based on U.S. micro data at the level of the individual, Evans and Leighton (1989), and Evans and Jovanovic (1989), have argued formally that entrepreneurs face liquidity constraints. The authors use the National Longitudinal Survey of Young Men for 1966-1981, and the Current Population Surveys for 1968-1987. The key test shows that, all else remaining equal, people with greater family assets are more likely to switch to self-employment from employment. This asset variable enters econometric equations significantly and with a quadratic form. Although Evans and his collaborators draw the conclusion that capital and liquidity constraints bind, this claim is open to the objection that other interpretations of their correlation are feasible. One possibility, for example, is that inherently acquisitive individuals both start their own businesses and forego leisure to build up family assets. In this case, there would be a correlation between family assets and movement into self-employment even if capital constraints did not exist. A second possibility is that the correlation between family assets and the movement to self-employment arises because children tend to inherit family firms. Blanchflower and Oswald (1998), however, find that the probability of self-employment depends positively upon whether the individual ever received an inheritance or gift.⁶⁹ Moreover, when directly questioned in interview surveys, potential entrepreneurs say that raising capital is their principal problem. Work by Holtz-Eakin, Joulfaian and Harvey (1994a, 1994b), drew similar conclusions using different methods on U.S. data, examining flows into and out of self-employment and finding that inheritances both raise entry and slow exit. In contrast, Hurst and Lusardi (2004), citing evidence from the U.S. *Panel Study of Income Dynamics*, claim to show that wealth is not a significant determinant of entry into self-employment. In response, however, Fairlie and Krashinsky (2006) have demonstrated that when the sample is split into two segments—those who enter self-employment after job loss and those who do not—the strong correlation between assets and rate of entry business formation is evident in both segments.

The work of Black, *et al.* (1996) for the United Kingdom discovers an apparently powerful role for house prices (through its impact on equity withdrawal) in affecting the supply of small new firms. Cowling and Mitchell (1997), find a similar result. Again this is suggestive of capital constraints. Finally, Lindh and Ohlsson (1996) adopt the Blanchflower-Oswald procedure and provide complementary evidence for Sweden. Bernhardt (1994), in a study for Canada, using data from the 1981 Social Change in Canada Project also found evidence that capital constraints

⁶⁹ This emerges from British data, the National Child Development Study; a birth cohort of children born in March 1958 who have been followed for the whole of their lives.

appear to bind. Using the 1991 French Household Survey of Financial Assets, Laferrere and McEntee (1995), examined the determinants of self-employment using data on intergenerational transfers of wealth, education, informal human capital and a range of demographic variables.

They also find evidence of the importance played by the family in the decision to enter self-employment. Intergenerational transfers of wealth, familial transfers of human capital and the structure of the family were found to be determining factors in the decision to move from wage work into entrepreneurship. Broussard, *et al.* (2003) found that the self-employed have between 0.2 and 0.4 more children compared to the non-self-employed. The authors argue that having more children can increase the likelihood that an inside family member will be a good match at running the business. One might also think that the existence of family businesses, which are particularly prevalent in construction and in agriculture, is a further way to overcome the existence of capital constraints. Transfers of firms within families will help to preserve the status quo and will work against the interests of African Americans in particular who do not have as strong a history of business ownership as indigenous non-minorities. Analogously, Hout and Rosen (2000) and Fairlie and Robb (2007a) found that the offspring of self-employed parents are more likely than others to become self-employed and argued that the historically low rates of self-employment among African Americans and Latinos may contribute to their low contemporary rates. Fairlie and Robb (2007b), using data from the U.S. *Characteristics of Business Owners* survey, and Dunn and Holtz-Eakin (2000), using data from the U.S. *National Longitudinal Surveys*, show that the transmission of positive effects of family on self-employment operates through two channels, intergenerational transmission of entrepreneurial preferences and wealth, and the acquisition of general and specific human capital.

A continuing puzzle in the literature has been why, nationally, the self-employment rate of African American males is one third of that of nonminority males and has remained roughly constant since 1910. Fairlie and Meyer (2000) rule out a number of explanations for the difference. They found that trends in demographic factors, including the Great Migration and the racial convergence in education levels “did not have large effects on the trend in the racial gap in self-employment” (p. 662). They also found that an initial lack of business experience “cannot explain the current low levels of black self-employment.” Further they found that “the lack of traditions in business enterprise among blacks that resulted from slavery cannot explain a substantial part of the current racial gap in self-employment” (p. 664).

Fairlie (1999) and Wainwright (2000) have shown that a considerable part of the explanation of the differences between the African American and nonminority self-employment rate can be attributed to discrimination. Using PUMS data from the 1990 Census, Wainwright (2000) demonstrated that these disparities tend to persist even when factors such as geography, industry, occupation, age, education and assets are held constant.

Bates (1989) finds strong supporting evidence that racial differences in levels of financial capital have significant effects upon racial patterns in business failure rates. Fairlie (1999, 2006) demonstrates, for example, that the African American exit rate from self-employment is twice as high as that of non-minorities. An example will help to make the point. Two baths are being filled with water. In the first scenario, both have the plug in. Water flows into bath A at the same

rate as it does into bath B—that is, the inflow rate is the same. When we return after ten minutes the amount of water (the stock) will be the same in the two baths as the inflow rates were the same. In the second scenario, we take out the plugs and allow for the possibility that the outflow rates from the two baths are different. Bath A (the African American firms) has a much larger drain and hence the water flows out more quickly than it does from bath B (the nonminority firms). When we return after 10 minutes, even though the inflow rates are the same there is much less water in bath A than there is in bath B. A lower exit rate for nonminority-owned firms than is found for minority-owned firms is perfectly consistent with the observed fact that minority-owned firms are younger and smaller than nonminority-owned firms. The extent to which that will be true is a function of the relative sizes of the inflow and the outflow rates.

B. Race and Gender Disparities in Earnings

In this section, we examine earnings to determine whether minority and female entrepreneurs earn less from their businesses than do their nonminority male counterparts. Other things equal, if minority and female business owners as a group cannot achieve comparable earnings from their businesses as similarly-situated nonminorities because of discrimination, then failure rates for DBEs will be higher and DBE formation rates will be lower than would be observed in a race- and gender-neutral market area. Both phenomena would contribute directly to lower levels of minority and female business ownership.

Below, we first examine earnings disparities among wage and salary employees, that is, non-business owners. It is helpful to examine this segment of the labor force since a key source of new entrepreneurs in any given industry is the pool of experienced wage and salary workers in similar or related industries (Blanchflower, 2000; 2004). Employment discrimination that adversely impacts the ability of minorities or women to succeed in the labor force directly shrinks the available pool of potential DBEs. In almost every instance examined, a statistically significant adverse impact on wage and salary earnings is observed—in both the economy at large and also in the construction and construction-related professional services sector.⁷⁰

We then turn to an examination of differences in earnings among the self-employed, that is, among business owners. Here too, among the pool of minorities and women who have formed businesses despite discrimination in both employment opportunities and business opportunities, statistically significant adverse impacts are observed in the vast majority of cases in construction and construction-related professional services (hereafter, “construction”), and other sectors of the economy.

⁷⁰ There is a growing body of evidence that discriminatory constraints in the capital market prevent minority-owned businesses from obtaining business loans. Furthermore, even when they are able to obtain them there is evidence that these loans are not obtained on equal terms: minority-owned firms have to pay higher interest rates, other things being equal. This is another form of discrimination with an obvious and direct impact on the ability of racial minorities to form businesses and to expand or grow previously formed businesses. See Chapter IV, *infra*.

In the remainder of this Chapter we discuss the methods and data we employed and present the specific findings.

1. Methods

We used the statistical technique of linear regression analysis to estimate the effect of each of a set of observable characteristics, such as education and age, on an outcome variable of interest. In this case, the outcome variable of interest is earnings and we used regression to compare earnings among individuals in similar geographic and product markets at similar points in time and with similar years of education and potential labor market experience and see if any adverse race or gender differences remain. In a discrimination free market area, one would not expect to observe significant differences in earnings by race or gender among such similarly situated observations.

Regression also allows us to narrowly tailor our statistical tests to MDOT's relevant geographic market, and assess whether disparities in that market are statistically significantly different from those observed elsewhere in the nation. Starting from an economy-wide data set, we first estimated the basic model of earnings differences just described and also included an indicator variable for the Maryland Market Area (MDMA), which encompasses the Maryland, Delaware, the District of Columbia, and the Virginia and West Virginia portions of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, and is coextensive with the relevant geographic market area for MDOT. This model appears as Specification (1) in Tables 3.1 through 3.12. Next, we estimated Specification (2), which is the same model as (1) but with the addition of indicator variables that interact race and gender with the MDMA indicator. Specification (3) represents our ultimate specification, which includes all the variables from the basic model as well as any of the interaction terms from Specification (2) that were statistically significant.⁷¹

Any negative and statistically significant differences by race or gender that remain in Specification (3) after holding all of these other factors constant—time, age, education, geography, and industry—are consistent with what would be observed in a market suffering from business-related discrimination.⁷²

2. Data

The analyses undertaken in this Study require individual-level data (*i.e.*, “microdata”) with relevant information on business ownership status and other key socioeconomic characteristics.

⁷¹ If none of these terms is significant then Specification (3) reduces to Specification (1).

⁷² Typically, a given test statistic is considered to be statistically significant if there is a reasonably low probability that the value of the statistic is due to random chance alone. Unless otherwise indicated, in this and subsequent chapters, we employ three levels of statistical significance, corresponding to 10 percent, 5 percent, and 1 percent probabilities that results were the result of random chance.

The data source used is the American Community Survey (ACS) Public Use Microdata Sample (PUMS) for 2006–2008. The Census Bureau’s ACS is an ongoing survey covering the same type of information collected in the decennial census. The ACS is sent to approximately 3 million addresses annually, including housing units in all counties in the 50 states and the District of Columbia. The PUMS files from the ACS contain records for a subsample of the full ACS. The data used here are the multi-year estimates combining the 2006, 2007, and 2008 ACS PUMS records. The combined file contains over 3.6 million person-level records. The ACS PUMS provides the full range of population and housing information collected in the annual ACS and in the decennial census. Business ownership status is identified in the ACS PUMS through the “class of worker” variable, which distinguishes the unincorporated and incorporated self-employed from others in the labor force. The presence of the class of worker variable allows us to construct a detailed cross-sectional sample of individual business owners and their associated earnings.

3. Findings: Race and Gender Disparities in Wage and Salary Earnings

Tables 3.1, 3.2, and 3.3 report results from our regression analyses of annual earnings among wage and salary workers. Table 3.1 focuses on the economy as a whole, Table 3.2 on Construction and AE-CRS, and Table 3.3 on Goods and Services. The numbers shown in each table indicate the percentage difference in that sector between the average annual wages of a given race/gender group and comparable nonminority males.

a. Specification (1) - the Basic Model

For example, in Table 3.1 Specification (1) the estimated percentage difference in average annual wages between African Americans (both genders) and nonminority males in 2006–2008 was -32.6 percent. That is, average annual wages among African Americans were 32.6 percent lower than for nonminority males who were otherwise similar in terms of geographic location, industry, age, and education. The number in parentheses below each percentage difference is the t-statistic, which indicates whether the estimated percentage difference is statistically significant or not. In Tables 3.1 through 3.6, a t-statistic of 1.99 or larger indicates statistical significance at a 95 percent confidence level or better.⁷³ In the example just used, the t-statistic of 172.13 indicates that the result is statistically significant.

Specification (1) in Table 3.1 shows adverse and statistically significant wage disparities for African Americans, Hispanics, Asians, Native Americans, persons reporting in multiple race categories, and nonminority women consistent with the presence of discrimination in these markets. Observed disparities are large as well, ranging from a low of -22.6 percent for Hispanics to a high of -32.6 percent for African Americans.

⁷³ From a two-tailed test.

Specification (1) in Table 3.2 shows similar results when the basic analysis is restricted to the Construction and AE-CRS sector. In this sector, large, adverse, and statistically significant wage disparities are once again observed for African Americans, Hispanics, Asians, Native Americans, persons reporting in multiple race categories, and nonminority women. Similarly, Specification (1) in Table 3.3 for the Goods and Services sector also shows large, adverse, and statistically significant wage disparities for African Americans, Hispanics, Asians, Native Americans, persons reporting in multiple race categories, and nonminority women.

A comparison of Tables 3.1 and 3.2 shows that for Hispanics, Asians, and persons reporting in multiple race categories, the disparities in the Construction and AE-CRS sector are somewhat smaller than those observed in the economy as a whole. For African Americans and nonminority women, they are somewhat larger. Disparities for Native Americans are about the same in both sectors. A comparison of Tables 3.1 and 3.3 shows that for African Americans, Hispanics, Asians, Native Americans, persons reporting in multiple race categories, and nonminority women, the disparities in the Goods and Services sector are all larger than those observed in the economy as a whole.

b. Specifications (2) and (3) - the Full Model Including MDMA-Specific Interaction Terms

Next, we turn to Specifications (2) and (3) in Tables 3.1–3.3. In each of these Tables, Specification (2) is the basic regression model with a set of interaction terms added to test whether minorities and women in the MDMA differ significantly from those elsewhere in the U.S. economy. Specification (2) in Table 3.1, for example, shows a -22.7 percent wage difference that estimates the direct effect of being Hispanic in 2006–2008, as well as a statistically significant 4.5 percent wage increment that captures the indirect effect of residing in the MDMA and being Hispanic. That is, wages for Hispanics in the MDMA, on average, were 4.5 percent higher than for Hispanics in the nation as a whole and 18.2 percent lower (-22.7 percent plus 4.5 percent) than for nonminority males in the MDMA.

Specification (3) simply repeats Specification (2), dropping any MDMA interactions that are not statistically significant. In Table 3.1, for example, the only interaction terms included in the final specification are for Hispanics and Asians/Pacific Islanders. The net result of Specification (3) in Table 3.1 is evidence of large, adverse, and statistically significant wage disparities for all minority groups and for nonminority women. With only one exception, in Table 3.2 for Construction and AE-CRS and Table 3.3 for Goods and Services, there is evidence of large, adverse, and statistically significant wage disparities for all minority groups and for nonminority women as well.⁷⁴

⁷⁴ No wage disparity is observed for Asians/Pacific Islanders in Table 3.2.

Table 3.1. Annual Wage Earnings Regressions, All Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.326 (172.13)	-0.326 (170.63)	-0.326 (172.16)
Hispanic	-0.226 (122.60)	-0.227 (121.65)	-0.227 (121.80)
Asian	-0.266 (110.29)	-0.267 (109.79)	-0.267 (109.86)
Native American	-0.308 (47.67)	-0.309 (47.25)	-0.308 (47.68)
Two or more races	-0.262 (62.74)	-0.263 (61.87)	-0.262 (62.76)
Nonminority Female	-0.325 (293.66)	-0.325 (288.67)	-0.325 (293.66)
Age	0.182 (572.68)	0.182 (572.68)	0.182 (572.68)
Age ²	-0.002 (498.90)	-0.002 (498.90)	-0.002 (498.90)
MDMA	-0.046 (5.02)	-0.050 (5.18)	-0.048 (5.16)
MDMA*African American		0.017 (1.03)	
MDMA*Hispanic		0.045 (3.78)	0.043 (3.69)
MDMA * Asian/Pacific Islander		0.057 (2.49)	0.055 (2.40)
MDMA * Native American		0.059 (1.17)	
MDMA *Two or more races		0.015 (0.52)	
MDMA *Nonminority female		0.003 (0.53)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	2548959	2548959	2548959
Adj. R ²	.4592	.4593	.4593

Source: NERA calculations from the 2006-2008 ACS Public Use Microdata Samples.

Notes: (1) Universe is all private sector wage and salary workers between age 16 and 64; observations with imputed values to the dependent variable and all independent variables are excluded; (2) Reported coefficient is the percentage difference in annual wages between a given group and nonminority men; (3) Number in parentheses is the absolute value of the associated t-statistic. Using a two-tailed test, t-statistics greater than 1.67 (1.99) (2.64) are statistically significant at a 90 (95) (99) percent confidence level; (4) "Other Race" includes persons identifying themselves as belonging in more than one racial category; (5) Geography is defined based on place of residence; (6) "MDMA" is shorthand for Maryland Market Area," which includes Delaware, the District of Columbia, Maryland, and the Virginia and West Virginia portions of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA; (7) Each specification also included 16 indicator variables for educational attainment, 51 for state of residence, and 88 for industry affiliation, signified by a "Yes" for the corresponding table row and column.

Table 3.2. Annual Wage Earnings Regressions, Construction and Related Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.350 (44.21)	-0.351 (43.97)	-0.350 (44.22)
Hispanic	-0.196 (36.90)	-0.196 (36.40)	-0.196 (36.91)
Asian	-0.219 (19.37)	-0.221 (19.45)	-0.222 (19.47)
Native American	-0.309 (17.13)	-0.312 (17.01)	-0.309 (17.13)
Two or more races	-0.227 (15.89)	-0.222 (15.24)	-0.227 (15.90)
Nonminority Female	-0.360 (81.48)	-0.360 (79.69)	-0.360 (81.48)
Age	0.149 (139.48)	0.149 (139.48)	0.149 (139.48)
Age ²	-0.001 (119.52)	-0.001 (119.51)	-0.001 (119.52)
MDMA	-0.103 (3.48)	-0.105 (3.52)	-0.104 (3.49)
MDMA *African American		0.035 (0.40)	
MDMA *Hispanic		0.004 (0.14)	
MDMA * Asian/Pacific Islander		0.224 (1.96)	0.225 (1.97)
MDMA * Native American		0.123 (1.02)	
MDMA *Two or more races		-0.151 (1.90)	
MDMA*Nonminority female		0.000 (0.01)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	221546	221546	221546
Adj. R ²	.2762	.2762	.2762

Source and Notes: See Table 3.1.

Table 3.3. Annual Wage Earnings Regressions, Goods and Services Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.378 (193.81)	-0.378 (191.83)	-0.378 (193.81)
Hispanic	-0.286 (144.30)	-0.286 (142.63)	-0.286 (144.30)
Asian	-0.292 (114.46)	-0.292 (113.60)	-0.292 (114.46)
Native American	-0.374 (53.87)	-0.374 (53.25)	-0.374 (53.87)
Two or more races	-0.318 (71.64)	-0.318 (70.54)	-0.318 (71.64)
Nonminority Female	-0.394 (367.93)	-0.394 (360.01)	-0.394 (367.93)
Age	0.218 (624.89)	0.218 (624.88)	0.218 (624.89)
Age ²	-0.002 (542.61)	-0.002 (542.61)	-0.002 (542.61)
MDMA	-0.011 (1.07)	-0.007 (0.63)	-0.011 (1.07)
MDMA *African American		0.010 (0.58)	
MDMA *Hispanic		0.018 (1.34)	
MDMA * Asian/Pacific Islander		0.019 (0.78)	
MDMA * Native American		0.017 (0.30)	
MDMA *Two or more races		0.001 (0.04)	
MDMA*Nonminority female		-0.011 (1.69)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	2327413	2327413	2327413
Adj. R ²	.4100	.4100	.4100

Source and Notes: See Table 3.1.

c. Conclusions

Clearly, minorities and women earn substantially and significantly less from their labor than do their nonminority male counterparts—in the Maryland market area just as in the nation as a whole. Such disparities are symptoms of discrimination in the labor force that, in addition to its direct effect on workers, reduces the future availability of DBEs by stifling opportunities for minorities and women to progress through precisely those internal labor markets and occupational hierarchies that are most likely to lead to acquiring the skills, experience and

contacts necessary to take advantage of entrepreneurial opportunities. They also demonstrate that discrimination results in less opportunity for minorities and women to accumulate and save business start-up capital through their work as employees. These disparities reflect more than mere “societal discrimination” because they demonstrate the nexus between discrimination in the job market and reduced entrepreneurial opportunities for minorities and women. Other things equal, these reduced entrepreneurial opportunities in turn lead to lower DBE availability levels than would be observed in a race- and gender-neutral market area.

4. Findings: Race and Gender Disparities in Business Owner Earnings

The patterns of discrimination that affect minority and female wage earners affect minority and female entrepreneurs as well. We turn next to the analysis of race and gender disparities in business owner earnings. Table 3.4 focuses on the economy as a whole, Table 3.5 on Construction and AE-CRS, and Table 3.6 on Goods and Services. The numbers shown in each table indicate the percentage difference in that sector between the average annual self-employment earnings of a given race/gender group and comparable nonminority males.

a. Specification (1) - the Basic Model

Specification (1) in Table 3.4 shows large, adverse, and statistically significant business owner earnings disparities for African Americans, Hispanics, Asians, Native Americans, persons reporting multiple races, and nonminority women consistent with the presence of discrimination in these markets. The measured difference for African Americans is 40 percent lower than for comparable nonminority males; for Hispanics, 23.1 percent lower; for Asians, 9.3 percent lower; for Native Americans, 35.8 percent lower; and for nonminority women, 40.7 percent lower.

Turning to the Construction and AE-CRS sector, Specification (1) in Table 3.5 shows large, adverse, and statistically significant business owner earnings disparities for African Americans, Hispanics, Asians, Native Americans, persons reporting multiple races, and nonminority women consistent with the presence of discrimination in these markets. The measured difference for African Americans is 43.2 percent lower than for comparable nonminority males; for Hispanics, 15.9 percent lower; for Asians, 17.3 percent lower; for Native Americans, 31.2 percent lower; and for nonminority women, 45.9 percent lower.

For the Goods and Services sector, Specification (1) in Table 3.6 shows large, adverse, and statistically significant business owner earnings disparities for African Americans, Hispanics, Asians, Native Americans, persons reporting multiple races, and nonminority women consistent with the presence of discrimination in these markets. The measured difference for African Americans is 43.5 percent lower than for comparable nonminority males; for Hispanics, 29.6 percent lower; for Asians, 12.0 percent lower; for Native Americans, 40.1 percent lower; and for nonminority women, 43.1 percent lower.

b. Specifications (2) and (3) - the Full Model Including MDMA-Specific Interaction Terms

Next, we turn to Specifications (2) and (3) in Tables 3.4–3.6. Specification (2) is the basic regression model enhanced by a set of interaction terms to test whether minorities and women in the MDMA differ significantly from those elsewhere in the U.S. economy. Specification (3) drops any MDMA interaction terms that are not statistically significant.

For the economy as a whole in 2006-2008, Table 3.4 shows that only the MDMA interaction term for persons reporting multiple races is statistically significant, indicating that disparities for persons reporting multiple races are worse in the MDMA than in the nation as a whole, while disparities for all other minorities and nonminority women in the MDMA are no better or worse than in the nation as a whole.

For the Construction and AE-CRS sector in 2006–2008, Table 3.5 shows that the estimates for the MDMA are in agreement with results for the nation as a whole.

For the Goods and Services sector in 2006–2008, Table 3.6 shows that the estimates for the MDMA are in agreement with results for the nation as a whole.

Table 3.4. Annual Business Owner Earnings Regressions, All Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.400 (32.05)	-0.400 (31.77)	-0.400 (32.05)
Hispanic	-0.231 (20.70)	-0.233 (20.66)	-0.230 (20.69)
Asian	-0.093 (5.77)	-0.092 (5.65)	-0.093 (5.75)
Native American	-0.358 (10.16)	-0.352 (9.81)	-0.358 (10.16)
Two or more races	-0.363 (16.19)	-0.356 (15.57)	-0.356 (15.55)
Nonminority Female	-0.407 (67.41)	-0.407 (66.43)	-0.407 (67.41)
Age	0.163 (79.12)	0.163 (79.13)	0.163 (79.12)
Age ²	-0.002 (69.62)	-0.002 (69.63)	-0.002 (69.62)
MDMA	-0.003 (0.05)	-0.010 (0.21)	0.000 (0.01)
MDMA*African American		-0.026 (0.22)	
MDMA*Hispanic		0.106 (1.38)	
MDMA* Asian/Pacific Islander		-0.107 (0.85)	
MDMA * Native American		-0.250 (1.14)	
MDMA *Two or more races		-0.287 (2.12)	-0.297 (2.22)
MDMA *Nonminority female		0.036 (1.07)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	284365	284365	284365
Adj. R ²	.1673	.1673	.1673

Source: NERA calculations from the 2006-2008 ACS Public Use Microdata Samples.

Notes: (1) Universe is all persons in the private sector with positive business earnings between age 16 and 64; observations with imputed values to the dependent variable and all independent variables are excluded; (2) Reported coefficient is the percentage difference in annual business earnings between a given group and nonminority men; (3) Number in parentheses is the absolute value of the associated t-statistic. Using a two-tailed test, t-statistics greater than 1.67 (1.99) (2.64) are statistically significant at a 90 (95) (99) percent confidence level; (4) “Other Race” includes persons identifying themselves as belonging in more than one racial category; (5) Geography is defined based on place of residence; (6) “MDMA” is shorthand for Maryland Market Area,” which includes Delaware, the District of Columbia, Maryland, and the Virginia and West Virginia portions of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA; (7) Each specification also included 16 indicator variables for educational attainment, 51 for state of residence, and 88 for industry affiliation, signified by a “Yes” for the corresponding table row and column.

Table 3.5. Business Owner Earnings Regressions, Construction and Related Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.432 (14.07)	-0.435 (14.04)	-0.432 (14.07)
Hispanic	-0.159 (6.96)	-0.164 (7.10)	-0.159 (6.96)
Asian/Pacific Islanders	-0.173 (3.53)	-0.175 (3.55)	-0.173 (3.53)
Native American	-0.312 (4.48)	-0.310 (4.38)	-0.312 (4.48)
Two or more races	-0.280 (5.41)	-0.265 (4.99)	-0.280 (5.41)
Nonminority female	-0.459 (22.95)	-0.461 (22.52)	-0.459 (22.95)
Age	0.126 (27.40)	0.126 (27.41)	0.126 (27.40)
Age ²	-0.001 (24.68)	-0.001 (24.69)	-0.001 (24.68)
MDMA	-0.027 (0.30)	-0.031 (0.34)	-0.027 (0.30)
MDMA*African American		0.225 (0.70)	
MDMA *Hispanic		0.197 (1.38)	
MDMA * Asian/Pacific Islanders		0.137 (0.26)	
MDMA * Native American		-0.071 (0.16)	
MDMA *Two or more races		-0.429 (1.71)	
MDMA *Nonminority Female		0.103 (0.84)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	47414	47414	47414
Adj. R ²	.0524	.0524	.0524

Source and Notes: See Table 3.4.

Table 3.6. Business Owner Earnings Regressions, Goods and Services Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.435 (32.15)	-0.434 (31.77)	-0.435 (32.15)
Hispanic	-0.296 (23.87)	-0.297 (23.64)	-0.296 (23.87)
Asian/Pacific Islanders	-0.120 (6.91)	-0.118 (6.77)	-0.120 (6.91)
Native American	-0.401 (9.87)	-0.394 (9.50)	-0.401 (9.87)
Two or more races	-0.412 (16.50)	-0.407 (15.99)	-0.412 (16.50)
Nonminority female	-0.431 (72.86)	-0.433 (71.55)	-0.431 (72.86)
Age	0.181 (76.15)	0.181 (76.16)	0.181 (76.15)
Age ²	-0.002 (66.13)	-0.002 (66.14)	-0.002 (66.13)
MDMA	0.007 (0.11)	-0.007 (0.12)	0.007 (0.11)
MDMA*African American		-0.116 (0.91)	
MDMA *Hispanic		0.033 (0.36)	
MDMA * Asian/Pacific Islanders		-0.114 (0.82)	
MDMA * Native American		-0.318 (1.27)	
MDMA *Two or more races		-0.248 (1.52)	
MDMA *Nonminority Female		0.053 (1.37)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	236951	236951	236951
Adj. R ²	.1134	.1134	.1134

Source and Notes: See Table 3.4.

c. Conclusions

As was the case for wage and salary earners, minority and female entrepreneurs earn substantially and significantly less from their efforts than similarly situated nonminority male entrepreneurs. The situation is, in general, little different in the Maryland market area than in the nation as a whole. These disparities are a symptom of discrimination in commercial markets that directly and adversely affect DBEs. Other things equal, if minorities and women are prevented by discrimination from earning remuneration from their entrepreneurial efforts comparable to

that of similarly situated nonminority males, then capital reinvestment and growth rates may slow, business failure rates may increase, and as demonstrated in the next section, business formation rates may decrease. Combined, these phenomena result in lower DBE availability levels than would be observed in a race- and gender-neutral market area. As this chapter demonstrates, discrimination depresses business owner earnings for women and minority entrepreneurs. Business owner earnings, however, are often directly related to whether an owner has the capital to reinvest (firm size), how long a firm survives (firm age) and how much money a firm takes in (firm revenues). These observations illustrate why firm size, age and revenues are especially inappropriate factors to consider in any sort of “capacity” type analysis.

C. Race and Gender Disparities in Business Formation

As discussed in the two previous sections, discrimination that affects the wages and entrepreneurial earnings of minorities and women will ultimately affect the number of businesses formed by these groups as well. In the final section of this chapter, we turn to the analysis of race and gender disparities in business formation.⁷⁵ We compare self-employment rates by race and gender to determine whether minorities or women are as likely to enter the ranks of entrepreneurs as similarly-situated nonminority males. We find that they are not as likely to do so and that minority and female business formation rates would likely be substantially and significantly higher if markets operated in a race- and gender-neutral manner.

Discrimination in the labor market, symptoms of which are evidenced in Section B.3 above, might cause wage and salary workers to turn to self-employment in hopes of encountering less discrimination from customers and suppliers than from employers and co-workers. Other things equal, and assuming minority and female workers did not believe that discrimination pervaded commercial markets as well, this would lead minority and female business formation rates to be higher than would otherwise be expected.

On the other hand, discrimination in the labor market prevents minorities and women from acquiring the very skills, experience, and positions that are often observed among those who leave the ranks of the wage and salary earners to start their own businesses. Many construction contracting concerns have been formed by individuals who were once employed as foremen for other contractors, fewer by those who were employed instead as laborers. Similarly, discrimination in commercial capital and credit markets, as well as asset and wealth distribution, prevents minorities and women from acquiring the financial credit and capital that are so often prerequisite to starting or expanding a business. Other things being equal, these phenomena would lead minority and female business formation rates to be lower than otherwise would be expected.

Further, discrimination by commercial customers and suppliers against DBEs, symptoms of which are evidenced in Section B.4 above and elsewhere, operates to increase input prices and

⁷⁵ We use the phrases “business formation rates” and “self-employment rates” interchangeably in this Study.

lower output prices for DBEs. This discrimination leads to higher rates of failure for some minority- and women-owned firms, lower rates of profitability and growth for others, and prevents some minorities and women from ever starting businesses at all.⁷⁶ All of these phenomena, other things equal, would contribute directly to relatively lower observed rates of minority and female self-employment.

1. Methods and Data

To see if minorities or nonminority women are as likely to be business owners as are comparable nonminority males, we use a statistical technique known as Probit regression. Probit regression is used to determine the relationship between a categorical variable—one that can be characterized in terms of a “yes” or a “no” response as opposed to a continuous number—and a set of characteristics that are related to the outcome of the categorical variable. Probit regression produces estimates of the extent to which each characteristic is positively or negatively related to the likelihood that the categorical variable will be a yes or no. For example, Probit regression is used by statisticians to estimate the likelihood that an individual participates in the labor force, retires this year, or contracts a particular disease—these are all variables that can be categorized by a response of “yes” (for example, she is in the labor force) or “no” (for example, she is not in the labor force)—and the extent to which certain factors are positively or negatively related to the likelihood (for example, the more education she has, the more likely that she is in the labor force). Probit regression is one of several techniques that can be used to examine qualitative outcomes. Generally, other techniques such as Logit regression yield similar results.⁷⁷ In the present case, Probit regression is used to examine the relationship between the choice to own a business (yes or no) and the other demographic and socioeconomic characteristics in our basic model. The underlying data for this section is once again the 2006–2008 ACS PUMS.

2. Findings: Race and Gender Disparities in Business Formation

As a point of reference for what follows, Tables 3.7 and 3.8 provide a summary of business ownership rates in 2006–2008 by race and gender. A striking feature of both tables is how much higher business ownership rates are for nonminority males than for all other groups.

Table 3.7, for example, shows a 10.08 percentage point difference between the overall self-employment rate of African Americans and nonminority males in the MDMA ($15.05 - 4.97 = 10.08$). As shown in the rightmost column, this 10.08 percentage point gap translates into an African American business formation rate in the MDMA that is 67.0 percent lower than the nonminority male business formation rate (*i.e.*, $(4.97 - 15.05) \div 15.05 \approx -67.0\%$). Large deficits are observed for all minority groups as well as nonminority women, in the Construction and AE-CRS sector, the Goods and Services sector, and the economy as a whole.

⁷⁶ See also the materials cited at fn. 63 *supra*.

⁷⁷ For a detailed discussion, see Maddala (1983). Probit analysis is performed here using the “dprobit” command in the statistical program STATA.

There is little doubt that part of the group differences documented in Tables 3.7 and 3.8 are associated with differences in the distribution of individual characteristics and preferences between minorities, women, and nonminority males. It is well known, for example, that earnings tend to increase with age (*i.e.*, labor market experience). It is also true that the propensity toward self-employment increases with experience.⁷⁸ Since most minority populations in the United States have a lower median age than the nonminority population, we must examine whether the disparities in business ownership evidenced in here are largely—or even entirely—due to differences in the age distribution or other factors such as education, geographic location, or industry preferences of minorities and nonminority women compared to nonminority males.

To do this, the remainder of this section presents a series of regression analyses that test whether large, adverse, and statistically significant race and gender disparities for minorities and women remain when these other factors are held constant. Table 3.9 focuses on the economy as a whole and Tables 3.10 and 3.11 focus on the Construction and AE-CRS sector and the Goods and Services sector, respectively. The numbers shown in each of these tables indicate the percentage point difference between the probability of self-employment for a given race/gender group compared to similarly-situated nonminority males.

Table 3.7. Self-Employment Rates in 2006–2008 for Selected Race and Gender Groups: United States and the Maryland Market Area, All Industries

Race/Gender	U.S. (%)	Maryland Market Area (%)	Percent Difference from Nonminority male (Maryland Market Area)
African American	5.38	4.97	-67.0%
Hispanic	8.65	7.95	-47.2%
Asian and Pacific Islander	10.58	10.28	-31.7%
Native American	8.65	10.82	-28.1%
Two or more races	8.96	7.85	-47.8%
Minority	7.95	7.50	-50.2%
Nonminority female	8.76	9.73	-35.3%
DBE	8.38	9.04	-39.9%
Nonminority male	14.22	15.05	

Source: NERA calculations from the 2006-2008 ACS Public Use Microdata Samples.

⁷⁸ Wainwright (2000), p. 86.

Table 3.8. Self-Employment Rates in 2006–2008 for Selected Race and Gender Groups: United States and the Maryland Market Area, Construction and AE-CRS Sectors and Goods and Services Sectors

Race/Gender	U.S. (%)	Maryland Market Area (%)	Percent Difference from Nonminority male (Maryland Market Area)
<i>Construction and AE-CRS Sectors</i>			
African American	16.61	22.23	-22.4%
Hispanic	14.60	12.27	-57.2%
Asian and Pacific Islander	17.68	13.43	-53.1%
Native American	18.06	14.23	-50.3%
Two or more races	18.93	15.38	-46.3%
Minority	15.40	13.31	-53.6%
Nonminority female	15.34	17.86	-37.7%
DBE	15.39	14.93	-47.9%
Nonminority male	26.17	28.66	
<i>Goods and Services Sectors</i>			
African American	4.81	4.23	-65.5%
Hispanic	7.65	6.94	-43.4%
Asian and Pacific Islander	10.26	10.14	-17.3%
Native American	7.37	10.18	-17.0%
Two or more races	8.01	7.00	-42.9%
Minority	7.17	6.63	-45.9%
Nonminority female	8.56	9.46	-22.8%
DBE	7.93	8.65	-29.4%
Nonminority male	11.99	12.26	

Source: NERA calculations from the 2006-2008 ACS Public Use Microdata Samples.

a. Specification (1) - the Basic Model

Specification (1) in Table 3.9 shows large, adverse, and statistically significant business formation disparities for African Americans, Hispanics, Asians, Native Americans, persons reporting multiple races, and nonminority women consistent with the presence of discrimination in these markets. Specification (1) in Tables 3.10 and 3.11 shows large, negative, and statistically significant business formation disparities for every group in the Construction and AE-CRS sectors as well as in the Goods and Services sectors.

b. Specifications (2) and (3) - the Full Model Including MDMA-Specific Interaction Terms

Very few of the MDMA interaction terms included in Specification (2) were significant. The final results are in Specification (3) for Tables 3.9-3.11.

To summarize for the economy-wide results (Table 3.9):

- For African Americans, business formation rates are 4.2 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Hispanics, business formation rates are 4.3 percentage points lower than what would be expected in a race- and gender-neutral market area.⁷⁹
- For Asians, business formation rates are 1.8 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Native Americans, business formation rates are 2.7 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For nonminority women, business formation rates are 2.8 percentage points lower than what would be expected in a race- and gender-neutral market area.

To summarize for the Construction and AE-CRS sector results (Table 3.10):

- For African Americans, business formation rates are 9.2 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Hispanics, business formation rates are 11.7 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Asians, business formation rates are 6.2 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Native Americans, business formation rates are 7.9 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For nonminority women, business formation rates are 9.6 percentage points lower than what would be expected in a race- and gender-neutral market area.

To summarize for the Goods and Services sector results (Table 3.11):

- For African Americans, business formation rates are 5.3 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Hispanics, business formation rates are 4.2 percentage points lower than what would be expected in a race- and gender-neutral market area.

⁷⁹ Recall that the net business formation rate is equal to the value of the direct coefficient (on the Hispanic indicator variable in this case) plus the value of the statistically significant coefficient on the MDMA*Hispanic interaction term.

- For Asians, business formation rates are 2.7 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Native Americans, business formation rates are 2.8 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For nonminority women, business formation rates are 2.7 percentage points lower than what would be expected in a race- and gender-neutral market area.

Table 3.9. Business Formation Regressions, All Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.042 (74.39)	-0.042 (73.54)	-0.042 (74.36)
Hispanic	-0.032 (64.73)	-0.032 (63.42)	-0.032 (63.49)
Asian and Pacific Islander	-0.018 (27.05)	-0.018 (26.73)	-0.018 (26.99)
Native American	-0.027 (15.06)	-0.027 (14.96)	-0.027 (15.06)
Two or more races	-0.020 (16.41)	-0.020 (16.05)	-0.020 (16.40)
Nonminority Female	-0.028 (80.34)	-0.028 (79.04)	-0.028 (80.34)
Age	0.010 (115.64)	0.010 (115.63)	0.010 (115.64)
Age ²	-0.000 (80.52)	-0.000 (80.51)	-0.000 (80.51)
MDMA	0.012 (4.27)	0.011 (4.11)	0.012 (4.34)
MDMA*African American		-0.008 (1.52)	
MDMA*Hispanic		-0.011 (3.35)	-0.011 (3.48)
MDMA* Asian/Pacific Islander		-0.004 (0.59)	
MDMA* Native American		0.010 (0.73)	
MDMA*Two or more races		-0.004 (0.51)	
MDMA*Nonminority Female		0.001 (0.69)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (25 categories)	Yes	Yes	Yes
N	2695435	2695435	2695435
Pseudo R ²	.2194	.2195	.2195

Source: NERA calculations from the 2006-2008 ACS Public Use Microdata Samples.

Notes: (1) Universe is all private sector labor force participants between age 16 and 64; observations with imputed values to the dependent variable and all independent variables are excluded; (2) Reported coefficient represents the percentage point probability difference in business ownership rates between a given group and nonminority men, evaluated at the mean business ownership rate for the estimation sample; (3) Number in parentheses is the absolute value of the associated z-statistic. Using a two-tailed test, z-statistics greater than 1.67 (1.99) (2.64) are statistically significant at a 90 (95) (99) percent confidence level; (4) “Other Race” includes persons identifying themselves as belonging in more than one racial category; (5) Geography is defined based on place of residence; (6) “MDMA” is shorthand for Maryland Market Area,” which includes Delaware, the District of Columbia, Maryland, and the Virginia and West Virginia portions of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA.

Table 3.10. Business Formation Regressions, Construction and Related Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.092 (21.59)	-0.092 (21.54)	-0.092 (21.57)
Hispanic	-0.078 (27.90)	-0.076 (27.02)	-0.076 (27.03)
Asian/Pacific Islanders	-0.062 (10.16)	-0.061 (9.97)	-0.062 (10.12)
Native American	-0.079 (8.27)	-0.078 (7.94)	-0.079 (8.27)
Two or more races	-0.041 (5.46)	-0.041 (5.29)	-0.041 (5.45)
Nonminority Female	-0.096 (37.27)	-0.096 (36.50)	-0.096 (37.27)
Age	0.025 (46.81)	0.025 (46.80)	0.025 (46.80)
Age ²	-0.000 (32.55)	-0.000 (32.54)	-0.000 (32.54)
MDMA	0.022 (1.59)	0.023 (1.60)	0.023 (1.65)
MDMA*African American		0.048 (1.12)	
MDMA*Hispanic		-0.040 (2.80)	-0.041 (2.87)
MDMA* Asian/Pacific Islanders		-0.043 (0.77)	
MDMA* Native American		-0.059 (1.05)	
MDMA*Two or more races		-0.013 (0.32)	
MDMA*Nonminority female		0.008 (0.59)	
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (25 categories)	Yes	Yes	Yes
N	259606	259590	259590
Pseudo R ²	.0815	.0815	.0815

Source and Notes: See Table 3.9.

Table 3.11. Business Formation Regressions, Goods and Services Industries, 2006–2008

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.053 (78.16)	-0.053 (77.29)	-0.053 (78.17)
Hispanic	-0.030 (46.85)	-0.030 (45.88)	-0.030 (45.90)
Asian and Pacific Islander	-0.027 (33.62)	-0.027 (33.41)	-0.027 (33.61)
Native American	-0.028 (12.03)	-0.029 (12.03)	-0.028 (12.04)
Two or more races	-0.022 (14.61)	-0.022 (14.37)	-0.022 (14.61)
Nonminority Female	-0.027 (68.11)	-0.027 (67.12)	-0.027 (67.20)
Age	0.010 (92.13)	0.010 (92.12)	0.010 (92.13)
Age ²	-0.000 (61.64)	-0.000 (61.63)	-0.000 (61.63)
MDMA	0.007 (2.23)	0.005 (1.65)	0.005 (1.63)
MDMA*African American		-0.009 (1.45)	
MDMA*Hispanic		-0.012 (2.83)	-0.012 (2.83)
MDMA* Asian/Pacific Islander		0.005 (0.64)	
MDMA* Native American		0.018 (1.01)	
MDMA*Two or more races		-0.001 (0.12)	
MDMA*Nonminority female		0.004 (2.21)	0.005 (2.34)
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (25 categories)	Yes	Yes	Yes
N	2504250	2504250	2504250
Pseudo R ²	.0663	.0665	.0665

Source and Notes: See Table 3.9.

c. Conclusions

This section has demonstrated that observed DBE availability levels in the Maryland market area are substantially and statistically significantly lower in every case examined than those that would be expected to be observed if commercial markets operated in a race- and gender-neutral manner. Minorities and women are substantially and significantly less likely to own their own businesses than would be expected based upon their observable characteristics including age,

education, geographic location, industry, and trends over time. As demonstrated in previous sections, these groups also suffer substantial and significant earnings disadvantages relative to comparable nonminority males whether they work as employees or as entrepreneurs. These findings are consistent with results expected to be observed in a discriminatory market area.

D. Expected Business Formation Rates—Implications for Current DBE Availability⁸⁰

In Table 3.12, the Probit regression results from Tables 3.9, 3.10, and 3.11 for the overall Maryland market area economy, Construction and AE-CRS sector, and Goods and Services sector, respectively, are combined with weighted average self-employment rates by race and gender from the 2006–2008 ACS PUMS (Tables 3.7 and 3.8) to determine the disparity between baseline availability and expected availability in a race- and gender-neutral market area. These figures appear in column (3) of each panel in Table 3.12.

The business formation rate in the MDMA for minorities and women in the Construction and AE-CRS sector is 14.93 percent (*see* middle panel of Table 3.12, last row). According to the regression specification underlying Table 3.10, however, that rate would be 23.90 percent, or 60.1 percent higher, in a race- and gender-neutral market area. Put differently, the disparity index of the actual business formation rate to the expected business formation rate is 62.47. Disparity indices are adverse and statistically significant for all groups examined.

In Construction and AE-CRS, the largest disparities observed are for Hispanics (51.19) and for minorities as a group (55.18), followed in descending order by Native Americans (64.30), nonminority females (65.04), Asians (68.42), African Americans (70.73), and persons reporting two or more races (78.95). As previously indicated, for DBEs as a group in the MDMA Construction and AE-CRS sectors, the disparity index is 62.47.

In the Goods and Services sector, the largest disparity observed is for African Americans (44.39), followed by Hispanics (62.30), minorities as a group (65.51), persons reporting two or more races (76.09), Native Americans (78.43), Asians (78.97), and nonminority women (81.13). For DBEs as a group in the MDMA Goods and Services sectors, the disparity index is 74.57.

Given the large disparities observed throughout Table 3.12, goal-setters might consider adjusting baseline estimates of DBE availability upward to account for the continuing effects of discrimination. The business formation rate disparities documented in Table 3.12 can be combined with the estimates of current DBE availability documented in Tables 2.23 and 2.24, to provide estimates of expected availability. These estimates appear below in Table 5.21. In every single instance in the Maryland market area, expected DBE availability exceeds current DBE availability.

⁸⁰ This exercise also addresses the requirements of 49 CFR 26.45 (“Step 2”) for the USDOT DBE Program.

Table 3.12. Actual and Potential Business Formation Rates in the Maryland Market Area

Race/Gender	Business Formation Rate (%)	Expected Business Formation Rate (%)	Disparity Index
<i>All Industries</i>	(1)	(2)	(3)
African American	4.97	9.17	54.20
Hispanic	7.95	12.25	64.90
Asian and Pacific Islander	10.28	12.08	85.10
Native American	10.82	13.52	80.03
Two or more races	7.85	9.85	79.70
Minority	7.50	11.64	64.43
Nonminority female	9.73	12.53	77.65
DBE	9.04	12.45	72.61
<i>Construction and AE-CRS Sectors</i>	(1)	(2)	(3)
African American	22.23	31.43	70.73
Hispanic	12.27	23.97	51.19
Asian and Pacific Islander	13.43	19.63	68.42
Native American	14.23	22.13	64.30
Two or more races	15.38	19.48	78.95
Minority	13.31	24.12	55.18
Nonminority female	17.86	27.46	65.04
DBE	14.93	23.90	62.47
<i>Goods and Services Sectors</i>	(1)	(2)	(3)
African American	4.23	9.53	44.39
Hispanic	6.94	11.14	62.30
Asian and Pacific Islander	10.14	12.84	78.97
Native American	10.18	12.98	78.43
Two or more races	7.00	9.20	76.09
Minority	6.63	10.12	65.51
Nonminority female	9.46	11.66	81.13
DBE	8.65	11.60	74.57

Source: 2006–2008 ACS Public Use Microdata Sample. See Tables 3.9–3.11. Minority and DBE results from similar regression analyses, not reported here.

Notes: Figures in column (1) are average self-employment rates weighted using ACS population-based person weights. Figures in column (2), top, middle, and bottom panels, are derived by combining the figure in column (1) with the corresponding result from the regression reported in Table 3.9, 3.10, or 3.11, respectively. Minority and DBE figures were derived from similar regression analyses, not reported separately. Column (3) is the figure in column (1) divided by the figure in column (2), with the result multiplied by 100.

E. Evidence from the Survey of Business Owners

As a final check on the statistical findings in this Chapter, we present evidence from a Census Bureau data collection effort dedicated to M/W/DBEs. The Census Bureau's *Survey of Business Owners and Self-Employed Persons* (SBO) collects and disseminates data on the number, sales, employment, and payrolls of businesses owned by women and members of racial and ethnic

minority groups. This survey has been conducted every five years since 1972 as part of the *Economic Census* program. Data from the 2007 SBO, the most recent, were released in 2011.

The SBO estimates are created by matching data collected from income tax returns by the Internal Revenue Service with Social Security Administration data on race and ethnicity, and supplementing this information using statistical sampling methods. The unique field for conducting this matching is the Social Security Number (SSN) or the Employer Identification Number (EIN), as reported on the tax return.⁸¹

The SBO covers women and five groups of minorities: (1) African Americans, (2) Hispanics, (3) Asians, (4) Native Hawaiians and Pacific Islanders, and (5) American Indians and Alaskan Natives. The 2007 SBO also includes comparative information for nonminority male-owned firms.⁸²

The SBO provides aggregate estimates of the number of minority-owned and women-owned firms and their annual sales and receipts. The SBO distinguishes employer firms (*i.e.*, firms with one or more paid employees) from nonemployer firms, and for the former also includes estimates of aggregate annual employment and payroll.

Compared to the ACS PUMS, the SBO is more limited in the scope of industrial and geographic detail it provides. Nonetheless, it contains a wealth of information on the character of minority and female business enterprise in the U.S as a whole as well as in the State of Maryland.⁸³ In the remainder of this section, we present SBO statistics for the United States as a whole and in Maryland and calculate disparity indices from them. We find that results in the SBO regarding disparities are consistent with our findings above using the ACS PUMS.

Tables 3.13 and 3.14 contain data for all industries combined. Table 3.13 is for the U.S. as a whole, Table 3.14 is for the State of Maryland. Panel A in these two tables summarizes the SBO results for each race and/or gender grouping. For example, Panel A of Table 3.13 shows a total of 26.29 million firms in the U.S. in 2007 (column 1) with overall sales and receipts of \$10.949 trillion (column 2). Of these 26.29 million firms, 5.19 million had one or more employees (column 3) and these 5.19 million firms had overall sales and receipts of \$10.015 trillion (column 4). Column (5) shows a total of 56.63 million employees on the payroll of these 5.19 million firms and a total annual payroll expense of \$1.941 trillion (column 6).

⁸¹ Prior to 2002, “C” corporations were not included in the SMWOBE universe due to technical difficulties. This has been rectified in the 2002 SBO. For more information, consult the discussion of SBO survey methodology at <http://www.census.gov/econ/sbo/>.

⁸² In the ACS PUMS data, discussed above, the unit of analysis is the business owner, or self-employed person. In the SBO data the unit of analysis is the business rather than the business owner. Furthermore, unlike most other business statistics, including the other components of the *Economic Census*, the unit of analysis in the SBO is the firm, rather than the establishment.

⁸³ It is, in general, not possible with the SBO dataset to examine geographic divisions below the state level.

The remaining rows in Panel A provide comparable statistics for nonminority male-owned, women-owned, and minority-owned firms. For example, Table 3.13 shows that there were 1.9 million African American-owned firms counted in the SBO, and that these 1.9 million firms registered \$135.7 billion in sales and receipts. It also shows that 106,566 of these African American-owned firms had one or more employees, and that they employed a total of 909,552 workers with an annual payroll total of \$23.33 billion.

Panel A of Table 3.14 provides comparable information for Maryland. The SBO counted 509,273 firms in Maryland, of which 207,553 were nonminority male-owned; 172,083 were female-owned; 102,173 were African American-owned; 25,774 were Hispanic-owned; 35,881 were Asian-owned; 3,301 were Native American-owned; and 294 were Native Hawaiian- or Pacific Islander-owned.

Panel B in each Table converts the figures in Panel A to percentage distributions within each column. For example, Column (1) in Panel B of Table 3.14 shows that nonminority male-owned firms were 40.75 percent of all firms in Maryland, female-owned firms were 33.79 percent, and African American-owned firms were 20.06 percent. Additionally, 5.06 percent of firms were Hispanic-owned, 7.05 percent were Asian-owned, 0.65 percent were Native American-owned, and 0.06 percent were Native Hawaiian- or Pacific Islander-owned.

Column (2) in Panel B provides the same percentage distribution for overall sales and receipts. Table 3.14, for example, shows that although nonminority male-owned firms were 40.75 percent of all firms, they accounted for 73.18 percent of all sales and receipts. African American-owned firms, in contrast, were 20.06 percent of all firms in Maryland, but they accounted for only 3.44 percent of all sales and receipts. Hispanic-owned firms were 5.06 percent of all firms, but they accounted for only 2.19 percent of all sales and receipts. Asian-owned firms were 7.05 percent of all firms, but they accounted for only 5.75 percent of all sales and receipts. Native American-owned firms were 0.65 percent of all firms, but they accounted for only 0.17 percent of all sales and receipts. Native Hawaiian- or Pacific Islander-owned firms were 0.06 percent of all firms, but they accounted for only 0.04 percent of all sales and receipts. Similarly, women accounted for 33.79 percent of all firms in Maryland, but earned only 11.30 percent of sales and receipts.

Similar results are obtained when the survey results are restricted to firms with one or more paid employees. Column (3) in Table 3.14, for example, shows that although nonminority male-owned firms were 56.70 percent of all employer firms, they accounted for 75.15 percent of all employer firm sales and receipts. African American-owned firms, in contrast, were 5.43 percent of all employer firms, but they accounted for only 2.58 percent of all employer firm sales and receipts. Hispanic-owned firms were 3.32 percent of all employer firms, but they accounted for only 1.91 percent of all employer firm sales and receipts. Asian-owned firms were 9.85 percent of all employer firms, but they accounted for only 5.70 percent of all employer firm sales and receipts. Native American-owned firms were 0.33 percent of all employer firms but accounted for only 0.13 percent of all sales and receipts. Native Hawaiian- or Pacific Islander-owned employer firms were 0.04 percent of all employer firms and accounted for 0.05 percent of all sales and receipts. Finally, women accounted for 18.84 percent of all employer firms in Maryland, but earned only 10.23 percent of all employer firm sales and receipts.

Adverse disparities between the fraction of firms that are minority- or women-owned and their fraction of sales and receipts in Maryland are observed not only for African Americans, Hispanics, Asians, Native Americans, Native Hawaiians and Pacific Islanders, and women, both for employer firms and nonemployer firms. The disparity indices are presented in Panel C of each table. Disparity indices of approximately 80 percent or less indicate disparate impact consistent with business discrimination (0 percent being complete disparity and 100 percent being full parity). In Maryland (Table 3.14), the sales and receipts disparity indices (in columns 2 and 4) fall at or beneath the 80 percent threshold in 10 out of 12 cases. All of these disparity indices are statistically significant within a 95 percent confidence interval.

Table 3.13. Disparity Ratios from the 2007 Survey of Business Owners, United States, All Industries

	Number of Firms	Sales and Receipts (\$000s)	Employer Firms	Sales and Receipts (\$000s)	Employees	Payroll (\$000s)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Levels						
All Firms	26,294,860	10,949,461,874	5,189,968	10,015,142,962	56,626,554	1,940,572,944
Nonminority Male	10,943,636	7,725,275,376	2,753,871	7,255,760,511	37,138,139	1,386,782,737
Female	7,792,115	1,196,608,004	909,661	1,014,366,348	7,520,121	214,673,400
African American	1,921,864	135,739,834	106,566	97,144,898	909,552	23,334,792
Hispanic	2,260,269	350,661,243	248,852	279,920,707	1,908,161	54,295,508
Asian	1,549,559	506,047,751	397,426	453,574,194	2,807,771	79,230,459
Native Hawaiian/Pac. Islander	37,687	6,319,357	4,151	5,250,301	37,801	1,217,138
Am. Indian & Alaska Native	236,691	34,353,842	23,662	27,494,075	185,037	5,930,247
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	41.62%	70.55%	53.06%	72.45%	65.58%	71.46%
Female	29.63%	10.93%	17.53%	10.13%	13.28%	11.06%
African American	7.31%	1.24%	2.05%	0.97%	1.61%	1.20%
Hispanic	8.60%	3.20%	4.79%	2.79%	3.37%	2.80%
Asian	5.89%	4.62%	7.66%	4.53%	4.96%	4.08%
Native Hawaiian/Pac. Islander	0.14%	0.06%	0.08%	0.05%	0.07%	0.06%
Am. Indian & Alaska Native	0.90%	0.31%	0.46%	0.27%	0.33%	0.31%
Panel C. Disparity Ratios		(2) vs. (1)		(4) vs. (3)		(5) vs. (3)
Nonminority Male		169.52		136.54	123.60	134.68
Female		36.88		57.79	75.77	63.12
African American		16.96		47.24	78.23	58.56
Hispanic		37.26		58.29	70.28	58.35
Asian		78.43		59.14	64.75	53.32
Native Hawaiian/Pac. Islander		40.27		65.54	83.46	78.42
Am. Indian & Alaska Native		34.86		60.21	71.67	67.03

Source: NERA calculations using 2007 SBO. Notes: (A) Figures are rounded. Rounding was performed subsequent to any mathematical calculations. (B) Excludes publicly-owned, foreign-owned, and not-for-profit firms. (C) "n/a" indicates that data were not disclosed due to confidentiality or other publication restrictions.

Table 3.14. Disparity Ratios from the 2007 Survey of Business Owners, State of Maryland, All Industries

	Number of Firms	Sales and Receipts (\$000s)	Employer Firms	Sales and Receipts (\$000s)	Employees	Payroll (\$000s)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Levels						
All Firms	509,273	196,805,267	96,608	179,585,580	1,059,179	40,916,996
Nonminority Male	207,553	144,019,911	54,779	134,961,409	700,313	29,025,607
Female	172,083	22,231,876	18,202	18,379,402	164,894	5,447,955
African American	102,173	6,767,579	5,246	4,640,166	45,664	1,527,820
Hispanic	25,774	4,310,496	3,206	3,422,148	25,019	986,306
Asian	35,881	11,320,071	9,515	10,241,217	71,408	2,266,355
Native Hawaiian/Pac. Islander	294	88,073	39	86,124	679	35,465
Am. Indian & Alaska Native	3,301	324,997	318	239,231	1,971	79,595
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	40.75%	73.18%	56.70%	75.15%	66.12%	70.94%
Female	33.79%	11.30%	18.84%	10.23%	15.57%	13.31%
African American	20.06%	3.44%	5.43%	2.58%	4.31%	3.73%
Hispanic	5.06%	2.19%	3.32%	1.91%	2.36%	2.41%
Asian	7.05%	5.75%	9.85%	5.70%	6.74%	5.54%
Native Hawaiian/Pac. Islander	0.06%	0.04%	0.04%	0.05%	0.06%	0.09%
Am. Indian & Alaska Native	0.65%	0.17%	0.33%	0.13%	0.19%	0.19%
Panel C. Disparity Ratios						
		(2) vs. (1)		(4) vs. (3)	(5) vs. (3)	(6) vs. (3)
Nonminority Male		179.56		132.54	116.61	125.11
Female		33.43		54.32	82.63	70.67
African American		17.14		47.58	79.39	68.76
Hispanic		43.28		57.42	71.18	72.64
Asian		81.64		57.90	68.45	56.24
Native Hawaiian/Pac. Islander		77.52		118.80	158.80	214.71
Am. Indian & Alaska Native		25.48		40.47	56.53	59.10

Source and Notes: See Table 3.13.

Table 3.15 shows comparable SBO data for the Construction and AE-CRS sector in the U.S. as a whole. Here, adverse disparities are evident for African Americans, Hispanics, Asians, Native Americans, Native Hawaiians and Pacific Islanders, and women.⁸⁴ For example, although African Americans account for 4.10 percent of all firms in the Construction and AE-CRS sector, they earn only 1.15 percent of all sales and receipts in that sector. Hispanics account for 7.44 percent of firms but only 3.52 percent of sales and receipts. For Asians, the figures are 4.02 percent and 2.71 percent, respectively. For Native Americans, the figures are 0.87 percent and 0.49 percent, respectively. For Native Hawaiians and Pacific Islanders, the figures are 0.12 percent and 0.10 percent, respectively. Finally, women account for 19.31 percent of all Construction and AE-CRS firms but earned only 9.08 percent of all sales and receipts.

⁸⁴ The sole exception being Native Hawaiian and Pacific Islander-owned employer firms.

Among firms with paid employees, adverse disparities are observed for African Americans, Hispanics, Asians, Native Americans, and women. Overall, disparities in this category are slightly less acute than among firms as a whole. However, they remain far larger than the comparable figure for nonminority male-owned firms. This is evident in that the fraction of employer firms compared to the fraction of all firms is far higher among nonminority males than among other race and gender groups. In Table 3.15, for example, nonminority males represent 54.37 percent of all firms but 62.74 percent of employer firms. For all other groups, the direction of this ratio is reversed. That is, each group's fraction among employer firms is substantially smaller than its fraction among firms as a whole, whereas for nonminority males it is larger.

Table 3.15. Disparity Ratios from the 2007 Survey of Business Owners, United States, Construction and AE-CRS

	Number of Firms	Sales and Receipts (\$000s)	Employer Firms	Sales and Receipts (\$000s)	Employees	Payroll (\$000s)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Levels						
All Firms	7,069,005	2,247,219,546	1,473,633	1,968,365,597	10,803,954	515,161,851
Nonminority Male	3,843,180	1,649,355,770	924,548	1,483,625,570	7,664,496	381,436,430
Female	1,365,249	203,964,647	196,614	165,319,338	1,124,710	49,343,438
African American	289,579	25,787,994	22,521	18,937,276	135,685	5,647,555
Hispanic	526,190	79,164,324	63,055	58,649,224	390,113	15,224,090
Asian	284,427	61,003,128	48,732	51,923,279	303,058	17,195,039
Native Hawaiian/Pac. Islander	8,610	2,161,094	1,311	1,853,781	9,923	509,611
Am. Indian & Alaska Native	61,579	11,032,792	8,047	8,831,344	51,974	2,228,594
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	54.37%	73.40%	62.74%	75.37%	70.94%	74.04%
Female	19.31%	9.08%	13.34%	8.40%	10.41%	9.58%
African American	4.10%	1.15%	1.53%	0.96%	1.26%	1.10%
Hispanic	7.44%	3.52%	4.28%	2.98%	3.61%	2.96%
Asian	4.02%	2.71%	3.31%	2.64%	2.81%	3.34%
Native Hawaiian/Pac. Islander	0.12%	0.10%	0.09%	0.09%	0.09%	0.10%
Am. Indian & Alaska Native	0.87%	0.49%	0.55%	0.45%	0.48%	0.43%
Panel C. Disparity Ratios						
		(2) vs. (1)		(4) vs. (3)	(5) vs. (3)	(6) vs. (3)
Nonminority Male		135.00		120.14	113.07	118.02
Female		47.00		62.95	78.02	71.79
African American		28.01		62.95	82.18	71.73
Hispanic		47.33		69.63	84.39	69.06
Asian		67.47		79.77	84.82	100.93
Native Hawaiian/Pac. Islander		78.96		105.86	103.24	111.19
Am. Indian & Alaska Native		56.36		82.16	88.10	79.22

Source and Notes: See Table 3.13.

Table 3.16 shows comparable results for the Construction and AE-CRS sector in Maryland. Among all firms in Construction and AE-CRS, adverse disparities are observed for African Americans, Hispanics, Asians, Native Americans, and women. Among firms with paid employees, adverse disparities are observed for African Americans, Hispanics, Native Americans, and women. As in Table 3.15, nonminority males have a much higher ratio of employer firms to firms as a whole than do minorities or women. In the Maryland Construction and AE-CRS sector, the sales and receipts disparity indices fall at or beneath the 80 percent threshold in 7 out of 12 cases. All of these disparity indices are statistically significant within a 95 percent confidence interval.

Table 3.16. Disparity Ratios from the 2007 Survey of Business Owners, State of Maryland, Construction and AE-CRS

	Number of Firms	Sales and Receipts (\$000s)	Employer Firms	Sales and Receipts (\$000s)	Employees	Payroll (\$000s)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Levels						
All Firms	145,681	54,764,219	32,091	49,317,726	274,097	14,685,323
Nonminority Male	71,374	38,909,428	19,920	35,823,055	185,623	10,256,798
Female	34,535	6,136,059	5,248	5,185,395	33,742	1,693,086
African American	18,191	2,486,853	1,612	2,033,814	13,791	722,193
Hispanic	9,573	1,969,781	1,335	1,551,985	9,745	495,993
Asian	7,801	2,631,364	1,440	2,380,769	13,360	862,506
Native Hawaiian/Pac. Islander	120	85,920	31	85,170	664	34,899
Am. Indian & Alaska Native	797	178,815	133	144,293	899	50,628
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	48.99%	71.05%	62.07%	72.64%	67.72%	69.84%
Female	23.71%	11.20%	16.35%	10.51%	12.31%	11.53%
African American	12.49%	4.54%	5.02%	4.12%	5.03%	4.92%
Hispanic	6.57%	3.60%	4.16%	3.15%	3.56%	3.38%
Asian	5.35%	4.80%	4.49%	4.83%	4.87%	5.87%
Native Hawaiian/Pac. Islander	0.08%	0.16%	0.10%	0.17%	0.24%	0.24%
Am. Indian & Alaska Native	0.55%	0.33%	0.41%	0.29%	0.33%	0.34%
Panel C. Disparity Ratios		(2) vs. (1)		(4) vs. (3)		(5) vs. (3)
Nonminority Male		145.02		117.02	109.10	112.52
Female		47.26		64.29	75.28	70.50
African American		36.37		82.10	100.16	97.90
Hispanic		54.74		75.65	85.46	81.19
Asian		89.73		107.58	108.62	130.89
Native Hawaiian/Pac. Islander		190.47		178.77	250.78	246.01
Am. Indian & Alaska Native		59.68		70.59	79.14	83.18

Source and Notes: See Table 3.13.

Table 3.17 shows comparable SBO data for the Goods and Services sector in the U.S. as a whole. Here, adverse disparities are evident for African Americans, Hispanics, Asians, Native Americans, Native Hawaiians and Pacific Islanders, and women. African Americans, for example, account for 8.49 percent of all firms in the Goods and Services sector, they earned only 1.26 percent of all sales and receipts in that sector. Hispanics account for 9.02 percent of firms but only 3.12 percent of sales and receipts. For Asians, the figures are 6.58 percent and 5.11 percent, respectively. For Native Americans, the figures are 0.91 percent and 0.27 percent, respectively. For Native Hawaiians and Pacific Islanders, the figures are 0.15 percent and 0.05 percent, respectively. Finally, women account for 33.43 percent of all Goods and Services firms but earned only 11.41 percent of all sales and receipts. Comparable, though slightly smaller, disparities are observed as well among firms with paid employees in the Goods and Services sector.

Table 3.17. Disparity Ratios from the 2007 Survey of Business Owners, United States, Goods and Services

	Number of Firms	Sales and Receipts (\$000s)	Employer Firms	Sales and Receipts (\$000s)	Employees	Payroll (\$000s)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Levels						
All Firms	19,225,855	8,702,242,328	3,716,335	8,046,777,365	45,822,600	1,425,411,093
Nonminority Male	7,100,456	6,075,919,606	1,829,323	5,772,134,941	29,473,643	1,005,346,307
Female	6,426,866	992,643,357	713,047	849,047,010	6,395,411	165,329,962
African American	1,632,285	109,951,840	84,045	78,207,622	773,867	17,687,237
Hispanic	1,734,079	271,496,919	185,797	221,271,483	1,518,048	39,071,418
Asian	1,265,132	445,044,623	348,694	401,650,915	2,504,713	62,035,420
Native Hawaiian/Pac. Islander	29,077	4,158,263	2,840	3,396,520	27,878	707,527
Am. Indian & Alaska Native	175,112	23,321,050	15,615	18,662,731	133,063	3,701,653
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	36.93%	69.82%	49.22%	71.73%	64.32%	70.53%
Female	33.43%	11.41%	19.19%	10.55%	13.96%	11.60%
African American	8.49%	1.26%	2.26%	0.97%	1.69%	1.24%
Hispanic	9.02%	3.12%	5.00%	2.75%	3.31%	2.74%
Asian	6.58%	5.11%	9.38%	4.99%	5.47%	4.35%
Native Hawaiian/Pac. Islander	0.15%	0.05%	0.08%	0.04%	0.06%	0.05%
Am. Indian & Alaska Native	0.91%	0.27%	0.42%	0.23%	0.29%	0.26%
Panel C. Disparity Ratios						
		(2) vs. (1)		(4) vs. (3)	(5) vs. (3)	(6) vs. (3)
Nonminority Male		189.05		145.73	130.67	143.28
Female		34.12		54.99	72.74	60.45
African American		14.88		42.98	74.68	54.87
Hispanic		34.59		55.00	66.26	54.83
Asian		77.72		53.20	58.26	46.38
Native Hawaiian/Pac. Islander		31.59		55.23	79.61	64.95
Am. Indian & Alaska Native		29.42		55.20	69.11	61.81

Source and Notes: See Table 3.13.

Finally, Table 3.18 shows comparable results for the Goods and Services sector in Maryland. Among all firms in Goods and Services, adverse disparities are observed for African Americans, Hispanics, Asians, Native Americans, Native Hawaiians and Pacific Islanders and women. Among firms with paid employees, adverse disparities are observed for African Americans, Hispanics, Asians, Native Americans, Native Hawaiians and Pacific Islanders, and women. As in Table 3.17, nonminority males have a much higher ratio of employer firms to firms as a whole than do minorities or women. In the Maryland Goods and Services sector, the sales and receipts disparity indices fall at or beneath the 80 percent threshold in 12 out of 12 cases. All of these disparity indices are statistically significant within a 95 percent confidence interval.

Table 3.18. Disparity Ratios from the 2007 Survey of Business Owners, State of Maryland, Goods and Services

	Number of Firms	Sales and Receipts (\$000s)	Employer Firms	Sales and Receipts (\$000s)	Employees	Payroll (\$000s)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Levels						
All Firms	363,592	142,041,048	64,517	130,267,854	785,082	26,231,673
Nonminority Male	136,179	105,110,483	34,859	99,138,354	514,690	18,768,809
Female	137,548	16,095,817	12,954	13,194,007	131,152	3,754,869
African American	83,982	4,280,726	3,634	2,606,352	31,873	805,627
Hispanic	16,201	2,340,715	1,871	1,870,163	15,274	490,313
Asian	28,080	8,688,707	8,075	7,860,448	58,048	1,403,849
Native Hawaiian/Pac. Islander	174	2,153	8	954	15	566
Am. Indian & Alaska Native	2,504	146,182	185	94,938	1,072	28,967
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	37.45%	74.00%	54.03%	76.10%	65.56%	71.55%
Female	37.83%	11.33%	20.08%	10.13%	16.71%	14.31%
African American	23.10%	3.01%	5.63%	2.00%	4.06%	3.07%
Hispanic	4.46%	1.65%	2.90%	1.44%	1.95%	1.87%
Asian	7.72%	6.12%	12.52%	6.03%	7.39%	5.35%
Native Hawaiian/Pac. Islander	0.05%	0.00%	0.01%	0.00%	0.00%	0.00%
Am. Indian & Alaska Native	0.69%	0.10%	0.29%	0.07%	0.14%	0.11%
Panel C. Disparity Ratios						
		(2) vs. (1)		(4) vs. (3)	(5) vs. (3)	(6) vs. (3)
Nonminority Male		197.58		140.85	121.34	132.42
Female		29.95		50.44	83.20	71.29
African American		13.05		35.52	72.08	54.53
Hispanic		36.98		49.50	67.09	64.45
Asian		79.21		48.21	59.08	42.76
Native Hawaiian/Pac. Islander		3.17		5.91	15.41	17.40
Am. Indian & Alaska Native		14.94		25.42	47.62	38.51

Source and Notes: See Table 3.13.

IV. Statistical Disparities in Capital Markets

A. Introduction

Discrimination occurs whenever the terms of a transaction are affected by personal characteristics of the participants that are not relevant to the transaction. Among such characteristics, the most commonly considered are race, ethnicity and gender. In labor markets, this might translate into equally productive workers in similar jobs being paid different salaries because of their race, ethnicity or gender. In credit markets, it might translate into loan approvals differing across racial or gender groups with otherwise similar financial backgrounds.

In this Chapter, we examine whether there is evidence consistent with the presence of discrimination in the small business credit market against minority-owned or women-owned small businesses. Discrimination in the credit market against such businesses can have an important effect on the likelihood that they will succeed. Moreover, discrimination in the credit market might even prevent businesses from opening in the first place, might negatively impact the size a firm could obtain, and/or shorten its longevity in the market.⁸⁵

In our analysis, we use data from the Federal Reserve Board to examine the existence or otherwise of discrimination in the small business credit market for 1993, 1998 and 2003. These surveys are based on a large representative sample of firms with fewer than 500 employees and are administered by the Federal Reserve Board and the U.S. Small Business Administration. The 1993 and 1998 surveys deliberately oversampled minority-owned firms but the 2003 survey did not.⁸⁶ Because of the cancellation of these surveys by the Federal Reserve Board in 2008, these data remain the best and most current available data sources for this topic.⁸⁷

These data provide qualitative and quantitative evidence consistent with the presence of discrimination against minorities in the credit market for small businesses. For example, we find that African American-owned firms are much more likely to report being seriously concerned with credit market problems and report being less likely to apply for credit because they fear the loan would be denied. Moreover, after controlling for a large number of characteristics of the firms, we find that African American-owned firms, Hispanic-owned firms, and to a lesser extent other minority-owned firms are substantially and statistically significantly more likely to be

⁸⁵ Again, as noted in Chapter V, these factors also illustrate why, in a disparity study intended to answer the question of whether discrimination is present in business, adjusting availability for “capacity” factors such as firm age, firm size or firm revenues, is not a legitimate practice when there is evidence that suggests that these factors themselves are tainted by discrimination. To do so would be to inappropriately introduce one or more endogenous variables into the analysis.

⁸⁶ The 2003 survey took other steps, however, to increase the likelihood that minority-owned and women-owned firms were captured in the sampling frame. For more details, *see* NORC (2005), p. 11.

⁸⁷ *See* fn. 128 for additional information. As described later in this chapter, we also employ a smaller dataset built from comparable surveys performed by NERA between 1999-2007 as well summarize findings from a more limited dataset covering the 2007-2010 period.

denied credit than are nonminority-owned firms. We find some evidence that women are discriminated against in this market as well. The principal results are as follows:

- Minority-owned firms were more likely to report that they did not apply for a loan over the preceding three years because they feared the loan would be denied.
- When minority-owned firms applied for a loan their loan requests were substantially more likely to be denied than non-minorities, even after accounting for differences like firm size and credit history.
- When minority-owned firms *did* receive a loan they were obligated to pay higher interest rates on the loans than comparable nonminority-owned firms.
- A larger proportion of minority-owned firms than nonminority-owned firms report that credit market conditions are a serious concern.
- A larger share of minority-owned firms than nonminority-owned firms believes that the availability of credit is the most important issue likely to confront them in the upcoming year.
- There is no evidence that discrimination in the market for credit is significantly different in the Middle Atlantic census division or in the construction and construction-related professional services industries than it is in the nation or the economy as a whole.
- There is no evidence that the level of discrimination in the market for credit has diminished between 1993 and 2003.

The structure of this Chapter is as follows. First, we outline the main theories of discrimination and discuss how they might be tested. Second, we examine the evidence on the existence of capital/liquidity constraints facing individuals in the mortgage market, households in the non-mortgage loan market, and for small businesses in the commercial credit market. Third, we describe the data files used in the remainder of the Chapter and then examine in more detail problems faced by minority-owned firms in obtaining credit. Fourth, we provide a series of answers to criticisms. Finally, we present our conclusions.

B. Theoretical Framework and Review of the Literature

Most recent economic studies of discrimination draw on the analyses contained in Gary Becker's (1957) *The Economics of Discrimination*. Becker's main contribution was to translate the notion of discrimination into financial terms. Discrimination, in this view, results from the desire of owners, workers, or customers to avoid contact with certain groups. This being the case, transactions with the undesired groups would require more favorable terms than those that occur with a desired group. Assume that the primary objective of a financial institution is to maximize their expected profits. The expected return on a loan will depend on the interest rate charged and the likelihood that a borrower defaults. The financial institution would approve any loan for

which the expected return on the loan exceeded the cost of the funds to the institution. Discrimination would then result in either (a) higher interest rates being charged to undesired groups having otherwise similar characteristics to the desired group or (b) requiring better characteristics (*i.e.*, a lower expected default rate) from the undesired group at any given interest rate. In other words, applicants from the disadvantaged group might either be appraised more rigorously or be given less favorable terms on the loan.

A similar connection between the likelihood of loan approval and the race, ethnicity or gender of the applicant might also be found if lenders employ statistical discrimination—meaning that lenders use personal characteristics such as race, ethnicity or gender to infer the likelihood of default on the loan. If experience has suggested that certain groups of individuals are on average more or less likely to default, then the lender may use this information to economize on the costs of gathering more directly relevant information. Hence, discrimination would not reflect the preferences of the owner but would rather reflect an attempt to minimize costs. Empirically, the racial, ethnic or gender characteristics of the applicant could proxy for unobserved characteristics of their creditworthiness.

There has been an active debate about whether banks discriminate against minority applicants for mortgages. In particular, banks were often accused of “redlining”—that is, not granting loans for properties located in certain areas. To analyze that issue, the Home Mortgage Disclosure Act was passed to require lenders to disclose information on the geographic location of their home mortgage loans. These data, however, were not sufficient to assess whether or not there was discrimination in the market for mortgage loans.

In 1992, researchers at the Federal Reserve Bank of Boston collected additional information from mortgage lenders (Munnell, *et al.*, 1996). In particular, they tried to collect any information that might be deemed economically relevant to whether a loan would be approved. In the raw data, non-minorities had 10 percent of their loans rejected whereas rejection rates were 28 percent for both African Americans and Hispanics. Even after the creditworthiness of the borrowers (including the amount of the debt, debt-to-income ratio, credit history, loan characteristics, etc.) were controlled for, African Americans were still found to be 7 percentage points less likely to be granted the loan. A variety of criticisms have been launched at this study (see, for example, Horne, 1994; Day and Liebowitz, 1998; Harrison, 1998). Responses to these criticisms are found in Browne and Tootell (1995).

In addition to the type of statistical analysis done in the Munnell, *et al.* (1996) study, two other approaches have been used to measure discrimination in mortgage markets. First, Federal Reserve regulators can examine a lending institution’s files to try to identify any cases where a loan rejection looks suspicious. Second, audit studies have been used with paired “identical” applicants. Such studies have also found evidence of discrimination (*c.f.* Cloud and Galster, 1993) although the audit approach is not without its critics (Heckman, 1998).

Another relevant literature is concerned with the severity of liquidity constraints affecting consumers in non-mortgage credit markets. A consumer is said to be liquidity-constrained when lenders refuse to make the household a loan or offer the household less than they wished to

borrow (Ferri and Simon, 1997). Many studies have suggested that roughly twenty percent of U.S. families are liquidity-constrained (*c.f.* Hall and Mishkin, 1982; and Jappelli, 1990). As might be expected, liquidity-constrained households are typically younger, with less wealth and accumulated savings (Hayashi, 1985; and Jappelli, 1990). The research shows minority households to be substantially more likely to be liquidity-constrained even when a variety of financial characteristics of households are controlled for (Jappelli, 1990; and Ferri and Simon, 1997).

We now turn to the more directly relevant evidence on liquidity constraints facing small businesses. Just like individuals and households, businesses can also face liquidity constraints.⁸⁸ Liquidity constraints can be a problem in starting a business as well as in running it. Discrimination in the credit market against minority-owned small businesses can have a devastating effect on the success of such businesses, and even prevent them from opening in the first place. Evidence of the latter effect is provided in the economics literature on self-employment.⁸⁹

In his 2003 report for *Builders Association of Greater Chicago v. the City of Chicago*,⁹⁰ Bates argued that “from its origins, the black-business community has been constrained by limited access to credit, limited opportunities for education and training, and nonminority stereotypes about suitable roles for minorities in society” (Bates, 1989; Bates, 1993; Bates, 1973). Indeed, as Bates points out, Gunnar Myrdal observed,

“The Negro businessman ... encounters greater difficulties than whites in securing credit. This is partly due to the marginal position of Negro business. It is also partly due to prejudicial opinions among whites concerning business ability and personal reliability of Negroes. In either case a vicious circle is in operation keeping Negro business down” (Myrdal, 1944, p. 308).

Bates goes on to argue that commercial banks lend most easily to nonminority males who possess significant amounts of equity capital to invest in their businesses (Bates, 1991a). Apart from banks, an important source of debt capital for small business is likely to be family and

⁸⁸ Evans and Leighton (1989) and Evans and Jovanovic (1989) have argued formally that entrepreneurs face difficulties borrowing money. As in the discussion above, such individuals are labeled liquidity constrained by economists. Using data from the National Longitudinal Survey of Youth from 1966-1981 and the Current Population Surveys from 1968-1987, these authors found that, all else equal, people with greater family assets are more likely to switch to self-employment from employment. Blanchflower and Oswald (1998) studied the probability that an individual reports him or herself as self-employed. Consistent with the existence of capital constraints on potential entrepreneurs, their econometric estimates imply that the probability of being self-employed depends positively upon whether the individual ever received an inheritance or gift. Second, when directly questioned in interview surveys, potential entrepreneurs say that raising capital is their principal problem. Holtz-Eakin, *et al.* (1994a, 1994b) examine flows in and out of self-employment and find that inheritances both raise entry and slow exit. Black, de Meza and Jeffreys (1996) find that housing equity plays an important role in shaping the supply of entrepreneurs. Lindh and Ohlsson (1996) suggest that the probability of being self-employed increases when people receive windfall gains in the form of lottery winnings and inheritances.

⁸⁹ See Chapter III, above.

⁹⁰ 298 F.Supp.2d 725 (N.D. Ill. 2003).

friends, but the low wealth of African American households reduces the availability of debt capital that family and friends could invest in small business operations (Bates, 1993; Bates, 1991b).

Additional evidence indicates that capital constraints for African American-owned businesses are particularly large. For instance, Bates (1989) finds that racial differences in levels of financial capital do have a significant effect upon racial patterns in business failure rates. Fairlie and Meyer (1996) find that racial groups with higher levels of unearned income have higher levels of self-employment. In an important paper Fairlie (1999) uses data from the 1968-1989 Panel Study of Income Dynamics to examine why African American men are one-third as likely to be self-employed as nonminority men. The author finds that the large discrepancy is due to an African American transition rate into self-employment that is approximately one half the nonminority rate and an African American transition rate out of self-employment that is twice the nonminority rate. He finds that capital constraints—measured by interest income and lump-sum cash payments—significantly reduce the flow into self-employment from wage/salary work, with this effect being nearly seven times larger for African American self-employed than for nonminority self-employed persons. Fairlie then attempts to decompose the racial gap in the transition rate into self-employment into a part due to differences in the distributions of individual characteristics and a part due to differences in the processes generating the transitions. He finds that differences in the distributions of characteristics between African Americans and non-minorities explain only a part of the racial gap in the transition rate into self-employment. In addition, racial differences in specific variables, such as levels of assets and the likelihood of having a self-employed father provide important contributions to the gap. He concludes, however, that “the remaining part of the gap is large and is due to racial differences in the coefficients. Unfortunately, we know much less about the causes of these differences. They may be partly caused by lending or consumer discrimination against blacks” (1998, p.14).

There is also research into racial differences in access to credit among small businesses. Cavalluzzo and Cavalluzzo (1998) use data from the 1988-1989 National Survey of Small Business Finances (NSSBF), conducted by the Board of Governors of the Federal Reserve System, to analyze differences in application rates, denial rates, and other outcomes by race, ethnicity and gender in a manner similar to the econometric models reported in this Study. This paper documents that a large discrepancy exists in credit access between non-minorities and minority-owned firms that cannot be explained by a handful of firm characteristics. Unfortunately, the earlier NSSBF data did not over-sample minority-owned firms and included limited information on a firm’s credit history and that of its owner, reducing the ability to provide a powerful test of the causal impact of race, ethnicity or gender on loan decisions. In an unpublished paper, Cole (1998) uses the 1993 NSSBF and estimates models of loan denials similar in nature to those discussed in this Study.

The present analysis takes advantage of the 1993 NSSBF data, the 1998 Survey of Small Business Finances (SSBF) data, and the 2003 SSBF data. All three datasets have better information on creditworthiness than did the earlier NSSBF data, and the 1993 and 1998 surveys have larger sample of minority-owned firms than did the earlier NSSBF data. These datasets are

also used to conduct an extensive set of specification checks designed to weigh the possibility that our results are subject to alternative interpretations.

C. Empirical Framework and Description of the Data

1. Introduction

Disputes about discrimination typically originate in differences in the average outcomes for two groups. To determine whether a difference in the loan denial rate for African American-owned firms compared to nonminority-owned firms is consistent with discrimination, it is necessary to compare African American- and nonminority-owned firms that have similar risks of default, that is, the fraction of the African American firms' loans that would be approved if they had the same creditworthiness as the nonminority-owned firms. A standard approach to this problem is to statistically control for firms' characteristics relevant to the loan decision. If African American-owned firms with the same likelihood of default as nonminority-owned firms are less likely to be approved, then it is appropriate to attribute such a difference to discrimination.

Following Munnell, *et al.* (1996) we estimated the following loan denial equation:

$$(1) \quad \text{Prob}(D_i = 1) = \Phi(\beta_0 + \beta_1 CW_i + \beta_2 X_i + \beta_3 R_i),$$

where D_i represents an indicator variable for loan denial for firm i (that is, 1 if the loan is denied and 0 if accepted), CW represents measures of creditworthiness, X represents other firm characteristics, R represents the race, ethnicity or gender of the firm's ownership, and Φ is the cumulative normal probability distribution.⁹¹ This econometric model can be thought of as a reduced form version of a structural model that incorporates firms' demand for and financial institutions' supply of loan funds as a function of the interest rate and other factors.⁹² Within the framework of this model, a positive estimate of β_3 is consistent with the presence of discrimination.⁹³

⁹¹ Additional discussion of Probit regression appears in Chapter III, Section C.1.

⁹² Maddala and Trost (1994) describe two variants of such a model, one in which the interest rate is exogenous and another in which the interest rate is endogenously determined, but is capped so that some firms' loan applications are approved and others are rejected. If the interest rate is exogenous, they show that a reduced form model which controls for the loan amount, such as we report below, uniquely identifies supply-side differences in the treatment of African American-owned firms. If the interest rate is endogenous, a reduced form approach requires an assumption that the determinants of demand for nonminority and African American-owned firms are identical, other things being equal. The main alternative empirical strategy is to estimate a structural supply and demand model, in which proper identification generally is not feasible. Any characteristic of the borrower that affects his/her expected rate of return on the investment will affect his/her ability to repay and should be taken into consideration by the lender as well. For instance, in their structural model of mortgage decisions, Maddala and Trost (1994) impose questionable exclusion restrictions, like omitting marital status from the loan supply equation.

⁹³ The Equal Credit Opportunity Act prohibits discrimination in access to credit by race and would apply to both Becker-type and statistical discrimination.

2. 1993 NSSBF Data

The 1993 NSSBF data contain substantial information regarding credit availability on a nationally representative target sample of for-profit, non-farm, non-financial business enterprises with fewer than 500 employees. The survey was conducted during 1994 and 1995 for the Board of Governors of the Federal Reserve System and the U.S. Small Business Administration; the data relate to the years 1992 and 1993. The data file used here contains 4,637 firms.⁹⁴ In this NSSBF file, minority-owned firms were over-sampled, but sampling weights are provided to generate nationally representative estimates. Of the firms surveyed, 9.5 percent were owned by African Americans, 6.4 percent were owned by Hispanics, and 7.4 percent were owned by individuals of other races (*i.e.*, Asians, Pacific Islanders, American Indians, and Alaska Natives).⁹⁵

Table 4.1 presents population-weighted sample means from these data for all firms in the sample that applied for credit. The estimates indicate that African American-owned firms are almost 2.5 times more likely to have a loan application rejected as are non-Hispanic White-owned firms (hereafter “nonminority”) (65.9 percent versus 26.9 percent).⁹⁶ Other minority groups are denied at rates higher than non-minorities as well, but the magnitude of the African American/nonminority differential is especially striking.

Minority-owned firms, however, do have characteristics that are different from those of nonminority-owned firms, and such differences may contribute to the gap in loan denial rates. For instance, minority-owned firms were younger, smaller (whether measured in terms of sales or employment), more likely to be located in urban areas, and more likely to have an owner with fewer years of experience than their nonminority counterparts. Minority firms were also less creditworthy, on average, than their nonminority counterparts, as measured by whether (a) the owner had legal judgments against him or her over the previous three years, (b) the firm had been delinquent for more than 60 days on business obligations over the preceding three years, or (c) the owner had been delinquent for more than 60 days on personal obligations over the prior three years. Additionally, compared to nonminority-owned firms, African American-owned firms were also more likely, on average to have owners who had declared bankruptcy over the preceding seven years.

Minority-owned firms also sought smaller amounts of credit than nonminority-owned firms. This was particularly true for African American-owned firms, who requested loans that were, on

⁹⁴ The median size of firms in the sample was 5.5 and mean size was 31.6 full-time equivalent employees; 440 firms out of 4,637 had 100 or more full-time equivalent employees.

⁹⁵ There were also two firms in the “Other race” category in 1993 that reported multiple or mixed race.

⁹⁶ Cavalluzzo and Cavalluzzo (1998) examined these outcomes using the 1987 NSSBF and similarly found that denial rates (weighted) are considerably higher for minorities. Nonminority-owned firms had a denial rate for loans of 22 percent compared with 56 percent for African Americans, 36 percent for Hispanics, and 24 percent for other races, which are broadly similar to the differences reported here. These estimates for minority groups are estimated with less precision, however, because of the smaller number of minority-owned firms in the 1987 sample.

average, about 60 percent smaller than those requested by nonminority-owned firms; and Hispanic-owned firms, who requested loans about 42 percent smaller than those requested by nonminority-owned firms.

The NSSBF database does not identify the specific city or state where the firm is located; instead, data are reported for four census regions, nine census divisions, and urban or rural location. Table 4.2 presents evidence for the South Atlantic Census division (hereafter SATL), which includes Maryland, Delaware, the District of Columbia, Virginia, and West Virginia.⁹⁷ The 1993 SATL sample includes the owners of 773 firms, of which 342 firms said that they had applied for a loan over the preceding three-year period.

Table 4.1. Selected Population-Weighted Sample Means of Loan Applicants – USA, 1993

	All	Non-minority	African American	Hispanic	Other Races
% of Firms Denied in the Last Three Years	28.8	26.9	65.9	35.9	39.9
<i>Credit History of Firm/Owners</i>					
% Owners with Judgments Against Them	4.8	4.1	16.9	5.2	15.2
% Firms Delinquent in Business Obligations	24.2	23.1	49.0	25.1	31.6
% Owners Delinquent on Personal Obligations	14.0	12.6	43.4	14.8	24.5
% Owners Declared Bankruptcy in Past 7yrs	2.4	2.4	5.3	2.0	0.8
<i>Other Firm Characteristics</i>					
% Female-Owned	17.9	18.1	18.2	9.7	23.1
Sales (in 1,000s of 1992 \$)	1795.0	1870.6	588.6	1361.3	1309.1
Profits (in 1,000s of 1992 \$)	86.7	84.5	59.9	189.5	54.0
Assets (in 1,000s of 1992 \$)	889.4	922.5	230.3	745.6	747.3
Liabilities (in 1,000s of 1992 \$)	547.4	572.8	146.2	308.6	486.0
Owner's Years of Experience	18.3	18.7	15.3	15.9	14.9
Owner's Share of Business	77.1	76.5	86.4	83.9	77.1
% ≤ 8 th Grade Education	0.8	0.7	0.0	3.4	1.0
% 9 th -11 th Grade Education	2.2	2.2	3.7	1.8	1.2
% High School Graduate	19.6	19.7	12.8	27.7	14.9
% Some College	28.0	28.3	36.0	20.6	19.8
% College Graduate	29.2	29.2	28.0	24.1	36.5
% Postgraduate Education	20.2	19.9	19.5	22.3	26.6
% Line of credit	48.7	49.1	35.8	52.8	43.7
Total Full-time Employment in 1990	11.4	11.8	6.8	9.3	8.8
Total Full-time Employment in 1992	13.6	13.9	8.3	10.8	12.3
Firm age, in years	13.4	13.6	11.5	13.3	9.3
% New Firm Since 1990	9.4	9.4	13.0	6.4	9.5
% Firms Located in MSA	76.5	75.1	91.2	90.7	85.7
% Sole Proprietorship	32.8	32.3	48.6	38.2	24.2
% Partnership	7.8	7.8	7.7	6.7	7.9
% S Corporation	26.1	27.1	11.7	13.7	27.1
% C Corporation	33.4	32.8	32.1	41.4	40.8

⁹⁷ The other states in the South Atlantic division include Florida, Georgia, North Carolina, and South Carolina.

% Existing Relationship with Lender	24.6	24.7	12.8	29.6	25.7
% Firms with Local Sales Market	54.1	54.7	42.9	55.0	47.4
<i>Characteristics of Loan Application</i>					
Amount Requested (in 1,000s of 1992\$)	300.4	310.8	126.5	179.1	310.5
% Loans to be Used for Working Capital	8.4	8.8	4.9	4.6	5.5
% Loans to be Used for Equipment/Machinery	2.3	2.4	1.7	0.2	0.6
% Loans to be Used for Land/Buildings	0.4	0.4	0.9	0.0	0.0
% Loan to be Backed by Real Estate	28.3	28.6	24.7	26.2	24.7
Sample Size (unweighted)	2,007	1,648	170	96	93

Source: NERA calculations from 1993 NSSBF.

Notes: Sample weights are used to provide statistics that are nationally representative of all small businesses. Sample restricted to firms that applied for a loan over the preceding three years.

Table 4.2. Selected Sample Means of Loan Applicants – SATL 1993

	All	Non-minority	African American	Hispanic	Other Races
% of Firms Denied in the Last Three Years	29.2	26.3	69.8	50.9	33.4
<i>Credit History of Firm/Owners</i>					
% Owners with Judgments Against Them	4.8	3.9	14.9	0.0	22.5
% Firms Delinquent in Business Obligations	23.3	21.4	49.2	33.4	33.6
% Owners Delinquent on Personal Obligations	11.4	8.5	41.1	16.5	51.3
% Owners Declared Bankruptcy in Past 7yrs	2.3	2.2	6.6	0.0	0.0
<i>Other Firm Characteristics</i>					
% Female-Owned	18.3	17.8	29.9	9.7	28.6
Sales (in 1,000s of 1992 \$)	1727.7	1778.4	776.3	2363.0	635.8
Profits (in 1,000s of 1992 \$)	74.5	62.5	17.5	460.1	6.8
Assets (in 1,000s of 1992 \$)	1022.3	1074.2	277.8	815.9	752.9
Liabilities (in 1,000s of 1992 \$)	645.4	675.5	197.4	650.0	340.3
Owner's Years of Experience	19.1	19.7	15.2	10.9	16.6
Owner's Share of Business	73.8	73.5	84.8	62.3	82.9
% <= 8 th Grade Education	0.3	0.4	0.0	0.0	0.0
% 9 th -11 th Grade Education	1.9	1.6	6.7	3.9	0.0
% High School Graduate	16.4	16.2	21.3	27.0	0.0
% Some College	28.2	29.6	25.7	18.6	0.0
% College Graduate	32.5	31.6	31.4	29.5	67.3
% Postgraduate Education	20.7	20.6	14.8	21.0	32.7
% Line of credit	47.4	48.5	32.8	53.0	28.6
Total Full-time Employment in 1990	12.4	12.8	10.9	8.0	8.2
Total Full-time Employment in 1992	14.1	14.5	14.2	9.6	8.2
Firm age, in years	13.2	13.6	10.3	9.3	10.1
% New Firm Since 1990	4.4	3.9	11.2	12.0	0.0
% Firms Located in MSA	80.6	80.0	89.6	92.0	72.4
% Sole Proprietorship	23.1	23.0	45.0	4.5	20.8
% Partnership	6.3	6.7	0.7	3.5	5.1
% S Corporation	29.7	30.3	22.8	23.9	28.6
% C Corporation	40.9	40.0	31.4	68.0	45.5
% Existing Relationship with Lender	24.0	23.8	21.7	15.9	43.6
% Firms with Local Sales Market	49.8	50.3	42.7	30.2	72.5

Characteristics of Loan Application

Amount Requested (in 1,000s of 1992\$)	342.9	352.9	183.1	440.0	126.3
% Loans to be Used for Working Capital	6.9	7.4	1.3	3.5	5.3
% Loans to be Used for Equipment/Machinery	3.0	3.4	0.0	0.0	0.0
% Loans to be Used for Land/Buildings	0.4	0.4	0.0	0.0	0.0
% Loan to be Backed by Real Estate	24.6	23.9	38.5	34.4	14.7
Total Sample Size (unweighted)	342	270	45	19	8

Source and Notes: See Table 4.1.

The overall denial rate in the SATL is slightly lower than the national rate reported in Table 4.1, but this difference is not statistically significant. The difference in the denial rates between African American-owned and nonminority-owned firms is also slightly larger in the SATL (39.0 percentage points nationally and 43.5 percentage points in the SATL), but again this difference is not statistically significant. Indeed, in the large majority of cases (over 80 percent), the weighted sample means are not statistically significantly different in the SATL than in the nation as a whole—either overall or by race, ethnicity or gender.

D. Qualitative Evidence

Before moving on to the results of our multivariate analysis, we first report on what business owners themselves said were their main problems. While this evidence, standing alone, is not conclusive in determining whether discrimination exists, it highlights firms' perceptions regarding discrimination in obtaining credit. That African American-owned firms and other minorities report greater difficulty in obtaining credit than do nonminority-owned firms, but report other types of problems no more frequently, suggests either that discrimination takes place or that perceptions of discrimination exist that are unwarranted. Evidence of business owners' own perceptions therefore complements the econometric analysis provided subsequently, which can distinguish between these two hypotheses.

Table 4.3 summarizes, for the U.S. as a whole, responses to specific questions about problems that firms confronted over the 12-month period before the date of response. In the top panel, respondents were asked to what extent credit market conditions had been a problem. African Americans and Hispanics were much more likely to say that it had been a "serious" problem (31.3 percent and 22.9 percent, respectively) than non-minorities (12.7 percent). The bottom panel of the table reports the results for eight other designated problem areas—(1) training costs; (2) worker's compensation costs; (3) health insurance costs; (4) IRS regulation or penalties; (5) environmental regulations; (6) the Americans with Disabilities Act; (7) the Occupational Safety and Health Act; and (8) the Family and Medical Leave Act. Differences by race, ethnicity or gender are much less pronounced in these eight areas than they are in relation to credit market conditions.⁹⁸ The finding that African American-owned and Hispanic-owned firms are largely

⁹⁸ We also estimated a series of ordered Logit equations (not reported) to control for differences across firms in their creditworthiness, location, industry, size, and the like. It is apparent from these regressions that African American-owned firms were more likely to report that credit market conditions were especially serious.

indistinguishable from nonminority-owned firms in reporting a variety of problems, except for the case of credit, indicates that minority-owned firms perceive credit availability to be a particular problem for them.

Results are broadly similar in Table 4.4 for the SATL region—with African American, Hispanic, and other minority-owned firms being more likely than nonminority-owned firms to say that credit market conditions had been a serious problem in the preceding 12 months.

Table 4.5 reports the views of NSSBF respondents for the U.S. as a whole and Table 4.6 reports views for the SATL on the most important issue businesses expected to face over the next 12 months. Nationally, credit availability and cash flow again appear to be more important issues for African American-owned firms than for nonminority-owned firms. Nonminority-owned firms were especially worried about health care costs. Hispanic and Other minority-owned firms were especially worried about general business conditions.

Table 4.3. Problems Firms Experienced During Preceding 12 Months - USA, 1993

	All	Non-minority	African American	Hispanic	Other Races
<i>Credit Market Conditions</i>					
Percent reporting not a problem	66.2	67.3	43.1	58.9	65.8
Percent reporting somewhat of a problem	20.1	19.9	25.6	18.2	21.3
Percent reporting serious problem	13.7	12.7	31.3	22.9	12.9
<i>Other Potential Problems (% reporting problem is serious)</i>					
Training costs	6.5	6.6	7.2	6.3	4.3
Worker's compensation costs	21.7	21.0	19.3	30.6	28.7
Health insurance costs	32.5	31.6	38.1	44.3	35.0
IRS regulation or penalties	12.3	11.8	17.1	17.9	13.2
Environmental regulations	8.5	8.5	5.6	7.4	11.0
Americans with Disabilities Act	2.7	2.6	3.6	2.7	3.9
Occupational Safety and Health Act	4.5	4.5	3.9	3.6	6.2
Family and Medical Leave Act	2.7	2.5	4.5	3.1	4.8
Number of observations (unweighted)	2,007	1,648	170	96	93

Source: See Table 4.1.

Table 4.4. Problems Firms Experienced During Preceding 12 Months – SATL, 1993

	All	Non-minority	African American	Hispanic	Other Races
<i>Credit Market Conditions</i>					
Percent reporting not a problem	65.3	66.8	38.4	58.9	69.2
Percent reporting somewhat of a problem	20.9	20.9	28.8	14.2	18.4
Percent reporting serious problem	13.7	12.3	32.8	26.9	12.4
<i>Other Potential Problems (% reporting problem is serious)</i>					
Training costs	6.5	6.5	5.4	4.8	8.4
Worker's compensation costs	21.5	20.5	25.1	44.0	20.1
Health insurance costs	29.8	27.7	39.4	44.6	50.6
IRS regulation or penalties	12.7	12.3	19.1	24.3	5.0
Environmental regulations	9.3	10.1	6.1	2.9	2.5

Americans with Disabilities Act	2.1	2.0	6.6	0.0	1.2
Occupational Safety and Health Act	3.4	3.2	5.7	5.3	2.7
Family and Medical Leave Act	2.5	2.3	7.8	1.6	1.2
Number of observations (unweighted)	773	573	112	47	41

Source: See Table 4.1.

In the SATL, credit availability and cash flow are far more important issues for African American-owned firms than for nonminority-owned firms. Almost four times as many African American-owned firms reported credit availability as the most important issue than nonminority-owned firms. In contrast, in the SATL, health care costs were a large concern for all types of firms.

Table 4.5. Percentage of Firms Reporting Most Important Issues Affecting Them Over the Next 12 Months - USA, 1993

	All	Non-minority	African American	Hispanic	Other Races
Credit availability	5.9	5.5	20.5	5.3	4.3
Health care, health insurance	21.1	22.1	12.3	13.7	14.8
Taxes, tax policy	5.7	5.7	2.6	8.7	3.3
General U.S. business conditions	11.8	11.5	8.9	14.4	17.4
High interest rates	5.4	5.7	1.8	3.5	3.4
Costs of conducting business	3.3	3.3	3.8	3.8	3.6
Labor force problems	3.5	3.3	3.9	5.5	3.6
Profits, cash flow, expansion, sales	10.3	9.9	20.3	9.8	11.9
Number of observations (unweighted)	4,388	3,383	424	262	319

Source: See Table 4.1.

Table 4.6. Percentage of Firms Reporting Most Important Issues Affecting Them Over the Next 12 Months - SATL, 1993

	All	Non-minority	African American	Hispanic	Other Races
Credit availability	7.1	6.5	25.1	7.2	0.0
Health care, health insurance	19.4	19.6	13.2	17.2	21.6
Taxes, tax policy	6.8	7.2	2.1	9.5	0.0
General U.S. business conditions	10.2	10.1	5.3	15.9	13.3
High interest rates	5.5	5.8	0.7	1.6	6.1
Costs of conducting business	4.0	4.0	5.8	5.3	1.6
Labor force problems	3.9	3.7	4.3	9.3	2.9
Profits, cash flow, expansion, sales	8.5	7.9	14.0	6.1	19.0
Number of observations (unweighted)	729	544	106	41	38

Source: See Table 4.1.

Acute credit availability problems for minorities have been reported in surveys other than the NSSBF. In the 1992 Characteristics of Business Owners (CBO) Survey, conducted by the Census Bureau, for example, when owners were asked to identify the impact of various issues on their firm's profitability, 27.0 percent of African American-owned firms reporting an answer indicated that lack of financial capital had a strong adverse impact—compared to only 17.3 percent among nonminority male-owned firms. Hispanic-owned firms and other minority-owned firms also reported higher percentages than nonminority male-owned firms—21.3 percent and 19.7 percent, respectively. Further, owners who had recently discontinued their business because it was unsuccessful were asked in the CBO survey to identify the reasons why. African American-owned firms, and to a lesser degree Hispanic-owned firms, other minority-owned firms, and women-owned firms, were much more likely than nonminority male-owned firms to report that the reason was due to lack of access to business or personal loans or credit. For unsuccessful firms that were discontinued, 7.3 percent of firms owned by nonminority males reported it was due to lack of access to business loans or credit compared to 15.5 percent for firms owned by African Americans, 8.8 percent for Hispanics, 6.1 percent for other minorities, and 9.3 percent for women. Another 2.7 percent of nonminority males said it was due to lack of personal loans or credit compared to 8.4 percent for firms owned by African Americans, 5.8 percent for Hispanics, 6.4 percent of Other minorities, and 3.3 percent for women.⁹⁹

Table 4.7. Types of Problems Facing Your Business, by Race and Gender – USA, 2005 (%)

	Non-minority Male	Non-minority Female	Minority Male	Minority Female	African American	Hispanic	Asian
Availability of credit	19	23	54	38	46	52	34
Rising health care costs	60	49	50	41	31	42	66
Excessive tax burden	49	46	48	42	46	34	51
Lack of qualified workers	37	28	33	17	22	20	34
Rising energy costs	37	35	36	35	29	34	44
Rising costs of materials	44	47	36	47	53	42	32
Legal reform	21	15	15	12	11	10	17
Number firms	415	356	80	81	55	50	41

Source: U.S. Chamber of Commerce (2005), Appendix tables, page 55, available at http://www.uschamber.com/publications/reports/access_to_capital.htm.

Note: Total percentages may be greater than 100% due to respondents having the option to select multiple choices. Minorities also include 14 firms owned by Native Americans.

⁹⁹ Bureau of the Census (1997), Table 5a, p. 46, Table 1, p. 21.

A later study published by the U.S. Chamber of Commerce (2005) is also consistent with these findings from the 1993 NSSBF and the 1992 CBO.¹⁰⁰ The Chamber of Commerce survey was conducted in March and April 2005 and detailed the financing problems experienced by small business owners, 95 percent of whom had less than 100 employees. Over 1,000 business owners were interviewed. As detailed in Table 4.7, minority-owned businesses report that availability of credit is their top problem. The biggest difference in responses between minorities and nonminority men and women was availability of credit: 19 percent of nonminority males report credit as their top problem compared with 54 percent for minority males. There was a 15 percentage point difference between minority women and nonminority women. In no other category is there more than a 10 percentage point difference for men or women.

In summary, African American-owned and Hispanic-owned firms in particular and to a lesser extent other minority-owned firms and women-owned firms report that they had problems with the availability of credit in the past and expected that such difficulties would continue into the future. Whether or not these perceptions reflect actual discrimination can be distinguished in the econometric analyses to follow.

E. Differences in Loan Denial Rates by Race, Ethnicity or Gender

Evidence presented to this point indicates that minority-owned firms are more likely to be denied loans and report that their lack of access to credit significantly impairs their business. Can these differences be explained by such things as differences in size, creditworthiness, location, or other factors as some have suggested in the literature on discrimination in mortgage lending (Horne, 1994; Bauer and Cromwell, 1994; and Yezer, Phillips, and Trost, 1994)? To address this question we turn to an econometric examination of whether the loan requests made by minority-owned firms are more likely to be denied, holding constant important differences among firms.

In Table 4.8 and Table 4.9, we report the results from a series of loan denial Probit regressions of the form specified in Equation (1) using data from the 1993 NSSBF for the U.S. and the SATL region.¹⁰¹ As indicated earlier, the 1993-2003 datasets have the particular advantage that they include information that can be used to proxy an applicant's creditworthiness. We report estimates from these models that can be interpreted as changes or differences in loan denial probabilities depending on the type of variables considered. For indicator variables, such as race, ethnicity and gender indicators, estimates show differences in loan denial probabilities between the indicated group and the base group.¹⁰² In Column (1) of Table 4.8 (in which the regression

¹⁰⁰ Although the CBO is part of the Economic Census, it was not published in 1997. In 2002, the name was changed to the Survey of Business Owners (SBO). Unfortunately, questions relating to the importance of access to financial loans and credit to business success were not included in the 2002 survey.

¹⁰¹ Firms owned 50-50 by minorities and non-minorities are excluded from this and all subsequent analyses, as are nonminority firms owned 50-50 by women and men.

¹⁰² For "continuous" variables, such as profits and sales, estimates can be thought of as changes in loan denial probability when the continuous variable changes by one unit. For example, in Column (2) of Table 4.8, the estimated coefficient of -0.003 on

model contains only race and gender indicators), the estimated coefficient of 0.443 on the African American indicator can be interpreted as indicating that the denial rate for African American-owned businesses is 44.3 percentage points higher than that for nonminority male-owned firms.¹⁰³

The remainder of Table 4.8 includes additional explanatory variables to hold constant differences in the characteristics of firms that may vary by race, ethnicity or gender.¹⁰⁴ In Column (2) a number of controls are included that distinguish the creditworthiness of the firm and the owner. Many are statistically significant on a two-tailed test at conventional levels of significance with the expected signs. For instance, having been bankrupt or had legal judgments against the firm or owner raises the probability of denial; stronger sales lower this probability.

Even after controlling for these differences in creditworthiness, however, African American-owned firms remain 29 percentage points more likely than nonminority-owned firms to have their loan request denied.

The models reported in Columns (3) through (5) of Table 4.8 control for an array of additional characteristics of firms. Column (3) adds 39 additional characteristics of the firm and the loan application, including such factors as level of employment, change in employment, the size of the loan request, and the use of the loan. Column (4) includes variables to control for differences across regions of the country and major industry group. Column (5) adds variables indicating the month and year in which the loan was requested and the type of financial institution to which the firm applied.¹⁰⁵ In total these three columns add 176 variables to the more parsimonious specification reported in Column (2). Nevertheless, the estimated disadvantage experienced by African American-owned firms in obtaining credit remains large and statistically significant. The estimate from each of the three additional columns indicates that African American-owned firms

owner's years of experience indicates that one additional year of owner's experience is related to -0.3 percentage point reduction in loan denial rate.

¹⁰³ This estimate largely replicates the raw difference in denial rates between African American- and nonminority-owned businesses reported in Table 4.1. The raw differential observed there ($0.659 - 0.269 = 0.39$) differs slightly from the 0.443 differential reported here because this specification also controls for whether the business is owned by a nonminority female and because the regressions are unweighted whereas the descriptive statistics are weighted using the sample weights. When a full set of explanatory control variables are included the unweighted estimates are insignificantly different from the weighted estimates, hence in Table 4.8 and subsequent tables we report only unweighted estimates.

¹⁰⁴ In preliminary analyses, these models were also estimated separately, focusing specifically on the differences in coefficient estimates between non-minorities and African Americans. The F-Test conducted to determine whether parameter estimates were the same for African Americans and non-minorities rejected this null hypothesis. Next, the estimates obtained by estimating the model separately by race were used to conduct an Oaxaca (1973) decomposition. The results from this analysis were similar to those obtained by restricting the coefficients to be the same between African Americans and non-minorities and using the coefficient on the African American indicator variable to measure the gap between groups. In this Chapter, all the results are reported in this simpler format for ease of exposition and interpretation.

¹⁰⁵ Approximately four out of five (80.5%) of the firms who required a loan applied to a commercial bank. Overall seventeen different types of financial institution were tabulated, although only the following accounted for more than 1% of the (weighted) total— Finance Companies (4.9%); Savings Banks (2.5%); Savings & Loans (2.3%); Leasing Companies (2.1%); and Credit Unions (2.0%).

are 24 percentage points more likely than nonminority male-owned firms to have their loan application denied even after controlling for the multitude of factors we have taken into consideration.¹⁰⁶

¹⁰⁶ One piece of information to which we did not have access in the 1993 NSSBF or the 1998 SSBF because of confidentiality concerns was each firm's credit rating. A working paper by Cavalluzzo, Cavalluzzo, and Wolken (1999) was able to incorporate Dun & Bradstreet credit ratings for each firm because the authors' connection to the Federal Reserve Board enabled them to access the confidential firm identifiers. They added these credit rating variables in a model comparable to that reported here and found the results insensitive to the inclusion. The 2003 SSBF includes Dun & Bradstreet credit ratings for each firm. Below, we discuss the impact of incorporating them into a model similar to that presented in Table 4.8 (see Tables 4.27 and 4.28).

Table 4.8. Determinants of Loan Denial Rates – USA, 1993

	(1)	(2)	(3)	(4)	(5)
African American	0.443 (11.21)	0.288 (6.84)	0.237 (5.57)	0.235 (5.22)	0.241 (5.13)
Asian	0.225 (4.21)	0.171 (3.18)	0.140 (2.56)	0.121 (2.15)	0.119 (2.07)
Native American	-0.016 (0.11)	-0.141 (1.06)	-0.097 (0.71)	-0.052 (0.35)	-0.083 (0.56)
Hispanic	0.129 (2.62)	0.070 (1.42)	0.067 (1.36)	0.035 (0.70)	0.031 (0.63)
Nonminority female	0.088 (2.65)	0.048 (1.45)	0.047 (1.45)	0.036 (1.06)	0.033 (0.94)
Judgments		0.143 (2.84)	0.129 (2.56)	0.124 (2.40)	0.121 (2.29)
Firm delinquent		0.176 (6.50)	0.178 (6.43)	0.195 (6.77)	0.208 (7.00)
Personally delinquent		0.161 (4.45)	0.128 (3.56)	0.124 (3.38)	0.119 (3.17)
Bankrupt past 7 yrs		0.208 (3.11)	0.179 (2.68)	0.162 (2.37)	0.167 (2.33)
\$1992 profits (*10 ⁸)		-0.000 (0.89)	-0.000 (1.64)	-0.000 (1.78)	-0.000 (1.83)
\$1992 sales (*10 ⁸)		-0.000 (3.08)	-0.000 (3.38)	-0.000 (3.28)	-0.000 (3.38)
\$1992 assets (*10 ⁸)		0.000 (0.51)	0.000 (0.60)	0.000 (0.40)	0.000 (0.37)
\$1992 liabilities (*10 ⁸)		0.000 (0.61)	0.000 (1.11)	0.000 (1.04)	0.000 (1.17)
Owner years experience		-0.003 (2.59)	-0.001 (1.30)	-0.002 (1.55)	-0.002 (1.72)
Owners' share of business		0.001 (1.91)	0.000 (0.71)	0.000 (0.26)	0.000 (0.30)
Owner's Education (5 indicator variables)	No	Yes	Yes	Yes	Yes
Other Firm Characteristics (17 variables)	No	No	Yes	Yes	Yes
Characteristics of the Loan (13 variables)	No	No	Yes	Yes	Yes
Region (8 indicator variables)	No	No	No	Yes	Yes
Industry (60 indicator variables)	No	No	No	Yes	Yes
Month /Year of Application (51 indicator variables)	No	No	No	No	Yes
Type of Financial Institution (16 indicator vars.)	No	No	No	No	Yes
N	2,007	2,007	2,006	1,985	1,973
Pseudo R ²	.0608	.1412	.2276	.2539	.2725
Chi ²	143.6	333.4	537.3	595.4	635.8
Log likelihood	-1108.8	-1013.8	-911.6	-874.8	-848.7

Source: See Table 4.1.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), t-statistics are in parentheses. "Other firm characteristics" include variables indicating whether the firm had a line of credit, 1990 employment, firm age, metropolitan area, a new firm since 1990, legal form of organization (sole proprietorship, partnership, S-corporation, or C-corporation), 1990-1992 employment change, existing long run relation with lender, geographic scope of market (local, regional, national or international), the value of the firm's inventory, the level of wages and salaries paid to workers, the firm's cash holdings, and the value of land held by the firm. "Characteristics of the loan" include the size of the loan applied for, a variable indicating whether the loan was backed by real estate, and twelve variables indicating the intended use of the loan.

Table 4.9. Determinants of Loan Denial Rates – SATL Region, 1993

	(1)	(2)	(3)	(4)	(5)
African American	0.452 (9.85)	0.289 (5.94)	0.239 (4.88)	0.235 (4.61)	0.252 (4.72)
Asian	0.223 (3.98)	0.180 (3.19)	0.142 (2.51)	0.123 (2.11)	0.125 (2.11)
Native American	0.007 (0.05)	-0.132 (0.94)	-0.094 (0.67)	-0.047 (0.31)	-0.079 (0.52)
Hispanic	0.104 (1.91)	0.047 (0.88)	0.051 (0.95)	0.021 (0.40)	0.014 (0.25)
Nonminority female	0.089 (2.45)	0.055 (1.51)	0.060 (1.65)	0.044 (1.18)	0.042 (1.10)
African American*SATL	-0.027 (0.35)	-0.009 (0.11)	-0.013 (0.16)	0.002 (0.02)	-0.030 (0.39)
Asian/Pacific*SATL	0.011 (0.06)	-0.069 (0.44)	-0.011 (0.06)	-0.018 (0.10)	-0.052 (0.31)
Native American*SATL					
Hispanic*SATL	0.114 (0.94)	0.107 (0.85)	0.079 (0.61)	0.073 (0.56)	0.095 (0.71)
Nonminority female*SATL	-0.006 (0.07)	-0.035 (0.43)	-0.062 (0.80)	-0.042 (0.51)	-0.050 (0.61)
SATL region	-0.009 (0.270)	0.012 (0.34)	0.015 (0.43)	0.042 (0.98)	0.046 (1.07)
Creditworthiness controls (4 variables)	No	Yes	Yes	Yes	Yes
Owner's Education (5 indicator variables)	No	Yes	Yes	Yes	Yes
Other Firm Characteristics (17 variables)	No	No	Yes	Yes	Yes
Characteristics of the Loan (13 variables)	No	No	Yes	Yes	Yes
Region (7 indicator variables)	No	No	No	Yes	Yes
Industry (60 indicator variables)	No	No	No	Yes	Yes
Month /Year of Application (51 indicator variables)	No	No	No	No	Yes
Type of Financial Institution (16 indicator vars.)	No	No	No	No	Yes
N	2006	2,006	2,005	1,984	1,972
Pseudo R ²	.0612	.1416	.2280	.2540	.2728
Chi ²	144.54	334.27	537.91	595.43	636.45
Log likelihood	-1107.9	-1013.1	-910.9	-874.4	-848.1

Source: See Table 4.1.

Note: Creditworthiness controls are those used in Table 4.8 above.

The results also indicate that Asians/Pacific Islanders had significantly higher denial rates than nonminority males—12 percentage points. There is little evidence in the 1993 national data, however, that denial rates for firms owned by Native Americans or Hispanics were significantly different from the denial rates of firms owned by non-minorities; or that denial rates for firms

owned by nonminority women were significantly different from those for firms owned by nonminority men.¹⁰⁷

In Table 4.9, we see results for the SATL region similar to those reported in Table 4.8 for the nation as a whole. The table shows that the results of our loan denial model in the SATL are not substantially different from the nationwide results reported in Table 4.8. The indicator variable for the SATL region is insignificantly different from zero; as are the interaction terms between race/ethnicity/gender and the SATL region.¹⁰⁸

Although the results provided so far strongly indicate that financial institutions treat African American-owned and nonminority male-owned small businesses differently in lending, other considerations may limit our ability to interpret this finding as discrimination. Of perhaps greatest concern is the possibility that we may not have adequately controlled for differences in the creditworthiness of firms. If African American-owned firms are less creditworthy and we have failed to sufficiently capture those differences then we would be inadvertently attributing the racial difference in loan denial rates to discrimination. On the other hand, however, if financial institutions discriminate against African American-owned firms, then the greater likelihood of denial for African Americans in earlier years is likely to hurt the performance of these firms and appear to make them look less creditworthy. Therefore, controlling for creditworthiness will likely understate the presence of discrimination.

As a check on the foregoing results, therefore, our first approach was to identify the types of information that financial institutions collect in order to evaluate a loan application and compare that with the information available to us in the NSSBF. First, a selection of small business loan applications was collected from various banks. An Internet search of web sites that provide general business advice to small firms was also conducted. Such sites typically include descriptions of the loan application process and list the kinds of information typically requested of applicants.¹⁰⁹

Bank loan applications typically request detailed information about both the firm and its owner(s). Regarding the firm, banks typically request information on: (a) type of business, (b) years in business, (c) number of full-time employees, (d) annual sales, (e) organization type (corporation or proprietorship), (f) owner share(s), (g) assets and liabilities, (h) whether the business is a party to any lawsuit, and (i) whether any back taxes are owed. Regarding the

¹⁰⁷ It would be a mistake to interpret a lack of statistical significance (as opposed to substantive significance) in any of the Tables in Chapter 6 as a lack of adverse disparity. While tests for statistical significance are very useful for assessing whether chance can explain disparities that we observe, they do have important limitations. First, the fact that a disparity is not statistically significant does not mean that it *is* due to chance. It merely means that we cannot rule out chance. Second, there are circumstances under which tests for statistical significance are not helpful for distinguishing disparities due to chance from disparities due to other reasons (e.g., discrimination). In the particular statistical application presented in this chapter, the chance that a test for statistical significance will incorrectly attribute to chance disparities that are due to discrimination becomes greater when relatively small sample sizes are present for an affected group.

¹⁰⁸ The number of Native Americans in the SATL sample was too small to yield statistical results.

¹⁰⁹ An example of a typical application form is presented as Appendix B in Blanchflower, Levine, and Zimmerman (2003).

owner's personal finances, banks typically ask for: (a) assets and liabilities, (b) sources and levels of income, and (c) whether the owner has any contingent liabilities. Some applications ask explicitly if the firm qualifies as a minority-owned enterprise for the purposes of certain government loan guarantee programs. The race of the applicant, however, would be readily identifiable even in the absence of such a question since most of these loans would be originated through face-to-face contact with a representative of the financial institution.

These criteria seem to match reasonably closely the information available in the 1993 NSSBF. The particular strength of the NSSBF is the detail available on the firm, which covers much of the information typically requested on loan application forms. The main shortcoming that we have identified in these data is that less detail is available on the finances of the owner of the firm.¹¹⁰ Although the creditworthiness measures enable us to identify those owners who have had serious financial problems (like being delinquent on personal obligations), we have no direct information regarding the owner's assets, liabilities, and income. These factors would be necessary to identify whether the business owner has sufficient personal resources to draw upon should the business encounter difficulties and to determine the personal collateral available should the firm default on its obligation. We do have measures of the owner's human capital in the form of education and experience, which likely capture at least some of the differential in available personal wealth across firm owners. Nevertheless, our potentially incomplete characterization of the business owner's personal financial condition may introduce a bias into our analysis if African American business owners have fewer resources than nonminority business owners.

To assess the potential impact of this problem on our results, we separately examined groups of firms who differ in the degree to which personal finances should influence the loan decision and compare the estimated disadvantage experienced by African American-owned firms in different groups. First, we examine proprietorships and partnerships separately from corporations since owners of incorporated businesses are at least somewhat shielded from incurring the costs of a failed business. Second, we divide firms according to size.¹¹¹ Both larger small businesses and those that have been in existence for some time are more likely to rely on the business's funds, rather than the owner's, to repay its obligations. Third, we consider firms that have applied for loans to obtain working capital separately from those firms that seek funds for other purposes (mainly to purchase vehicles, machinery and equipment, and buildings or land). Loans made for any of these other purposes are at least partially collateralized because the financial institution

¹¹⁰ This deficiency is remedied in the 1998 SSBF and the 2003 SSBF, discussed below, both of which contain information on the owner's home equity, and personal net worth excluding home equity and business equity.

¹¹¹ As reported earlier, the mean and median size of firms is 5.5 and 31.6 full-time equivalent workers, respectively. 14 percent of firms have one or fewer employees and 27 percent have two or fewer employees. In the SATL, the figures are 6.0, 34.3, 12 percent, and 26 percent, respectively.

could sell them, albeit at a potentially somewhat reduced rate, should the small business default.¹¹²

In order to determine whether the findings for the SATL region were different from those for the nation, in the second column of Table 4.10 we also report the coefficient and t-statistics on an interaction term between the SATL region and African American ownership. In only one case was the estimated coefficient on this interaction significant, implying that the national results also apply in general to the SATL.

Results from these analyses provide no indication that omitting the owner's personal wealth substantially biases the results presented above in Tables 4.8 or 4.9. Estimates presented in row numbers 1 through 9 of Table 4.10 indicate that African American-owned small businesses are significantly more likely to have their loan applications rejected regardless of the category of firm considered. In particular, when samples are restricted to corporations, larger firms, and firms seeking credit for uses other than working capital, African American-owned firms are 18, 25, and 16 percentage points more likely, respectively, to have their loan application rejected even though personal resources should be less important in these categories. Moreover, in each group where there are two types of firms (large and small, etc.), the estimates for the two types of firms are not significantly different from each other.

Another issue is whether the racial differences in loan denial rates among firms with similar characteristics can be attributed to differences in the geographic location of African American- and nonminority-owned firms. If, for example, African American-owned firms are more likely to be located in the central city, and a central city location is inversely correlated with profitability and the ability to repay debt, then financial institutions may be acting optimally in rejecting the loan applications of African American-owned firms at a higher rate. As indicated earlier, this type of behavior is labeled "statistical discrimination." In the subsequent text and tables, we present a limited analysis to address whether or not this type of behavior takes place.¹¹³

¹¹² As indicated earlier, greater personal wealth may improve a small business's chances of obtaining credit because it provides collateral should the loan go bad and because wealthy owners can use their own resources to weather bad times, improving the likelihood of repayment. Our separate analysis of corporations and proprietorships and of large and small firms does not account for this second reason because corporations and large businesses may still need to draw on the owner's personal wealth to help it survive short-term shocks. Businesses that have been in existence for several years, however, are less likely to experience these shocks, making them less likely to require infusions from the owner's personal wealth. A loan used to purchase equipment that can be sold if the firm defaults may insulate the bank from the need to seek repayment directly from the owner.

¹¹³ A strong test to distinguish between statistical discrimination and "Becker-Type" discrimination would require a tremendous amount of detail about the specific location of the firm, characteristics of its surrounding area, characteristics of neighboring firms, and the like, which were unavailable to us. As indicated earlier, both forms of discrimination are illegal and this Chapter applies a definition that incorporates both.

Table 4.10. Alternative Models of Loan Denials, 1993

Specification	African American	African American* SATL	Asian	Hispanic	Non-minority Female	Sample Size
All	0.222 (4.76)	0.080 (0.85)	0.080 (1.37)	0.055 (0.97)	0.044 (1.25)	2,006
<i>Organization Type</i>						
1) Proprietorships and Partnerships	0.278 (3.03)	0.039 (0.24)	0.177 (1.51)	-0.021 (0.21)	-0.020 (0.29)	536
2) Corporations	0.181 (3.36)	0.175 (1.17)	0.050 (0.73)	0.092 (1.25)	0.069 (1.66)	1,457
<i>Age of Firm</i>						
3) 12 Years or Under	0.243 (3.80)	0.117 (1.02)	0.150 (1.41)	-0.001 (0.01)	0.029 (0.56)	1,074
4) Over 12 Years	0.180 (2.56)	-0.006 (0.54)	0.068 (0.08)	0.114 (1.39)	0.087 (1.69)	926
<i>1993 Firm Size</i>						
5) Fewer than 10 Employees	0.193 (2.97)	0.078 (1.71)	0.251 (0.92)	-0.019 (0.24)	-0.018 (0.34)	868
6) 10 or More Employees	0.245 (3.39)	0.077 (0.65)	-0.082 (0.85)	0.145 (1.61)	0.111 (2.18)	1,132
<i>Intended Use of Loan</i>						
7) Working Capital	0.241 (4.21)	0.176 (1.22)	0.035 (0.47)	0.039 (0.51)	0.041 (0.85)	1,086
8) Other Use	0.158 (1.93)	0.037 (0.27)	0.167 (1.74)	0.081 (0.94)	0.045 (0.87)	917
<i>Scope of Sales Market</i>						
9) Local	0.108 (1.50)	0.348 (2.06)	0.097 (1.26)	0.007 (0.10)	0.041 (0.78)	875
10) Regional, National, or international	0.199 (4.94)	-0.013 (0.24)	0.031 (0.65)	0.071 (1.34)	0.031 (1.19)	1,129
<i>Creditworthiness</i>						
11) No Past Problems	0.244 (4.08)	-0.005 (0.05)	0.113 (1.92)	0.039 (0.71)	0.071 (2.06)	1,386
12) One Past Problem	0.282 (2.53)	-0.072 (0.36)	-0.092 (0.53)	0.181 (1.10)	0.038 (0.37)	376
13) More Than One Problem	0.273 (2.55)	0.080 (0.85)	0.180 (0.67)	0.257 (1.70)	-0.018 (0.09)	231

Source: See Table 4.1.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), t-statistics are in parentheses. Each line of this table represents a separate regression with the same control variables as Column (3) of Table 4.8. The dependent variable in all specifications represents an indicator for whether or not a loan application was denied. Control for SATL also included.

To identify whether lenders' behavior is consistent with this hypothesis we distinguish those firms that self-classified their sales market as being local rather than regional, national, or international. A central city location should have a greater impact on future profit expectations for those firms that operate on a local level. If minority-owned firms are more likely to locate in the central city, racial differences in loan denial rates should be greater in the firms that sell in the local market area. The results of this test, reported in row numbers 9 and 10 of Table 4.10, reject the hypothesis that differences in loan denial rates are attributable to different propensities to locate in the center of a city. Estimates for the nation as a whole indicate that African American-owned firms that sell to the local market are 11 percentage points more likely to have their loan applications denied compared to a 20 percent excess denial rate for firms selling primarily to regional, national, or international markets. In the SATL, however, the figures are reversed, indicating that statistical discrimination may in fact be occurring in this region.

We also estimate models that address a potential weakness in the specific functional form with which we control for differences in credit history across firms. As shown in Tables 4.1 and 4.2, African American-owned firms are considerably more likely to have had troubles in the past in the form of judgments against them, late payments by the firm or its owner, or past bankruptcies. The model specifications reported in Tables 4.8 and 4.9 implicitly assume that these past problems are additive in their effect on loan denials and one might suspect the marginal impact would rise as past problems rise. Therefore, in the final three rows of Table 4.10, we separated firms by the number of past problems experienced. In Rows 11 through 13, we restricted the sample to those firms that have never had any past credit problems, those firms that reported one problem only, and those firms that reported more than one of these problems, respectively. The results indicate that even African American-owned firms with clean credit histories are at a significant disadvantage in getting their loans approved, holding constant their other characteristics. In fact, the estimated differential in loan approval rates between African American- and nonminority-owned firms is statistically indistinguishable within each of these groups. Asian-owned firms and nonminority female-owned firms with clean credit histories, as well, are also at a significant disadvantage relative to nonminority-male owned firms.

Finally, we considered whether African American-owned firms are treated differently from nonminority-owned firms when requesting credit from other sources. The source of credit we examined is credit cards. Such an analysis provides a unique advantage because credit card applications are more likely to be filled out and mailed in, so it is less likely that the race of the applicant is known to the financial institution, at least in the case of African American-owned firms and Native American-owned firms, where surname is unlikely to provide any signal about minority status. On the other hand, for Asian and Hispanic applicants, it is possible that surname does provide such a signal, although an imperfect one. The 1993 NSSBF asked respondents whether they used either a business or personal credit card for business purposes. Although our analysis of use of credit cards does not condition on application, a finding that African American- and nonminority-owned small businesses are equally likely to use credit cards may still provide evidence supporting discrimination in small-business lending. In fact, if financial institutions discriminate against African Americans in providing small business loans, we may even expect to see African Americans use credit cards more often than non-minorities since they

have fewer alternatives. Even though many institutions may offer both types of credit, they may only be aware of the race of the applicant in a small business loan.¹¹⁴

In Tables 4.11 and 4.12, we examine the probability that a firm uses either a business credit card (Row 1) or a personal credit card (Row 2) to finance business expenses holding constant other differences across firms.¹¹⁵ There is no evidence, either for the U.S. as a whole or for the SATL, that African American-owned firms are less likely to access either business or personal credit cards for business expenses. On the other hand, there is evidence in the SATL and in the nation as a whole that Asian-owned firms are less likely to access business credit cards. Credit card use for financing business expenses may be an area where further research is warranted. Unfortunately, available data on this subject is quite limited.

Table 4.11. Models of Credit Card Use – USA, 1993

Specification	African American	Asian	Native American	Hispanic	Non-minority Female	Sample Size
1) Business Credit Card	0.035 (1.35)	-0.096 (3.23)	0.085 (1.00)	0.024 (0.79)	0.018 (0.83)	4,633
2) Personal Credit Card	0.019 (0.74)	-0.019 (0.63)	0.019 (0.23)	-0.042 (1.40)	0.028 (1.28)	4,633

Source: See Table 4.1.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), t-statistics are in parentheses. Each line of this table represents a separate regression with the same control variables as Column (3) of Table 4.8 but excluding the loan characteristics. The dependent variable indicates whether the firm used business or personal credit cards to finance business expenses. In all specifications, the sample size is all firms. Other races are excluded due to sample size limitations.

¹¹⁴ It appears that race may also rarely be known to those institutions that issue credit ratings. As we mentioned above, Cavalluzzo, Cavalluzzo, and Wolken (1999) show that Dun & Bradstreet Credit Ratings are not helpful in explaining racial disparities in loan denials. Although we are not privy to Dun & Bradstreet's methodology for establishing its credit ratings, we do know from long experience that the good indicators of ownership by race are lacking in Dun & Bradstreet's master business identifier file. Indeed, this is the reason why NERA's availability estimation methodology requires us to create a master directory of disadvantaged, minority, and women-owned businesses for merging with Dun & Bradstreet's data.

¹¹⁵ On average, 29 percent of all firms use business credit cards and 41 percent use personal credit cards for business use; these levels vary only modestly by race and ethnicity. In the SATL the figures are 29 percent and 36 percent, respectively.

Table 4.12. Models of Credit Card Use – SATL, 1993

Specification	African American	Asian	Native American	Hispanic	Non-minority Female	Sample Size
1) Business Credit Card	0.028 (0.96)	-0.087 (2.78)	0.098 (1.07)	0.028 (0.83)	0.009 (0.37)	4,633
2) Personal Credit Card	-0.014 (0.48)	-0.034 (1.08)	0.024 (0.26)	-0.029 (0.87)	0.028 (1.17)	4,633

Source: See Table 4.1.

Notes: See Table 4.11. Control for SATL included.

F. Differences in Interest Rates Charged on Approved Loans

Although most of our analysis has addressed whether minority- and nonminority-owned firms are treated equally in terms of their probability of loan denial, another way that differential treatment may emerge is through the interest rate charged for approved loans. Discrimination may be apparent if banks approve loans to equally creditworthy minority- and nonminority-owned firms, but charge the minority-owned firms a higher interest rate. Therefore, we estimated model specifications analogous to those reported previously for loan denials, but now the dependent variable represents the interest rate charged for firms whose loans were approved and the set of explanatory variables includes characteristics of the loan. More formally, the model we estimated takes the form:

$$(2) \quad I_i = \beta_0 + \beta_1 CW_i + \beta_2 X_i + \beta_3 R_i + \beta_4 LC_i + \varepsilon_i,$$

where I represents the interest rate charged on the loan, LC represents characteristics of the loan (see the notes to Table 4.8 for a full list of the variables included in this set), ε_i is a term capturing random factors, and all other notations are the same as in equation (1).

An important consideration is whether the interest rate may be treated as exogenous, as our reduced form model assumes. In the context of small business loans, in which it is possible that the loan terms may be negotiated in the determination process, this assumption may not be valid. As such, a model that simultaneously estimates the interest rate and the loan decision might be appropriate, except that the interest rate that would be charged to firms whose loans were denied is not available in our data. Alternatively, one could estimate an interest rate model alone for those firms whose loan was approved, adjusting for the potential bias brought about by sample selection. To properly identify such a model, however, a variable is required that is linked to the loan denial decision, but unrelated to the level of interest charged on approved loans; no such variable exists in the data.

Nevertheless, one would expect these considerations to impose a downward bias on the estimated differential in interest rates charged on loans to African American-owned firms. Those firms whose loans were rejected would have been charged higher interest rates than those

approved. Since African American-owned businesses were considerably more likely to be rejected holding constant differences in creditworthiness, one would expect any differential in interest rate to be even greater if those firms were included in the sample. We disregard this implication in the results reported below, but its impact should be kept in mind.

Table 4.13. Models of Interest Rate Charged – USA, 1993

Specification	African American	Asian	Native American	Hispanic	Non-minority Female	Sample Size
1) All loans (controls as in Column 5, Table 4.8)	1.034 (3.72)	0.413 (1.37)	-0.427 (0.63)	0.517 (1.97)	0.025 (0.14)	1,454
<i>Creditworthiness</i>						
2) No credit problems	1.187 (3.27)	0.485 (1.33)	0.910 (1.07)	0.435 (1.48)	0.129 (0.66)	1,137
<i>Organization Type</i>						
3) Proprietorships and Partnerships	1.735 (2.57)	0.826 (1.03)	2.589 (0.9)	1.008 (1.74)	-0.239 (0.53)	364
4) Corporations	0.660 (2.04)	0.359 (1.07)	-0.585 (0.86)	0.491 (1.53)	0.127 (0.66)	1,090
<i>1993 Firm Size</i>						
5) Fewer than 10 Employees	1.200 (2.58)	-0.247 (0.41)	-0.010 (0.01)	0.783 (1.75)	-0.311 (1.02)	574
6) 10 or More Employees	0.450 (1.15)	0.446 (1.21)	-0.197 (0.25)	0.515 (1.37)	0.164 (0.77)	880
<i>Scope of Sales Market</i>						
7) Local	0.751 (1.55)	-0.073 (0.13)	1.773 (1.12)	0.805 (2.05)	0.324 (1.08)	633
8) Regional, National, or International	1.544 (4.26)	1.185 (2.93)	-1.368 (1.85)	0.392 (0.96)	-0.163 (0.73)	821

Source: See Table 4.1.

Notes: Reported estimates are Ordinary Least Squares (OLS) coefficients, t-statistics in parentheses. Each line of this table represents a separate regression with all of the control variables as Column (5) of Table 4.8 (except where specified) as well as: an indicator variable for whether the loan request was for a fixed interest rate loan, the length of the loan, the size of the loan, whether the loan was guaranteed, whether the loan was secured by collateral, and 7 variables identifying the type of collateral used if the loan was secured. The sample consists of firms who had applied for a loan and had their application approved. ‘No credit problems’ means that neither the firm nor the owner had been delinquent on payments over 60 days, no judgments against the owner for the preceding 3 years and the owner had not been bankrupt in the preceding 7 years.

Table 4.14. Models of Interest Rate Charged – SATL, 1993

Specification	African American	African American * SATL	Asian	Native American	Hispanic	Non-minority Female	Sample Size
1) All loans (controls as in Column 5, Table 4.8)	0.974 (3.02)	0.206 (0.35)	0.528 (1.69)	-0.959 (1.32)	0.211 (0.73)	-0.017 (0.09)	1,454
<i>Creditworthiness</i>							
2) No credit problems	0.928 (2.20)	0.927 (1.18)	0.512 (1.39)	0.227 (0.24)	0.008 (0.03)	0.068 (0.32)	1,137
<i>Organization Type</i>							
3) Proprietorships and Partnerships	1.338 (1.93)	6.556 (2.23)	0.772 (0.94)	2.284 (0.80)	0.979 (1.69)	-0.391 (0.83)	364
4) Corporations	0.716 (1.76)	-0.119 (0.19)	0.399 (1.16)	-1.193 (1.63)	0.027 (0.07)	0.107 (0.50)	1,090
<i>1993 Firm Size</i>							
5) Fewer than 10 Employees	1.076 (2.10)	0.746 (0.64)	0.048 (0.08)	-1.371 (0.92)	0.458 (0.97)	-0.488 (1.45)	574
6) 10 or More Employees	0.369 (0.69)	0.152 (0.20)	0.454 (1.23)	-0.200 (0.25)	0.535 (1.23)	0.200 (0.87)	880
<i>Scope of Sales Market</i>							
7) Local	1.154 (2.10)	-1.663 (1.52)	0.189 (0.33)	-1.081 (0.48)	0.541 (1.29)	0.346 (1.06)	633
8) Regional, National, or International	1.227 (2.79)	0.943 (1.27)	1.153 (2.82)	-1.403 (1.90)	0.003 (0.01)	-0.132 (0.54)	821

Source: See Table 4.1.

Notes: See Table 4.13.

The results obtained from estimating equation (2) are reported in Row 1 of Table 4.13, which includes the complete set of control variables comparable to those in Column (5) of Table 4.8. Estimates indicated that African American-owned firms pay rates of interest that are roughly 1 full percentage point higher than similarly situated nonminority-owned firms. Row 2 shows that even African American-owned firms with good credit histories are charged higher interest rates relative to nonminority-owned firms.¹¹⁶

The remainder of the table presents similar specification checks to those reported in Table 4.10. Recall that most of these models identify firms for which the firm's own history is likely to be a more important contributor to its creditworthiness. The specifications by sales market are designed to distinguish the impact of central city location. Unfortunately, sample sizes are

¹¹⁶ Estimates from firms that have had past credit problems are not presented since the higher likelihood of their being denied credit restricts the size of the sample and limits the ability to provide a powerful test of the interest rates charged if they are approved.

smaller in these specifications and reduce the power of the analysis. Nevertheless, we still find that regardless of organization type and firm age, African American-owned firms face statistically significantly higher interest rates. Overall, the evidence presented indicates that African Americans, and to a lesser extent Hispanics and Asians, do face disadvantages in the market for small business credit that does not appear to be attributable to differences in geography or creditworthiness.

Table 4.14 shows results for the SATL. Findings are comparable to those for the nation as a whole.

G. Loan Approval Rates and Access to Credit

The results presented so far may be biased toward finding too small a disparity between nonminority- and African American-owned firms because those minority-owned firms that actually apply for credit may represent a selected sample of the most creditworthy. More marginal minority-owned firms whose loans may have been accepted had they been owned by non-minorities may not even be among the pool of loan applicants. First, these firms may have gone out of business or may not have had the opportunity to commence operations because of their inability to obtain capital. Second, some existing firms may have chosen not to apply for credit because they were afraid their application would be rejected due to prejudice.

Although we have no direct evidence regarding the first proposition, data from the 1993 NSSBF provide some evidence for the second: African American- and Hispanic-owned firms are much more likely to report that they did not apply for a loan, even though they needed credit, because they thought they would be rejected. Table 4.15 reports estimates from Probit models in which the dependent variable is an indicator variable representing failure to apply for a loan fearing denial for all firms. The first row presents racial differences without controlling for any other characteristics of firms, and the results indicate that African American- and Hispanic-owned firms are, respectively, 41 and 24 percentage points more likely than nonminority-owned firms to withhold an application fearing denial.

Of course, some of this difference may be attributable to differences in creditworthiness across firms since firms that are bad credit risks should be afraid that their loan would be denied. To adjust for this, the second row of Table 4.15 reports comparable models that control for differences in creditworthiness and other characteristics of firms. The results from this specification show that the greater fear of rejection among African American- and Hispanic-owned firms can partially be explained by these differences. Nevertheless, a gap of 26 and 16 percentage points still exists for African American- and Hispanic-owned firms relative to nonminority-owned firms with similar characteristics. In fact, when asked directly why they were afraid to apply for loans, minority-owned firms were far more likely to report prejudice as the reason (19 percent for African American-owned firms, 8 percent for Hispanic-owned firms,

and 3 percent for nonminority-owned firms).¹¹⁷ Results obtained in section (b) of Table 4.15 for the SATL region are very similar to those found for the nation as a whole. Further, as section (c) of Table 4.15 shows, African American-owned firms in construction also appear to be fearful of applying because of the possibility of their application being turned down.¹¹⁸

If these minority-owned firms had applied for credit and were rejected because of discrimination, estimates of racial disparities based only upon loan applicants (as in Tables 4.8 and 4.9) would be understated. The perception of prejudice among these firms, however, does not necessarily imply that selection bias is present. Those firms that failed to apply because they feared rejection may have had similar loan denial rates as other minority-owned firms with comparable levels of creditworthiness that did apply. If those firms chose to apply for a loan, differences by race in the combined denial rate of the actual and potential applicants would be the same as what we have estimated for the observed sample of applicants.

Table 4.15. Racial Differences in Failing to Apply for Loans Fearing Denial, 1993

Specification	African American	Asian	Native American	Hispanic	Non-minority Female
a) USA					
No Other Control Variables (n=4,637)	0.405 (16.65)	0.099 (3.61)	0.134 (1.72)	0.235 (8.28)	0.031 (1.54)
Full Set of Control Variables (same as Table 4.8, Column 3 except for loan characteristics) (n=4,633)	0.257 (10.02)	0.054 (1.98)	0.019 (0.27)	0.164 (5.69)	-0.008 (0.38)
b) SATL					
No Other Control Variables, except for SATL dummy and race*SATL interactions (n=4,637)	0.405 (14.53)	0.096 (3.27)	0.154 (1.83)	0.241 (7.77)	0.037 (1.67)
Full Set of Control Variables (same as Table 4.8, Column 3 except for loan characteristics) (n=4,633)	0.248 (8.52)	0.054 (1.85)	0.069 (0.85)	0.168 (5.35)	-0.002 (0.07)
c) Construction					
No Other Control Variables (n=781)	0.350 (6.74)	0.109 (1.27)	-0.087 (0.54)	0.150 (2.22)	-0.007 (0.12)
Full Set of Control Variables (same as Table 4.8, Column 3 except for loan characteristics) (n=781)	0.181 (3.67)	0.064 (0.78)	-0.132 (1.00)	0.039 (0.65)	-0.063 (1.32)

Source: See Table 4.1.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), t-statistics in parentheses. Sample consists of all firms. Dependent variable equals one if the firm said they did not apply for a loan fearing denial, zero otherwise.

¹¹⁷ Other reasons given, including “too little collateral,” “poor credit history,” and “poor balance sheet,” are comparable across groups. Firms could report more than one reason.

¹¹⁸ It was not possible to report separate construction results in earlier tables because of small sample sizes.

More formally, suppose that loan denial rates for equally creditworthy nonminority- and minority-owned firms that applied for credit are θ^W and θ^m , respectively; the measure of discrimination employed in the previous analysis is $\theta^m - \theta^W$. Now suppose that firms that are equally creditworthy, but chose not to apply for a loan because they feared rejection, would have been denied at the rates θ^W and ψ^m for nonminority- and minority-owned firms, respectively. Among the nonminority-owned firms, the denial rate is identical regardless of whether the firm chose to apply or not, conditional upon creditworthiness. Among minority-owned firms, however, those who were afraid to apply may have been denied at a higher rate (perhaps because of their greater propensity to locate in the central city or other factors that are related to their race, but unrelated to creditworthiness) compared with other minority-owned firms. Then the correct representation of the disadvantage faced by minority-owned firms is $[\eta\theta^m + (1-\eta)\psi^m] - \theta^W$, where η represents the share of minority-owned firms desiring credit that submitted an application. Our earlier findings are biased if θ^m is not equal to ψ^m .

One approach that is frequently employed to address such a problem is to estimate a “Heckman-correction” that would formally model the application process in conjunction with the loan outcome for those who applied. The difficulty with this methodology in the present context is that it is only correctly implemented when some variable is present that is correlated with a firm’s decision to apply for a loan, but is independent of the financial institution’s decision to approve or deny the request. Unfortunately, the NSSBF data do not appear to contain any variables that would satisfy these conditions, so we are unable to implement this methodology.¹¹⁹

As an alternative that answers a different, but related, question we consider the ability of firms to get credit among those who desired it, regardless of whether or not they applied. This amounts to analyzing access to credit rather than loan approval and includes in the denominator those firms that needed credit but did not apply because they feared rejection. If differences by race in this rate among all firms who needed credit are greater than differences by race in the rate of denial among loan applicants, then this would indicate that African American- and other minority-owned firms have even less access to credit than an analysis of loan applicants would indicate.

To test this proposition, we estimate a regression model comparable to the one reported in Table 4.10 for the sample of firms that applied for a loan, except that this analysis considers all firms seeking credit and treats those who did not apply for fear of rejection as denials. The sample excludes firms that did not need additional credit in the preceding three years. The results, reported in Table 4.16, are consistent with the previous analysis; we find that selection is not much of an issue for African American-owned firms nationally or in the SATL. Regardless of

¹¹⁹ The only variable that potentially could meet these conditions in the NSSBF data is the distance between a firm and the nearest financial institution. If greater distance reduced a firm’s information regarding the availability of funds, it might be related to the decision to apply for a loan. On the other hand, the creditworthiness of the firm should be independent of its location and should be unlikely to enter into the approval process. Unfortunately, we did not find a direct relationship between distance to the nearest financial institution and the probability of applying for a loan. This may be due to the fact that few firms are located more than a very short distance from the nearest financial institution.

whether we consider denial rates among applicants or denial rates among firms that desired additional credit, African American-owned firms are 20-30 percentage points less likely to obtain credit once control variables are included and even higher than that when they are not. For Asian- and Hispanic-owned firms, however, some selection bias is evident. Among the pool of loan applicants, Hispanic-owned firms are not statistically significantly more likely to be denied than other firms with the same characteristics (*see* Tables 4.8 and 4.9, Column 5). Among the pool of firms seeking additional credit, however, Hispanic-owned firms are 16 percentage points more likely to be denied access to credit, and this difference is statistically significant. Among the pool of loan applicants, Asian-owned firms are about 12 percentage points more likely to be denied than other firms with the same characteristics (*see* Tables 4.8 and 4.9, Column 5). Among the pool of firms seeking additional credit, however, Asian-owned firms are 18 percentage points more likely to be denied access to credit, and this difference is statistically significant.

Table 4.16. Models of Failure to Obtain Credit Among Firms that Desired Additional Credit, 1993

Specification	African American	Asian	Native American	Hispanic	Non-minority Female
a) USA					
No Other Control Variables (n=2,646)	0.455 (14.84)	0.298 (6.82)	0.188 (1.57)	0.297 (7.76)	0.126 (4.01)
Full Set of Control Variables (same as Table 4.8, Column 3 except for loan characteristics) (n=2,643)	0.276 (6.93)	0.180 (3.42)	-0.008 (0.06)	0.165 (3.51)	0.049 (1.38)
b) SATL					
No Other Control Variables (n=2,646)	0.461 (13.02)	0.288 (6.19)	0.191 (1.49)	0.299 (7.13)	0.142 (4.19)
Full Set of Control Variables (same as Table 4.8, Column 3 except for loan characteristics) (n=2,643)	0.268 (5.85)	0.175 (3.16)	-0.018 (0.12)	0.159 (3.10)	0.083 (2.15)
c) Construction					
No Other Control Variables (n=463)	0.413 (6.12)	0.196 (1.46)	0.128 (0.36)	0.255 (2.71)	0.043 (0.51)
Full Set of Control Variables (same as Table 4.8, Column 3 except for loan characteristics) (n=463)	0.051 (2.86)	0.015 (0.53)	-0.015 (0.41)	0.019 (1.00)	-0.010 (1.04)

Source: See Table 4.1.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), t-statistics in parentheses. The sample consists of all firms that applied for loans along with those who needed credit, but did not apply for fear of refusal. Failure to obtain credit includes those firms that were denied and those that did not apply for fear of refusal. Dependent variable is unity if the firm failed to obtain credit and zero if the firm applied for credit and had their loan application approved.

H. Analysis of Credit Market Discrimination in the U.S. in 1998

We turn next to an examination of the extent to which discrimination in the credit market has changed since 1993 using data from the 1998 SSBF conducted by the Board of Governors of the

Federal Reserve System.¹²⁰ This section updates the several estimates obtained above using the 1993 NSSBF. Two complications are that the overall sample size is smaller and a number of the questions have been changed. However, the result is still clear—African American-owned firms face discrimination in the credit market. In addition, there is evidence of discrimination in the credit market against other minority-owned firms as well. We present four sections of evidence, all of which are consistent with our findings from the 1993 survey.

1. Qualitative Evidence

Consistent with the 1993 survey, Table 4.17 shows that African American-owned firms in the 1998 survey report that the biggest problem their firm currently faces is “financing and interest rates.” In the 1993 survey, respondents were asked to report problems in the preceding 12 months (Tables 4.3 and 4.4) and over the next 12 months (Tables 4.5 and 4.6). Interestingly, even though credit availability was by far the most important category for African Americans (21 percent in Table 4.5), interest rates were relatively unimportant (2 percent). The 1998 SSBF, however, did not report separate categories.

¹²⁰ The target population of the survey was for-profit businesses with fewer than 500 employees that were either a single establishment or the headquarters of a multiple establishment company, and were not agricultural firms, financial institutions, or government entities. These firms also had to be in business during December 1998. Data were collected for fiscal year-end 1998. Like its 1993 counterpart, the purpose of this survey was to gather information about small business financial behavior and the use of financial services and financial service providers by these firms. The objectives of the survey were to collect information that can inform researchers and policy makers on the availability of credit to small businesses; the location of the sources of financial services; the types of financial services used, including checking accounts, savings accounts, various types of credit, credit cards, trade credit, and equity injections; as well as the firm’s recent credit acquisition experiences. The survey also investigated the level of debt held by these firms and their accessibility to credit. Additionally, the survey collected information on firm and owner demographics, as well as the firm’s recent income statement and balance sheet.

Table 4.17. Most Important Problem Facing Your Business Today – USA, 1998

	Non-minority male	African American	Other	Hispanic	Non-minority Female	Total
Financing and interest rates	5.8%	18.2%	10.6%	8.1%	6.2%	6.8%
Taxes	7.7%	1.9%	5.3%	3.1%	6.6%	6.9%
Inflation	0.4%	0.6%	0.0%	1.0%	0.4%	0.4%
Poor sales	7.0%	5.9%	11.6%	7.0%	8.3%	7.5%
Cost/availability of labor	3.9%	3.3%	2.4%	3.5%	4.5%	3.9%
Government regulations/red tape	7.1%	3.0%	4.8%	8.1%	6.5%	6.8%
Competition (from larger firms)	11.1%	10.7%	10.6%	18.4%	10.2%	11.3%
Quality of labor	14.4%	11.0%	9.4%	8.7%	9.1%	12.6%
Cost and availability of insurance	2.6%	1.0%	0.8%	0.0%	2.3%	2.2%
Other	11.4%	10.0%	8.3%	16.0%	12.7%	11.7%
Cash flow	4.6%	10.9%	6.3%	3.5%	3.3%	4.6%
Capital other than working capital	1.1%	1.7%	4.1%	0.8%	1.3%	1.3%
Acquiring and retaining new customers	3.1%	3.9%	5.0%	1.8%	3.3%	3.2%
Growth of firm/industry	0.9%	1.0%	1.2%	0.1%	0.4%	0.8%
Overcapacity of firm/industry	0.1%	0.0%	0.0%	0.3%	0.0%	0.1%
Marketing/advertising	2.1%	3.9%	2.5%	2.8%	3.6%	2.5%
Technology	1.4%	1.2%	1.6%	2.6%	1.3%	1.5%
Costs, other than labor	2.7%	1.8%	2.5%	3.6%	3.8%	2.9%
Seasonal/cyclical issues	1.3%	1.2%	0.7%	0.4%	0.7%	1.1%
Bill collection	2.8%	2.2%	2.4%	2.6%	2.8%	2.8%
Too much work/not enough time	3.6%	2.2%	4.3%	1.4%	5.7%	3.9%
No problems	4.6%	4.3%	5.6%	5.8%	6.4%	5.1%
Not ascertainable	0.4%	0.0%	0.0%	0.0%	0.7%	0.4%

Source: NERA calculations from the 1998 SSBF (n=3561).

Notes: Results are weighted.

2. Differences in Loan Denial Rates by Race/Ethnicity

In 1998 as in 1993, in comparison with firms owned by nonminority males, minority and female-owned firms were less creditworthy, more likely to have their loan applications turned down, more likely not to apply for a loan for fear of being denied, and consistently smaller and younger. Moreover, their owners had lower amounts of both home and non-home equity. Minority-owned firms in general, and African American-owned firms in particular, were much less likely to be classified as having a “low risk” credit rating by Dun & Bradstreet.¹²¹

¹²¹ Information on home and non-home equity or on the Dun & Bradstreet credit rating was not available in the 1993 survey.

In the 1993 survey, respondents were asked “During the last three years has the firm applied for credit or asked for the renewal of terms on an existing loan?” In 1998, a narrower question limited to new loans was asked—“Did the firm apply for new loans in the last three years?” In 1993, 43 percent answered the question in the affirmative compared with 27 percent in 1998. Despite the fact that in 1993 the question was broader, the pattern of denials by race and gender is similar across the years. As can be seen below, minority-owned firms were especially likely to have their loan applications denied.

Percentage of Loan Applications Denied		
	1993	1998
Nonminority males	26.2%	24.4%
African Americans	65.9%	62.3%
Asians, Native Americans, etc.	39.9%	47.0%
Hispanics	35.9%	49.9%
Nonminority females	30.1%	23.5%
Overall	28.8%	28.6%

Similarly, the proportion of firms reporting that they did not apply for fear of being denied is similar by race, ethnicity and gender across the two years. More than half of African American owners did not apply for a loan for fear of being denied compared with only one out of five nonminority males.

Percentage Not Applying for Fear of Denial		
	1993	1998
Nonminority males	22.5%	20.2%
African Americans	60.7%	53.9%
Asians, Native Americans, etc.	27.5%	23.1%
Hispanics	41.5%	34.3%
Nonminority females	22.7%	24.2%
Overall	24.7%	23.3%

In the 1998 SSBF survey, respondents who were denied loans were asked if they believed there were reasons other than the official ones provided by their financial institution as to why their loan applications were turned down. Among numerous options provided were the following:

- a) Prejudice on a racial/ethnic basis.
- b) Prejudice against women.
- c) Prejudice against the business location.
- d) Prejudice against the business type.
- e) Prejudice or discrimination (not-specified or other).

Among firm owners who had applied for credit within the last three years and were denied, 34.1 percent believed there were reasons for their denial beyond the official explanation provided by the financial institution. Among non-minorities, 7.7 percent suspected some sort of prejudice. By contrast, the figure among minorities was 25.8 percent. Among owners who needed credit but did not apply for fear of denial, a similar pattern was observed. Only 1.7 percent of non-minorities believed prejudice was the reason, whereas among minorities the figure was 6.8 percent.

In Tables 4.8 and 4.9 the determinants of loan denial rates were estimated using data from the 1993 NSSBF. It was found that African American-owned firms were almost twice as likely to have their loans denied than nonminority male-owned firms, even after controlling for a host of variables included primarily to control for the possibility that minority-owned firms are smaller and less creditworthy than those owned by nonminority men.

A similar exercise is performed below in Tables 4.18 and 4.19 using data from the 1998 SSBF. Column (1) in Table 4.18 shows that African American-owned firms in 1998 had a 42.2 percentage point higher probability of denial than nonminority male-owned firms before taking account of creditworthiness of the firm or any other characteristics. For 1993 the comparable figure was 44.3 percentage points. The addition of a large number of controls reduces the percentage point differential for African Americans to 21.8 in Column (5) as the full set of controls is added. For 1993 the comparable figure was 24.1 percentage points.

The main difference between 1993 and 1998 is that now we find evidence that the probability of denial is significantly higher for Hispanic-owned firms as well. In Table 4.18 Column (5), Hispanic-owned firms have a 17.1 percentage point higher probability of being denied than nonminority male-owned firms. In Table 4.8, by contrast, denial probabilities for Hispanic-owned firms were *not* significantly different from those of nonminority male-owned firms. If anything, discrimination in the small business credit market appears to have expanded during the late 1990s.

Table 4.19 focusing on the SATL region yields similar results—showing significantly larger denial probabilities for African American- and Hispanic-owned firms (24.3 percent and 20.9 percentage points, respectively) than for nonminority male-owned firms. The SATL indicator was not significant in Table 4.19, nor were the interaction terms between SATL and race, ethnicity or gender, indicating that the 1998 loan denial results for the SATL are not significantly different than for the nation as a whole.

Table 4.18. Determinants of Loan Denial Rates - USA, 1998

	(1)	(2)	(3)	(4)	(5)
African American	0.422 (7.94)	0.254 (5.36)	0.217 (5.05)	0.192 (4.52)	0.218 (4.74)
Asian	0.148 (2.54)	0.129 (2.52)	0.049 (1.25)	0.023 (0.65)	0.028 (0.77)
Hispanic	0.353 (6.44)	0.269 (5.37)	0.211 (4.69)	0.183 (4.21)	0.171 (4.00)
Nonminority female	0.087 (2.22)	0.049 (1.55)	0.024 (0.96)	0.016 (0.66)	0.011 (0.44)
Judgments		0.272 (4.28)	0.249 (4.32)	0.272 (4.47)	0.262 (4.20)
Firm delinquent		0.081 (2.88)	0.115 (4.20)	0.103 (3.88)	0.111 (4.01)
Personally delinquent		0.092 (2.85)	0.039 (1.59)	0.042 (1.69)	0.045 (1.76)
Bankrupt past 7 yrs		0.504 (4.48)	0.406 (3.83)	0.392 (3.67)	0.395 (3.64)
\$1998 sales (*10 ⁸)		-0.000 (2.47)	-0.000 (0.26)	0.000 (0.02)	0.000 (0.03)
\$1998 firm equity (*10 ⁸)		0.000 (1.40)	0.000 (0.46)	0.000 (0.20)	0.000 (0.06)
Owner home equity (*10 ⁸)		0.000 (0.52)	0.000 (1.47)	0.000 (0.96)	0.000 (0.90)
Owner net worth (*10 ⁸)		-0.000 (1.25)	-0.000 (1.28)	-0.000 (1.19)	-0.000 (1.24)
Owner years experience		-0.002 (1.42)	-0.001 (0.49)	-0.000 (0.34)	-0.000 (0.21)
Owners' share of business		0.000 (0.75)	-0.000 (0.12)	0.000 (0.03)	-0.000 (0.33)
Dun & Bradstreet credit ratings (4)	No	Yes	Yes	Yes	Yes
Owner's Education (6 indicator variables)	No	Yes	Yes	Yes	Yes
Other Firm Characteristics (17 variables)	No	No	Yes	Yes	Yes
Characteristics of the Loan (1 variable)	No	No	Yes	Yes	Yes
Region (8 indicator variables)	No	No	No	Yes	Yes
Industry (8 indicator variables)	No	No	No	Yes	Yes
Year of Application (5 indicator variables)	No	No	No	No	Yes
Type of Financial Institution (11 indicator vars.)	No	No	No	No	Yes
N	924	924	924	924	905
Pseudo R ²	.1061	.2842	.3714	.3910	.4015
Chi ²	90.0	241.1	315.1	331.8	337.8
Log likelihood	-379.3	-303.7	-266.7	-258.3	-251.7

Source: See Table 4.17.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), t-statistics are in parentheses. "Other firm characteristics" include variables indicating whether the firm had a line of credit, 1998 full time equivalent employment, firm age, metropolitan area, legal form of organization (sole proprietorship, partnership, LLP, S-corporation, C-corporation, or LLC), existing long run relation with lender, geographic scope of market (regional, national, foreign, or international), the value of the firm's inventory, the firm's cash holdings, and the value of land held by the firm. "Characteristics of the loan" includes the size of the loan applied for.

Table 4.19. Determinants of Loan Denial Rates – SATL, 1998

	(1)	(2)	(3)	(4)	(5)
African American	0.471 (7.46)	0.318 (5.38)	0.236 (4.59)	0.217 (4.16)	0.243 (4.35)
Asian	0.189 (3.00)	0.162 (2.89)	0.072 (1.65)	0.041 (1.05)	0.048 (1.17)
Hispanic	0.381 (6.27)	0.309 (5.46)	0.251 (4.79)	0.223 (4.32)	0.209 (4.13)
Nonminority female	0.074 (1.69)	0.049 (1.39)	0.021 (0.75)	0.012 (0.45)	0.004 (0.16)
African American*SATL	-0.092 (1.42)	-0.072 (1.65)	-0.029 (0.63)	-0.028 (0.64)	-0.027 (0.60)
Asian*SATL					
Hispanic*SATL	-0.080 (0.96)	-0.070 (1.32)	-0.051 (1.28)	-0.047 (1.20)	-0.046 (1.20)
Nonminority female*SATL	0.050 (0.53)	-0.011 (0.18)	0.001 (0.02)	0.006 (0.11)	0.017 (0.29)
SATL region	0.043 (0.94)	0.041 (1.05)	0.040 (1.19)	0.006 (0.13)	0.011 (0.22)
Creditworthiness Controls (8 variables)	No	Yes	Yes	Yes	Yes
Owner's Education (6 indicator variables)	No	Yes	Yes	Yes	Yes
Other Firm Characteristics (17 variables)	No	No	Yes	Yes	Yes
Characteristics of the Loan (1 variable)	No	No	Yes	Yes	Yes
Region (7 indicator variables)	No	No	No	Yes	Yes
Industry (8 indicator variables)	No	No	No	Yes	Yes
Year of Application (5 indicator variables)	No	No	No	No	Yes
Type of Financial Institution (11 indicator vars.)	No	No	No	No	Yes
N	918	918	918	918	899
Pseudo R ²	0.1119	0.2893	0.3750	0.3941	0.4052
Chi ²	94.67	244.85	317.33	333.51	339.91
Log likelihood	-375.8	-300.7	-264.5	-256.4	-249.5

Source: See Table 4.17.

Notes: t-statistics in parentheses. Other creditworthiness controls are the four other variables included in Column (2) of Table 4.18. Since there was no variation in the loan denial indicator for the Asian observations in the SATL sample, they dropped out of the regression analysis.

Although tempered by the smaller sample size available, the quality of the experiment is somewhat better using the 1998 data than it was using the 1993 data due to the availability of an improved set of controls for the creditworthiness of the firm and its owner. In 1998, three new variables are included regarding the financial viability of the firm:

- a) The value of the equity, if any, in the owner's home.
- b) The owner's net worth excluding home equity and equity in the firm.

- c) The firm's 1999 Dun & Bradstreet credit rating in five categories (low, moderate, average, significant and high) indicating the likelihood of loan default.¹²²

Despite the fact that these new variables do help to predict loan denials,¹²³ the estimated race, ethnicity, and gender differences including these variables are little changed from those reported above.¹²⁴ This suggests that the large estimated differences in the denial probabilities that were estimated in 1993 were not biased significantly upwards by the fact that these variables were unavailable.

3. Effect of 1998 Survey Design Changes on Differences in Loan Denial Rates

The question we used to examine the 1998 data was somewhat narrower than the question used in the 1993 survey because it was changed by the survey designers. The 1998 question asked about new loans over the preceding three years, whereas the 1993 question covered all loans including renewals. Responses in 1998 were as follows:

Applied for New Loans Last Three Years	Number	Percent
Did not apply	2,599	73.0%
Always approved	713	20.0%
Always denied	166	4.7%
Sometimes approved/sometimes denied	83	2.3%
Total	3,561	100.0%

The dependent variable used in Tables 4.18 and 4.19 was set to one if the loan application was always denied and was set to zero if the application was always approved or sometimes approved/sometimes denied. An alternative dependent variable—called *denylast*—is set to one if the application is always denied, set to zero if always approved. Those responding “sometimes approved/sometimes denied” are excluded from the analysis. Column (1) of Table 4.20 replicates Column (1) of Table 4.18 using *denylast* as the dependent variable with the smaller sub-sample. African Americans, Hispanics, Asians and nonminority females are all confirmed to face higher denial rates than nonminority males using this specification. For African Americans and

¹²² The D&B Commercial Credit Score Report predicts the likelihood of a company paying in a delinquent manner (90+ days past terms) during the next 12 months based on the information in D&B's file. The score is intended to help firms decide quickly whether to accept or reject accounts, adjust terms or credit limits, or conduct a more extensive review based on the report D&B provides. Firms can also determine the company's relative ranking among other businesses in the D&B database.

¹²³ The coefficients and t-statistics on the credit score variables when they were included alone in a U.S. loan denial model was as follows: moderate risk .228 (2.45), average risk= .295 (3.25); significant risk=.319 (3.28); high risk= .391 (3.53), n=924 pseudo $r^2=.0253$. Excluded category 'low risk'. Results were essentially unchanged when a control for SATL was included.

¹²⁴ This confirms the findings of Cavalluzzo, Cavalluzzo and Wolken (1999) who performed a similar exercise with the 1993 data.

Hispanics, the difference is 46 and 36 percentage points, respectively. For Asians, the difference is 19 percentage points, and for nonminority females, 8 percentage points.

Table 4.20. More Loan Denial Probabilities, 1998

	(1)	(2)	(3)	(4)
	<i>Denylast</i>	<i>Denylast</i>	<i>Denylast</i>	<i>Denylast</i>
African American	0.457 (8.00)	0.246 (4.76)	0.499 (7.42)	0.271 (4.32)
Asian	0.185 (2.81)	0.027 (0.65)	0.231 (3.25)	0.043 (0.93)
Hispanic	0.360 (6.28)	0.171 (3.67)	0.385 (6.07)	0.206 (3.79)
Nonminority female	0.083 (2.00)	0.005 (0.20)	0.068 (1.48)	0.001 (0.04)
African American*SATL			-0.091 (1.21)	-0.028 (0.53)
Asian*SATL				
Hispanic*SATL			-0.078 (0.82)	-0.051 (1.06)
Nonminority female*SATL			0.058 (0.57)	0.011 (0.16)
SATL			0.043 (0.87)	0.025 (0.43)
Creditworthiness Controls	No	Yes	No	Yes
Owner's Education	No	Yes	No	Yes
Other Firm Characteristics	No	Yes	No	Yes
Characteristics of the loan	No	Yes	No	Yes
Region	No	Yes	No	Yes
Industry	No	Yes	No	Yes
N	846	846	841	841
Pseudo R ²	0.1112	0.4265	0.1168	0.4284
Chi ²	90.94	348.71	95.23	349.41
Log likelihood	-363.3	-234.5	-360.1	-233.1

Source: See Table 4.17.

Notes: t-statistics in parentheses. Other creditworthiness controls are the four other variables included in Column (2) of Table 4.18. Since there was no variation in the loan denial indicator for the Asian observations in the SATL sample, they dropped out of the regression analysis.

Results consistent with discrimination are confirmed for African Americans and Hispanics in Column (2) of Table 4.20 when a host of demographic and financial characteristics and geographic and industry indicators are included. When interaction terms for the SATL region are added to the model as in Columns (3) and (4), these results remain statistically significant.

Neither the SATL indicator nor any of the interactions between SATL and race, ethnicity or gender is significant.

4. Differences in Interest Rates, Credit Card Use, and Failure to Apply for Fear of Denial

Tables 4.21 through 4.23 provide confirmation from the 1998 survey of a number of other results from the 1993 survey reported above.

First, Table 4.21, which is similar to Tables 4.13 and 4.14, finds that conditional on obtaining a loan, African Americans are charged a higher price for their credit—on average 1.06 percentage points nationally. These results are not significantly different in construction and construction-related industries either.¹²⁵ African Americans in the SATL appear to be no different in this regard than elsewhere in the country.

Table 4.22, which is similar to Table 4.15, shows that African American owners are much more likely not to apply for a loan fearing they will be denied. Based on all of the foregoing evidence this is perhaps a sensible decision—if and when they do apply they are almost twice as likely as nonminority male-owned firms to have their application rejected. This is evident in the SATL as well and also in the construction and construction-related industries.¹²⁶

Finally, Table 4.23, which is comparable to Tables 4.11 and 4.12, suggests that when the financial institution does not know the race or ethnicity of the applicant—as is often the case in an application for a credit card—there are no differences nationally by race or ethnicity in the usage for business purposes of either business or personal credit cards. There was also no evidence of any race effects in the use of business credit cards in the SATL region (row 3) or in construction (results not reported here).

Our confidence in the strength of our findings from the 1993 NSSBF survey is elevated by these findings from the 1998 SSBF survey, which strongly confirm the original results. Unfortunately, African Americans continue to be discriminated against in the market for small business credit. By 1998, this discrimination appears to be on the increase for African Americans and to be expanding to impact other minority groups, such as Hispanics and Asians, as well. This is an important market failure, and one which governments such as the State of Maryland cannot ignore if they are to avoid passive participation in a discriminatory market area.

¹²⁵ There is some indication that nonminority females nationally pay slightly less for their loans, but this difference is not quite statistically significant.

¹²⁶ There is some evidence of this phenomenon for Hispanics nationally as well. However, the coefficient of 0.052 in Row (2) of Table 4.22 is not quite statistically significant.

Table 4.21. Models of Interest Rate Charged, 1998

Specification	African American	African American * SATL	African American * Construction	Asian	Hispanic	Non-minority Female
1a) All Loans (as in Column 5 of Table 4.18) n=765	1.064 (2.66)	–	–	0.559 (1.49)	-0.088 (0.23)	-0.501 (1.93)
1b) All Loans (as in Column 5 of Table 4.18) n=765	1.177 (2.22)	-0.407 (0.49)	0.251 (0.25)	0.639 (1.50)	-0.152 (0.30)	-0.272 (0.92)

Source: See Table 4.17.

Notes: Each line of this table represents a separate regression with all of the control variables. The sample consists of firms who had applied for a loan and had their application approved.

Table 4.22. Racial Differences in Failing to Apply for Loans Fearing Denial, 1998

Specification	African American	Asian	Hispanic	Nonminority female
a) U.S.				
No Other Control Variables (n=3,448)	0.353 (11.90)	0.046 (1.48)	0.173 (5.77)	0.051 (2.55)
Full Set of Control Variables (n=3,448)	0.208 (7.04)	-0.012 (0.43)	0.052 (1.87)	0.011 (0.59)
b) SATL region				
No Other Control Variables (n=618)	0.389 (7.00)	-0.001 (0.01)	0.122 (1.71)	0.080 (1.58)
Full Set of Control Variables (n=618)	0.218 (4.21)	-0.024 (0.35)	0.023 (0.40)	0.023 (0.57)
c) Construction				
No Other Control Variables (n=613)	0.371 (5.06)	0.117 (1.43)	0.020 (0.26)	0.122 (2.08)
Full Set of Control Variables (n=609)	0.273 (3.69)	0.099 (1.32)	-0.062 (1.13)	0.038 (0.74)

Source: See Table 4.17.

Note: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses. Full set of control variables as in Column (5) of Table 4.18, except for loan amount, year of application, and type of lender.

Table 4.23. Models of Credit Card Use, 1998

Specification	African American	Asian	Hispanic	Nonminority female	Sample Size
1) Business Credit Card	-0.001 (0.02)	-0.038 (1.00)	-0.014 (0.38)	-0.018 (0.72)	3,561
2) Personal Credit Card	-0.018 (0.54)	0.016 (0.44)	-0.050 (1.42)	0.012 (0.52)	3,561
3) Business Credit Card SATL	0.034 (0.49)	-0.198 (1.73)	-0.063 (0.7)	-0.108 (1.71)	641
4) Personal Credit Card SATL	-0.031 (0.47)	0.018 (0.16)	-0.028 (0.32)	0.091 (1.54)	641
3) Business Credit Card Construction & related	0.056 (0.62)	-0.074 (0.70)	0.087 (0.86)	-0.025 (0.35)	624
4) Personal Credit Card Construction & related	0.003 (0.04)	0.047 (0.46)	-0.092 (1.01)	-0.073 (0.99)	624

Source: See Table 4.17.

Notes: Each line of this table represents a separate regression with the same control variables as Column (5) of Table 4.18, except for loan amount, year of application and type of lender. The dependent variable indicates whether the firm used business or personal credit cards to finance business expenses. In all specifications, the sample size includes all firms. Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses.

I. Analysis of Credit Market Discrimination in the U.S. in 2003

The most recent wave of the Survey of Small Business Finances was made available by the Board of Governors of the Federal Reserve System in 2007.¹²⁷ This is the fourth and final survey of U.S. small businesses conducted by the Board of Governors since 1987.¹²⁸ The survey gathered data from 4,072 firms selected to be representative of small businesses operating in the U.S. at the end of 2003. The survey covered a nationally representative sample of U.S. for profit, non-financial, non-subsidary, nonagricultural, and nongovernmental businesses with fewer than 500 employees that were in operation at year end 2003 and at the time of interview. Most interviews took place between June 2004 and January 2005. The sample was drawn from the

¹²⁷ See www.federalreserve.gov/pubs/oss/oss3/ssbf03/ssbf03home.html.

¹²⁸ The Federal Reserve Board cancelled the SSBF subsequent to the completion of the 2003 wave, ostensibly for financial reasons. See Robb (2010).

Dun & Bradstreet Market Identifier file. The numbers of employees varied from zero to 486 with a weighted median of 3.0 and weighted mean of 8.6.

Unfortunately, the 2003 SSBF did not over-sample minority-owned firms, as in the first three survey waves. According to survey staff, this was due to concerns that doing so would delay the survey timeline and reduce the overall response rate.¹²⁹

In 1998 almost 8 percent of survey respondents were African American, compared to slightly more than 3 percent in 2003. Hispanics were almost 7 percent in 1998 but less than 4 percent in 2003. Other minorities were 6.5 percent in 1998 but only 5.4 percent in 2003.¹³⁰ Although the population weights were adjusted to accommodate these changes, even these weighted percentages are significantly smaller for minorities in 2003 than in 1998.¹³¹

Using these data, Mach and Wolken (2006) reported that 13.1 percent of firms were owned by nonminority or Hispanic individuals; the share is statistically lower than in 1998 (14.6 percent). The shares for African Americans and Asians each held roughly constant at 4 percent and the share of American Indians and Alaska natives held at roughly 1 percent. However, the share of Hispanics fell a statistically significant amount from 5.6 percent to 4.2 percent, which is somewhat surprising given the evidence that Hispanics are a growing share of the U.S. population—up from 12.5 percent in 2000 to 14.5 percent in 2005. The percentage of firms owned by females also declined from 72.0 percent to 64.8 percent.

Despite these drawbacks, our analysis of the 2003 SSBF yields results that are strongly consistent with those obtained from the 1993 and 1998 survey waves. The next section presents our findings from this analysis.¹³²

1. Qualitative Evidence

Table 4.24 reports the results of asking business owners for the most important problem currently facing their firm. Unlike earlier surveys, “poor sales” was the top concern among all groups. Consistent with the 1993 and 1998 surveys, however, firms owned by minorities and women were more likely to say that their most important problem was “financing and interest

¹²⁹ See footnote 86, above.

¹³⁰ The impact on women was not as pronounced. Females were 23.3 percent in 1998 and 20.9 percent in 2003. For nonminority females, the figures are 17.8 percent in 1998 and 18.2 percent in 2003.

¹³¹ Mach and Wolken (2006, Table 2) report that weighted figures for African Americans were 4.1 percent in 1998 and 3.7 percent in 2003. Hispanics were 5.6 and 4.2 percent, respectively. Asians and Pacific Islanders were 4.4 and 4.2 percent, respectively. Native Americans were 0.8 and 1.3 percent, respectively, and women were 24.3 and 22.4 percent, respectively.

¹³² The data file provided by the Board of Governors includes five separate observations per firm. That is to say there are 4240*5=21,200 observations. These so-called multiple imputations are done via a randomized regression model, and are included because where there are missing observations several alternative estimates are provided. Where values are not missing the values for each of the five imputations are identical. We make use of the data from the first imputation; the results presented here are essentially identical whichever imputation is used. Overall only 1.8 percent of observations in the data file were missing.

rates.” Once again the African American/nonminority difference was most pronounced—only slightly more than 5 percent of nonminority male business owners reported this as their major problem compared to almost 21 percent of African American business owners.

Table 4.24. Most Important Problem Facing Your Business Today – USA, 2003

	Non-minority Male	African American	Other	Hispanic	Non-minority Female	Total
Financing and interest rates	5.4%	20.7%	9.1%	5.7%	5.8%	6.3%
Taxes	6.3%	2.4%	4.9%	7.7%	4.3%	5.7%
Inflation	2.7%	1.0%	2.3%	0.5%	1.4%	2.3%
Poor sales	17.8%	38.5%	28.9%	30.0%	22.5%	20.6%
Cost/availability of labor	1.5%	0.0%	0.6%	1.5%	1.5%	1.4%
Government regulations/red tape	4.7%	1.0%	5.4%	9.6%	2.5%	4.5%
Competition (from larger firms)	4.0%	2.7%	2.7%	3.6%	3.6%	3.8%
Quality of labor	7.9%	6.9%	5.0%	3.8%	6.5%	7.2%
Cost and availability of insurance	10.3%	1.8%	3.1%	5.2%	6.4%	8.6%
Other	2.6%	1.9%	4.0%	2.8%	1.6%	2.5%
Cash flow	5.3%	3.4%	9.4%	4.1%	8.6%	6.0%
Capital other than working capital	6.2%	5.1%	4.6%	7.1%	6.8%	6.3%
Acquiring and retaining new customers	0.9%	2.7%	0.4%	1.1%	0.8%	1.0%
Growth of firm/industry	1.3%	0.0%	1.0%	0.1%	0.7%	1.0%
Overcapacity of firm/industry	1.6%	0.8%	1.8%	0.1%	1.1%	1.4%
Marketing/advertising	0.8%	0.8%	0.6%	1.6%	1.2%	0.9%
Technology	1.2%	2.2%	0.2%	0.0%	1.3%	1.1%
Costs, other than labor	4.2%	2.5%	4.3%	1.0%	6.1%	4.4%
Seasonal/cyclical issues	1.4%	0.7%	1.6%	2.3%	2.0%	1.6%
Bill collection	2.2%	1.8%	2.4%	1.8%	3.3%	2.4%
Too much work/not enough time	4.9%	1.9%	4.0%	2.3%	6.2%	4.8%
No problems	1.5%	0.0%	0.7%	0.8%	1.4%	1.4%
Costs, other than labor	1.5%	0.0%	0.7%	3.7%	1.2%	1.4%
Seasonal/cyclical issues	2.2%	1.0%	0.1%	3.6%	1.0%	1.9%
Bill collection	0.3%	0.0%	0.0%	0.0%	0.8%	0.4%
Too much work/not enough time	0.4%	0.0%	0.7%	0.0%	0.5%	0.4%
No problems	0.3%	0.4%	0.0%	0.0%	0.4%	0.3%
Not ascertainable	0.2%	0.0%	1.3%	0.0%	0.5%	0.3%

Source: NERA calculations from the 2003 SSBF (n=4072).

Note: Results are weighted.

2. Differences in Loan Denial Rates by Race/Ethnicity

Tables 4.25 and 4.26 present estimates of loan denial probabilities for the nation as a whole and for the SATL using a regression model comparable to that which was used with the 1993 and 1998 survey waves.¹³³

Column (1) in Table 4.25 (comparable to Table 4.8 for 1993 and 4.18 for 1998) shows that African American-owned firms in 2003 had a 45.9 percentage point higher probability of denial than nonminority male-owned firms before taking account of creditworthiness of the firm or any other characteristics. The addition of a large number of controls reduces the percentage point differential for African Americans to 9.4 in Column (5) as the full set of controls is added. The coefficients in Column (5) for nonminority females and other minority groups are not significant however.

Table 4.26 (comparable to Table 4.9 for 1993 and 4.19 for 1998), which focuses on the SATL region, yields similar results—showing significantly larger denial probabilities for African American-owned firms than for nonminority male-owned firms. The SATL indicator as well as the race and gender interaction terms with the SATL are also insignificant.

¹³³ In 2003, the credit application question was changed from 1998 to once again include requests for renewals as well as new loans, making it comparable to the 1993 version.

Table 4.25. Determinants of Loan Denial Rates - USA, 2003

	(1)	(2)	(3)	(4)	(5)
African American	0.459 (8.38)	0.136 (5.47)	0.105 (4.80)	0.091 (5.04)	0.094 (4.95)
Asian	0.055 (1.51)	0.020 (1.59)	0.009 (1.01)	0.002 (0.49)	0.001 (0.18)
Hispanic	0.067 (1.74)	0.008 (0.83)	0.004 (0.58)	0.001 (0.30)	0.001 (0.25)
Native American and Other	0.184 (2.22)	0.061 (1.95)	0.032 (1.47)	0.021 (1.43)	0.021 (1.49)
Nonminority female	0.043 (2.17)	0.003 (0.70)	0.002 (0.49)	0.001 (0.57)	0.002 (0.76)
Judgments against owner		0.007 (0.66)	0.003 (0.35)	0.003 (0.54)	0.006 (0.90)
Judgments against firm		0.005 (1.16)	0.005 (1.42)	0.001 (0.54)	0.001 (0.64)
Firm delinquent		0.032 (3.78)	0.021 (3.23)	0.019 (3.89)	0.021 (4.08)
Personally delinquent		-0.007 (0.69)	-0.006 (1.02)	-0.003 (0.82)	-0.002 (0.58)
Owner Bankrupt past 7 yrs		0.046 (1.36)	0.041 (1.35)	0.052 (1.81)	0.044 (1.66)
Firm Bankrupt past 7 yrs		0.000 (0.03)	0.003 (0.37)	0.001 (0.17)	-0.001 (0.38)
\$1998 sales (*10 ⁸)		-0.000 (1.68)	0.000 (0.04)	0.000 (0.29)	0.000 (0.51)
\$1998 firm equity (*10 ⁸)		-0.000 (2.23)	-0.000 (1.03)	-0.000 (1.62)	-0.000 (1.63)
Owner home equity (*10 ⁸)		0.000 (0.28)	0.000 (0.02)	-0.000 (0.45)	-0.000 (0.26)
Owner net worth (*10 ⁸)		-0.000 (2.97)	-0.000 (2.92)	-0.000 (3.06)	-0.000 (3.26)
Owner years experience		0.000 (0.31)	0.000 (1.00)	0.000 (0.82)	0.000 (0.62)
Owners' share of business		0.000 (0.08)	0.000 (0.61)	0.000 (0.38)	0.000 (0.47)
Dun & Bradstreet credit ratings (4)	No	Yes	Yes	Yes	Yes
Owner's Education (6 indicator variables)	No	Yes	Yes	Yes	Yes
Other Firm Characteristics (17 variables)	No	No	Yes	Yes	Yes
Characteristics of the Loan (1 variable)	No	No	Yes	Yes	Yes
Region (8 indicator variables)	No	No	No	Yes	Yes
Industry (8 indicator variables)	No	No	No	Yes	Yes
Year of Application (5 indicator variables)	No	No	No	No	Yes
Type of Financial Institution (11 indicator vars.)	No	No	No	No	Yes
N	1,664	1,655	1,655	1,655	1,605
Pseudo R ²	.0850	.2267	.2901	.3336	.3681
Chi ²	74.1	192.9	246.8	283.8	310.3
Log likelihood	-399.1	-328.9	-301.9	-283.4	-266.4

Source: See Table 4.24. Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses. "Other firm characteristics" include variables indicating whether the firm had a line of credit, 2003 total employment, firm age, metropolitan area, legal form of organization (sole proprietorship, partnership, LLP, S-corporation, C-corporation, or LLC), existing long run relation with lender, geographic scope of market (local, regional, national, foreign, or international), the value of the firm's inventory, the firm's cash holdings, the value of land held by the firm, and total salaries and wages paid. "Characteristics of the loan" includes the size of the loan applied for.

Table 4.26. Determinants of Loan Denial Rates – SATL, 2003

	(1)	(2)	(3)	(4)	(5)
African American	0.412 (6.44)	0.111 (4.18)	0.088 (3.74)	0.082 (4.05)	0.083 (4.05)
Asian	0.051 (1.31)	0.016 (1.24)	0.007 (0.80)	0.001 (0.26)	-0.000 (0.00)
Hispanic	0.030 (0.70)	-0.002 (0.22)	-0.002 (0.23)	-0.002 (0.59)	-0.002 (0.63)
Native and Other	0.206 (2.34)	0.062 (1.94)	0.035 (1.50)	0.022 (1.43)	0.022 (1.50)
Nonminority female	0.054 (2.39)	0.004 (0.70)	0.002 (0.55)	0.002 (0.63)	0.002 (0.96)
African American*SATL	0.053 (0.78)	0.018 (0.81)	0.011 (0.61)	0.003 (0.34)	0.003 (0.35)
Asian*SATL	0.025 (0.27)	0.018 (0.55)	0.010 (0.38)	0.009 (0.49)	0.009 (0.50)
Hispanic-Other*SATL	0.093 (1.04)	0.067 (1.55)	0.032 (1.16)	0.032 (1.39)	0.034 (1.40)
Native-Other*SATL					
Nonminority female*SATL	0.054 (2.39)	0.004 (0.70)	-0.002 (0.19)	-0.001 (0.25)	-0.002 (0.57)
SATL region	0.010 (0.51)	-0.002 (0.35)	-0.001 (0.32)	-0.001 (0.32)	-0.001 (0.38)
Creditworthiness (4 variables)	No	Yes	Yes	Yes	Yes
Dun & Bradstreet credit ratings (4 variables)	No	Yes	Yes	Yes	Yes
Balance Sheet (4 indicator variables)	No	Yes	Yes	Yes	Yes
Owner Experience (1 indicator variable)	No	Yes	Yes	Yes	Yes
Owner's Share of Business (1 indicator variable)	No	Yes	Yes	Yes	Yes
Owner's Education (6 indicator variables)	No	Yes	Yes	Yes	Yes
Other Firm Characteristics (17 variables)	No	No	Yes	Yes	Yes
Characteristics of the Loan (1 variable)	No	No	Yes	Yes	Yes
Region (7 indicator variables)	No	No	No	Yes	Yes
Industry (8 indicator variables)	No	No	No	Yes	Yes
Year of Application (5 indicator variables)	No	No	No	No	Yes
Type of Financial Institution (11 indicator vars.)	No	No	No	No	Yes
N	1,663	1,654	1,654	1,654	1,604
Pseudo R ²	0.0897	0.2307	0.2926	0.3367	0.3719
Chi ²	78.25	196.16	248.84	286.32	313.48
Log likelihood	-397.0	-327.2	-300.8	-282.1	-264.7

Source: See Table 4.24.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses. Creditworthiness controls include presence of legal judgments against the firm during the previous 3 years, more than 60 days delinquent on any personal obligations the firm's owner during the previous 3 years, more than 60 days delinquent on any business obligations the firm during the previous 3 years, and declaration of owner of firm bankruptcy during the previous 7 years. Balance sheet variables include firm sales in 1998, firm equity in 1998, owner's home equity in 1998, and owner's personal net worth (exclusive of firm equity and home equity) in 1998. For other variables, see notes for Table 4.25. Since there was no variation in the loan denial indicator for the Native-Other observations in the SATL sample, they dropped out of the regression analysis.

3. Differences in Interest Rates, Credit Card Use, and Failure to Apply for Fear of Denial

Table 4.27 models the interest rate charged for those minority-owned and nonminority female-owned firms that were able to successfully obtain a loan (comparable to Tables 4.13 and 4.14 for 1993 and Table 4.21 for 1998). As was found in earlier surveys, African American business owners are hurt here as well since they have to pay, nationally on average, 1.05 percentage points more for their loans than nonminority male business owners with identical characteristics. Hispanic business owners, as well, pay 0.99 percentage points more, nationally on average, than their nonminority male counterparts have to pay.

The loan price differential is present for African American and Hispanic business owners in the SATL as well. According to the results in Table 4.27, African American business owners in the SATL may pay 1.1 percentage points more for their loans, on average, than comparable nonminority males. For Hispanics, the differential is 1.04 percentage points.

Table 4.28 reports the results of estimating a model where the dependent variable is whether a business or personal credit card is used to pay business expenses (comparable to Tables 4.11 and 4.12 for 1993 and Table 4.23 for 1998). As noted above, the application procedure for business and personal credit cards is usually automated and not conducted face-to-face. If there were missing variables such as creditworthiness or some such characteristic unobserved to the econometrician, then the race and ethnicity indicator variables should enter significantly in these equations. There is some evidence nationally and in the SATL in 2003 that African Americans and Hispanics are less likely to use personal credit cards for business expenses. However, this result is not observed for business credit cards.

Finally, consistent with earlier results, Table 4.29 (comparable to Tables 4.15 for 1993 and 4.22 for 1998), shows that African American owners are much more likely not to apply for a loan fearing they will be denied. Even after controlling for a host of demographic, financial, geographic, and industry factors, African American business owners are still almost 17 percentage points more likely to fail to apply for loans for fear of denial—even though they need the credit.

In the SATL the phenomenon is evident as well—African American business owners are 15 percentage points more likely to fail to apply for fear of denial. In construction and related industries, the trend is even more pronounced at 30 percentage points. There is evidence of this phenomenon for nonminority female business owners as well in the SATL and in the nation as a whole.

Table 4.27. Models of Interest Rate Charged, 2003

Specification	African American	African American * SATL	African American * Construction	Asian	Hispanic	Native and Other	Non-minority Female
1a) All Loans (as in Column 5 of Table 4.25) n=1,537 (U.S.)	1.046 (2.02)			0.430 (1.20)	0.991 (2.72)	0.260 (0.35)	-0.148 (0.75)
1b) All Loans (as in Column 5 of Table 4.26) n=1,537 (SATL)	1.101 (1.72)	-0.187 (0.16)	-0.162 (0.12)	0.486 (1.16)	1.044 (2.22)	0.480 (0.51)	-0.185 (0.77)

Source: See Table 4.24.

Notes: Each line of this table represents a separate regression with all of the control variables as indicated. Additionally, controls were included for whether the loan required a co-signer or guarantor, whether collateral was required and, if so, the type of collateral required. The sample consists of firms who had applied for a loan and had their application approved. Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses.

Table 4.28. Models of Credit Card Use, 2003

Specification	African American	Asian	Hispanic	Native American and Other	Non-minority Female	Sample Size
1) Business Credit Card	-0.060 (1.13)	0.040 (0.91)	0.004 (0.08)	-0.001 (0.01)	0.002 (0.07)	3,676
2) Personal Credit Card	-0.132 (2.68)	0.036 (0.84)	-0.080 (1.77)	-0.040 (0.48)	0.036 (1.56)	3,676
3) Business Credit Card SATL	-0.057 (0.57)	0.096 (0.94)	-0.013 (0.13)	–	-0.011 (0.20)	655
4) Personal Credit Card SATL	-0.185 (2.04)	-0.149 (1.52)	-0.271 (2.86)	–	0.056 (1.00)	646

Source: See Table 4.24.

Notes: Each line of this table represents a separate regression with the same control variables as Column (5) of Table 4.27, except for loan amount, year of application, and type of lender. The dependent variable indicates whether the firm used business or personal credit cards to finance business expenses. In all specifications, the sample size is all firms. Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses.

Table 4.29. Racial Differences in Failing to Apply for Loans Fearing Denial, 2003

Specification	African American	Asian	Hispanic	Native American and Other	Non-minority Female
a) U.S.					
No Other Control Variables (n=3,704)	0.385 (9.48)	0.059 (1.95)	0.138 (4.01)	0.138 (2.14)	0.072 (4.47)
Full Set of Control Variables (n=3,676)	0.166 (4.73)	0.038 (1.40)	0.050 (1.82)	0.052 (1.01)	0.035 (2.46)
b) SATL region					
No Other Control Variables (n=3,704)	0.357 (7.22)	0.060 (1.80)	0.115 (2.98)	0.126 (1.91)	0.088 (4.93)
Full Set of Control Variables (n=3,676)	0.152 (3.59)	0.036 (1.19)	0.033 (1.06)	0.046 (0.88)	0.046 (2.90)
c) Construction					
No Other Control Variables (n=705)	0.492 (4.34)	-0.022 (0.29)	0.090 (1.22)	0.258 (2.17)	0.026 (0.64)
Full Set of Control Variables (n=695)	0.303 (3.16)	0.002 (0.04)	-0.009 (0.34)	0.137 (1.65)	-0.002 (0.11)

Source: See Table 4.24.

Note: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses. Full set of control variables as in Column (5) of Table 4.25, except for loan amount, year of application, and type of lender. In Panel (b), interaction terms between race, gender, and SATL were all insignificant, with the exception of the interaction between white female and SATL in the model with no other controls.

J. Further Analysis of Credit Market Discrimination: NERA Surveys 1999-2007

NERA has conducted local credit market surveys at nine other times and places across the country since 1999. These include the Chicago metropolitan area in 1999, the State of Maryland¹³⁴ in 2000 (Maryland I), the Jacksonville, Florida metropolitan area in 2002, the Baltimore-Washington, DC metropolitan area in 2003, the St. Louis metropolitan area in 2004, the Denver metropolitan area in 2005, the State of Maryland in 2005 (Maryland II),¹³⁵ the State

¹³⁴ Including the District of Columbia, the State of Delaware, and the portion of Virginia within the Baltimore-Washington Metropolitan Area.

¹³⁵ Including (again) the District of Columbia, the State of Delaware, and the portion of Virginia within the Baltimore-Washington Metropolitan Area.

of Massachusetts in 2005, and the Memphis, TN-MS-AR metropolitan area in 2007. The Chicago, Jacksonville, Baltimore, St. Louis, and Denver surveys focused on construction and construction-related industries, while the two Maryland surveys, the Massachusetts surveys and the Memphis surveys included other goods and services as well.

Our Chicago, Maryland I, and Jacksonville survey questionnaires followed the format of the 1993 NSSBF while our Baltimore, St. Louis, Denver, Maryland II, Massachusetts, and Memphis surveys followed the format of the 1998 SSBF questionnaire.

As a final check on our findings in this chapter, we combined the results of these nine NERA surveys together in a consistent format and re-estimated the basic loan denial model on this larger file. These results appear below in Table 4.30, and are remarkably similar to results seen in Tables 4.8-4.9, 4.18-4.19, and 4.25-4.26. Denial probabilities for African American-owned firms compared to nonminority male-owned firms are 29 percentage points higher—even when creditworthiness controls, other firm and owner characteristics, and interaction terms are included.

Moreover, the NERA surveys found statistically significant loan denial disparities for Hispanic-owned firms and nonminority female-owned firms as well. Denial rates were 18-24 percentage points higher for Hispanic-owned firms and 5-9 percentage points higher for nonminority female-owned firms than for their nonminority male-owned counterparts. Significant loan denial disparities were also observed for Native American-owned firms in some cases (9-19 percentage points higher).

Finally, as shown in Table 4.31, we modeled the rate of interest charged, conditional upon receiving loan approval, using our nine-jurisdiction dataset. Results are very similar to that observed in Tables 4.13-4.14, 4.21 and 4.27. African Americans pay almost 1.7 percentage points more, on average, for their business credit than do nonminority males, declining to 1.5 percentage points when creditworthiness and other firm and owner controls are accounted for.

On the basis of the foregoing, we conclude that the evidence of credit discrimination from NERA's nine local credit market surveys conducted throughout the nation between 1999-2007 is entirely consistent with the results obtained using data from the 1993 NSSBF, the 1998 SSBF, and the 2003 SSBF.

Table 4.30. Determinants of Loan Denial Rates – Nine Jurisdictions

	(1)	(2)
	<i>Most Recent Application</i>	<i>Last Three Years</i>
African American	0.289 (8.2)	0.293 (7.60)
Hispanic	0.178 (3.86)	0.244 (4.59)
Native American	0.087 (1.69)	0.188 (3.29)
Asian	0.042 (0.72)	0.003 (0.05)
Other race	0.313 (3.07)	0.364 (3.15)
Nonminority female	0.046 (1.83)	0.086 (2.96)
Judgments	0.051 (1.23)	0.119 (2.24)
Firm delinquent	0.022 (2.7)	0.057 (5.90)
Personally delinquent	0.076 (7.38)	0.077 (6.03)
Bankrupt past 3yrs	0.228 (3.99)	0.328 (4.74)
N	1,855	1,855
Pseudo R ²	.1905	.1721
Chi ²	336.0	363.3

Source: NERA Credit Market Surveys, 1999-2007.

Notes: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), with t-statistics in parentheses. Indicator variables are also included for the various jurisdictions.

Table 4.31. Determinants of Interest Rates – Nine Jurisdictions

	(1)	(2)
African American	1.683 (3.44)	1.491 (2.98)
Asian	1.221 (2.16)	0.789 (1.34)
Hispanic	0.820 (1.48)	0.895 (1.56)
Native American	1.241 (1.52)	1.008 (1.24)
Other race	-1.115 (0.63)	-1.072 (0.61)
Nonminority female	0.046 (0.16)	0.018 (0.06)
Judgments		0.537 (0.85)
Firm delinquent		-0.041 (0.36)
Personally delinquent		0.644 (3.65)
Bankrupt past 3yrs		1.184 (1.13)
Creditworthiness, Firm, and Owner Characteristics	No	Yes
Loan Characteristics	Yes	Yes
N	1,490	1,463
Adjusted R ²	.0831	.1046
F	11.4	11.05

Source: See Table 4.30.

Notes: Reported estimates are coefficients from OLS regression models, t-statistics are in parentheses. Source: NERA Credit Market Surveys, 1999-2007. Five indicators for primary owner's education level, four indicators for legal form of organization, loan amount applied for, loan amount granted, and month and year of loan application. Seven additional indicators for jurisdiction are also included.

K. Conclusions

The results presented in this chapter indicate that African American-owned firms face serious obstacles in obtaining credit that are unrelated to their creditworthiness, industry, or geographic location. In a number of cases this is true as well for Hispanic-owned firms, Asian-owned firms, Native American-owned firms, and nonminority female-owned firms.

As in any regression-based study, our analysis hinges upon the proposition that all the factors that are related to loan denial rates have been included in our statistical model. If, for example, African American business owners possess some unobservable characteristic that makes them less creditworthy, then our statistical finding would overstate the difference in loan denial rates. To check on this possibility, the models we have estimated include an extensive array of factors that could conceivably affect loan decisions. Moreover, we have also estimated several alternative specifications that could potentially identify the impact of such a bias. Moreover, we have conducted our own surveys on numerous occasions and in numerous places across the U.S.. Throughout, we have consistently found that African Americans and often other minorities as well are disadvantaged in the small business credit market and that our specification tests support the interpretation of discrimination.

Another potential criticism is that this Study has examined loan denial rates rather than loan default rates; some have claimed that the latter provides a more appropriate strategy for identifying discrimination. For example, if banks only approve loans for relatively good African American firms then African American firms should exhibit relatively low default rates. Such an approach has several significant shortcomings that are detailed in Browne and Tootell (1995) and Ladd (1998). For instance, one problem is that it relies on the distribution of default probabilities being similar for African American and nonminority applicants meeting the acceptance standard used for nonminority firms. A further problem is that it assumes that the loan originators know with a high degree of precision what determines defaults, however little hard information exists on what causes default. Additionally, it would be hard to disentangle the factors associated with differences in default rates between nonminority- and African American-owned firms given the fact that the African American-owned firms which obtain credit are typically charged higher interest rates, as we have demonstrated. Finally, such an analysis would require longitudinal data, tracking firms for several years following loan origination. Such data does not exist. While we have highlighted the potential limitations of such an analysis, we believe that it would be fruitful for this sort of longitudinal data collection to take place and for future research to investigate this question more fully.

In addition, many of the criticisms levied against the home mortgage loan discrimination study of Munnell, *et al.* (1996) could perhaps be used here as well. Yet these criticisms appear to have been effectively countered by, for example, Browne and Tootell (1995) and Tootell (1996). What is important to keep in mind in reference to this work compared with Munnell, *et al.* (1996) is the magnitude of the estimated racial disparity. The absolute size of the raw racial differences found in the mortgage study is considerably smaller than those observed in this Study regarding business credit.¹³⁶

¹³⁶ In the Boston Fed study 10 percent of nonminority mortgage applications were rejected compared with 28 percent for African Americans. Loan denial rates (weighted) for business credit in this study ranged from 8.3 to 26.2 percent for nonminority males and between 50.0 and 65.9 percent for African American-owned firms (depending on which NSSBF or SSBF survey is used).

The magnitude of the racial difference in small business loan approval rates is substantial, even after controlling for observed differences in creditworthiness, and considerably larger than that found in the analysis of discrimination in mortgage markets. Why do the results for small business loans differ so markedly from those obtained from mortgage loans? First, many mortgages are sold in the secondary market and a substantial fraction of mortgage lenders have little intention of keeping the loans they make. This added “distance” in the transaction might reduce the likelihood of discrimination. As Day and Liebowitz (1998, p. 6) point out, “economic self-interest, therefore, should reduce racial discrimination in this market more completely than in many others.” A highly sophisticated secondary market for loans to small firms does not exist. Second, the presence of special programs and regulatory incentives to encourage banks and others to increase their mortgage lending to minorities gives these groups some advantages in obtaining a mortgage.

Clearly, a portion of the difference in denial rates between nonminority males and other groups in both types of studies appears to be due to differences in the characteristics of the applicants. Even after controlling for these differences, however, the gap in denial rates in the small business credit market is considerably larger than that found in the mortgage market.¹³⁷

Our analysis finds significant evidence that African American-owned businesses face impediments to obtaining credit that go beyond observable differences in their creditworthiness. These firms are more likely to report that credit availability was a problem in the past and expect it to be a problem in the future. In fact, these concerns prevented more African American-owned firms from applying for loans because they feared being turned down due to prejudice or discrimination. We also found that loan denial rates are significantly higher for African American-owned firms than for nonminority male-owned firms even after taking into account differences in an extensive array of measures of creditworthiness and other characteristics. This result appears to be largely insensitive to geographic location or to changes in econometric specification. Comparable findings are observed for other minority business owners and for nonminority women as well, although not with as much consistency as the findings for African Americans.

Overall, the evidence is strong that African American-owned firms and often other DBE firms as well face large and statistically significant disadvantages in the market for small business credit. The larger size and significance of the effects found in our analyses (compared to mortgage market analyses) significantly reduces the possibility that the observed differences can be explained away by some quirk of the econometric estimation procedure and, instead, strongly suggests that the observed differences are due to discrimination.

¹³⁷ The gap in denial rates between African Americans and non-minorities with similar characteristics is between 34-46 percentage points in the small business credit market compared with 7 percentage points in the mortgage market.

As noted above, the Federal Reserve discontinued the SSBF as of 2003 and the most recent NERA survey on the topic was conducted in 2007. Economist Alicia Robb, in her article “Beyond the Late, Lamented Survey of Small Business Finance,”¹³⁸ notes:

“A few years ago, the [SSBF], the main source of data on small business financing, was cancelled by the Federal Reserve Board. The SSBF had provided detailed information on the use of credit and other financial services by small businesses every five years beginning in 1987. There are no data available after 2003. The Federal Reserve stated the survey was cancelled for financial reasons and the survey had been conducted four times in varying economic conditions. Yet, less than a year after the cancellation, the worst financial crisis hit the United States since the Great Depression. Unfortunately, the nation now has no demand-side data to investigate the impact of this financial crisis on small business financing or firm performance. It is ironic that a survey that could shed light on the impact of a financial crisis on the state of small business financing was cancelled due to budgetary concerns when the government has spent hundreds of billions of dollars on other matters arising from the crisis. The survey cost about \$6 million dollars over a five-year survey period, more of a rounding error to the Fed than a significant investment. What a pity that we have no data for 2008—a year of great interest for policy purposes.”

Given this, what, if anything, can we say about evidence of M/W/DBE disparities in access to capital and credit since the 2003-2007 Period? Although adverse impact of the loss of the SSBF cannot be overstated, Dr. Robb herself has endeavored to partially fill the void using data from a unique data set known as the Kaufman Firm Survey (KFS), which follows a sample of small businesses from 2004 through 2010, as well as other sources.

Key findings from Dr. Robb’s 2012 article entitled “Access to Capital among Young Firms, Minority-owned Firms, Women-owned Firms, and High-tech Firms,”¹³⁹ include the following:

- Differences in asset levels are the largest single factor explaining racial disparities in business creation rates. Half of all Hispanic families in 2004 had less than \$13,375 in wealth and half of all African American families in 2004 had less than \$8,650 in wealth. These figures were 12 percent and 8 percent, respectively, of nonminority wealth levels.
- Research indicates that the level of startup capital is a strong predictor of business success.

¹³⁸ Robb, A. (2010).

¹³⁹ Robb, A. (2012)

- There is evidence that during times of financial distress, bank lending is curtailed, especially to firms that are inherently more risky, such as minority-owned and women-owned firms
- During 2007-2010, young firms owned by African Americans, Hispanics, and other minorities (except Asians) were statistically significantly less likely than similarly situated nonminority firms to apply for credit when they needed it for fear of denial. Dr. Robb notes: “This is perhaps the clearest recent evidence of continued borrowing constraints for Black and Hispanic business owners in the United States. Women were also more likely than men to have this fear during the economic crisis.”
- During 2007-2010, when they did apply for credit, African American, Hispanic, and other young minority firms were statistically significantly more likely to have their loans denied than nonminority owned firms with comparable levels of creditworthiness.
- Moreover, the magnitude of minority denials “increased dramatically” during the 2007-2010 period and through the financial crisis.
- Women-owned firms were also more likely to be denied than nonminority male firms with comparable creditworthiness levels in three of the four years studies, through the difference was only statistically significant in 2008.

Dr. Robb concludes:¹⁴⁰

“The multivariate findings indicate that ... minority owners who did not apply for new loans were significantly more likely than their White counterparts to avoid applying for loans when needed because they were afraid that their loan applications would be declined by lenders. This is even after controlling for credit quality and a host of owner and firm characteristics. Women were also more likely than similar men not to apply for credit when it was needed for fear of having their loan application denied during the years of the economic crisis. The analysis showed that women and minority business owners’ fears of being declined for a loan were not necessarily unwarranted. In particular, in terms of loan application outcomes, even after controlling for such factors as industry, credit score, legal form, and human capital, minority owners of young firms were significantly less likely to have their loan applications approved than were similar White business owners. Similarly, in 2008, women owners of new businesses were significantly less likely than men with similar credit profiles and legal forms of organization to be approved for loans. More generally, the results suggest that in the initial year of startup, Black- and Hispanic-owned businesses faced greater credit constraints than did their White and Asian counterparts. Similarly, women-

¹⁴⁰ *Ibid.*

owned businesses faced greater credit constraints than did similar startups owned by men during the years of the financial crisis.”

Dr. Robb’s findings are consistent with those reported above from the SSBF and from NERA’s own surveys. There is no evidence to suggest that credit discrimination has lessened in the years since 2007. Indeed the available evidence suggests that credit discrimination has continued and, if anything, worsened during the recent financial crisis.

V. DBE Utilization and Disparity in MDOT Contracting

A. Introduction

The *Croson* decision and its progeny have held that statistical evidence of race-based or gender-based disparities in business enterprise activity is a requirement for any state or local entity that desires to establish or maintain race-conscious or gender-conscious requirements for DBE participation in contracting and procurement. Chapters III and IV documented the extent of disparity facing minority- and women-owned firms in the private sector of MDOT's market area, where contracting and procurement activity is typically *not* subject to such requirements. In this Chapter, we combined the evidence from Chapter II, which estimates DBE availability in MDOT's market area, with the Master Contract/Subcontract Database described in Chapter I, in order to examine whether there is statistical evidence of disparities in public sector contracting and purchasing activities supported by MDOT.

To determine whether DBEs have been underutilized in the public sector, we should ideally examine public expenditures that were *not* subject to affirmative action requirements. As a result of the federal DBE and State MBE Programs, however, MDOT has a longstanding policy of pursuing affirmative action in its federally-assisted contracting activities, as well as in its state-funded contracting activities.¹⁴¹

Given the history of U.S. Department of Transportation DBE policies, MDOT's own data may not show evidence of underutilization, even if such underutilization exists in the private sector of its relevant market area. MDOT's data is most useful for examining the effectiveness of its DBE policy during the study period. This is why it will usually be counterproductive to suspend or significantly curtail DBE programs at the first sign of the elimination of public sector disparities. Given the presence of proactive efforts to remedy discrimination, we would expect public sector disparities to lessen or even disappear. This is especially true since the benchmark used to assess disparities is current availability, which has been demonstrated to be lower than would be observed in a race- and gender-neutral market area (*see* Chapter II above). But as long as private sector disparities remain, and private sector efforts to increase utilization of DBEs remain limited, public sector disparities are likely to reemerge if DBE programs are weakened or suspended. Of course, if actual DBE utilization for MDOT still turns out to be significantly less than DBE availability in certain procurement categories, even in the presence of a robust DBE program, then the MDOT data will still provide strong evidence of adverse disparities.

The statistical evidence reported in Chapter I has already established from which specific industries MDOT buys the goods and services it requires as well as from which geographic areas it draws the majority of its prime contractors and subcontractors. In addition, the statistical evidence reported in Chapter II has established what percentage of all firms in MDOT's geographic and product markets are DBEs.

¹⁴¹ See NERA Economic Consulting (2011), Chapter IX, for an historical summary of the State's MBE program.

This Chapter will document:

- To what extent have DBEs been utilized in the contracting and subcontracting activities of MDOT during the study period.
- Whether DBEs have been utilized to the extent that they are available in the relevant market area.

Below, we report the DBE utilization results using two measures—dollars awarded and dollars paid. We report this information for Construction, AE-CRS, Maintenance, IT, Services, and CSE, and for all six of these procurement categories combined. We also report results separately for federally-assisted contracts. All results are reported by race and gender as well as for all DBEs combined.

B. Utilization

For this Study, we examined 769 prime contracts and 5,112 associated subcontracts awarded during the FFY 2005-2009 time period and with a total award value of \$5.50 billion and a total payment value of \$3.08 billion.¹⁴² Of these, 489 prime contracts and 3,611 associated subcontracts were issued on federally-assisted projects, with a total award value of \$4.58 billion and a total paid value of \$2.38 billion.¹⁴³ NAICS codes, DBE status, and detailed race and gender status for the prime contractors and subcontractors included in the master contract/subcontract database were established through computer-assisted cross-referencing of firms in that database with firms in (a) the master directory of DBEs assembled for this Study, (b) Dun & Bradstreet/Hoover's, (c) company profiles drawn from American Business Information, Standard & Poor's, and other sources, and (d) the results of our race/gender misclassification/non-classification surveys.¹⁴⁴

Table 5.1 shows that during the study period, DBEs as a group were awarded 27.01 percent of all MDOT contract and subcontract dollars in Construction, 24.25 percent in AE-CRS, 17.42 percent in Maintenance, 20.66 percent in IT, 15.33 percent in Services, and 0.70 percent in CSE. Combined, DBEs were awarded 22.76 percent of all MDOT contract and subcontract dollars during the five-year study period. Non-DBEs were awarded 77.24 percent of all MDOT contract and subcontract dollars. Among DBEs, firms owned by nonminority females were awarded the largest fraction of contracting and subcontracting dollars, followed in descending order by African Americans, Asians/Pacific Islanders, Hispanics, and Native Americans.

¹⁴² Payments on contracts that were not substantially complete at the time of the Study data collection were excluded from the paid dollar totals.

¹⁴³ Details of the contract universe definitions, sampling and data collection procedures, and response rates are provided in Chapter I.

¹⁴⁴ See Chapter II.

Table 5.1. DBE Utilization at MDOT (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.42	3.30	3.45	3.62	9.75	0.00	4.06
Hispanic	2.67	1.42	1.80	0.00	1.30	0.00	2.04
Asian	0.55	10.68	0.09	14.75	1.00	0.70	2.40
Native American	2.28	0.00	0.00	0.00	0.00	0.00	1.28
Minority	8.93	15.40	5.34	18.37	12.05	0.70	9.78
Nonminority Female	18.08	8.85	12.08	2.30	3.28	0.00	12.98
DBE	27.01	24.25	17.42	20.66	15.33	0.70	22.76
Non-DBE	72.99	75.75	82.58	79.34	84.67	99.30	77.24
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	3,075,432,112	879,183,452	444,026,504	78,236,702	725,617,784	293,136,663	5,495,633,217

Source: NERA Master Contract/Subcontract Database.

Table 5.2 shows that during the study period, DBEs as a group were paid 27.07 percent of all MDOT contract and subcontract dollars in Construction, 23.38 percent in AE-CRS, 10.95 percent in Maintenance, 33.23 percent in IT, 8.42 percent in Services, and 0.70 percent in CSE. Combined, DBEs were paid 21.12 percent of all MDOT contract and subcontract dollars during the five-year study period. Non-DBEs were paid 78.88 percent. Among DBEs, firms owned by nonminority females were paid the largest share, followed in descending order by African Americans, Native Americans, Asians/Pacific Islanders, and Hispanics.

Table 5.2. DBE Utilization at MDOT (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.10	2.59	2.80	3.49	4.55	0.00	2.96
Hispanic	2.89	1.60	0.73	0.00	1.21	0.00	2.10
Asian	0.67	10.89	0.05	28.81	0.69	0.70	2.13
Native American	3.59	0.00	0.01	0.00	0.00	0.00	2.14
Minority	10.25	15.08	3.60	32.30	6.45	0.70	9.33
Nonminority Female	16.82	8.30	7.36	0.93	1.97	0.00	11.79
DBE	27.07	23.38	10.95	33.23	8.42	0.70	21.12
Non-DBE	72.93	76.62	89.05	66.77	91.58	99.30	78.88
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	2,261,152,910	418,487,243	316,620,043	51,483,005	459,433,787	293,136,663	3,800,313,651

Source: NERA Master Contract/Subcontract Database.

Restricting the data to federally-assisted contracts and associated subcontracts, Table 5.3 shows that DBEs as a group were awarded 28.06 percent of all MDOT contract and subcontract dollars in Construction, 24.71 percent in AE-CRS, 21.50 percent in Maintenance, 29.24 percent in IT, 12.91 percent in Services, and 0.77 percent in CSE. Combined, DBEs were awarded 23.73 percent of all MDOT contract and subcontract dollars during the five-year study period. Non-DBEs were paid 76.27 percent. Among DBEs, firms owned by nonminority females were awarded the largest share, followed in descending order by African Americans, Asians/Pacific Islanders, Hispanics, and Native Americans.

Table 5.3. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.31	3.38	2.30	6.19	8.30	0.00	3.73
Hispanic	2.04	1.36	0.91	0.00	0.68	0.00	1.56
Asian	0.55	11.09	0.10	18.92	0.84	0.77	2.65
Native American	2.58	0.00	0.00	0.00	0.00	0.00	1.51
Minority	8.49	15.84	3.32	25.11	9.82	0.77	9.46
Nonminority Female	19.58	8.87	18.18	4.13	3.08	0.00	14.27
DBE	28.06	24.71	21.50	29.24	12.91	0.77	23.73
Non-DBE	71.94	75.29	78.50	70.76	87.09	99.23	76.27
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	2,681,516,219	824,480,482	196,690,221	43,208,653	565,349,612	266,458,652	4,577,703,839

Source: NERA Master Contract/Subcontract Database.

Table 5.4 shows that during the study period, DBEs as a group were paid 28.58 percent of all federally-assisted MDOT contract and subcontract dollars in Construction, 24.11 percent in AE-CRS, 9.70 percent in Maintenance, 27.53 percent in IT, 5.46 percent in Services, and 0.77 percent in CSE. Combined, DBEs were paid 21.94 percent of all MDOT contract and subcontract dollars during the five-year study period. Non-DBEs were paid 78.06 percent. Among DBEs, firms owned by nonminority females were paid the largest share, followed in descending order by Native Americans, African Americans, Asians/Pacific Islanders, and Hispanics.¹⁴⁵

Table 5.4. DBE Utilization at MDOT on Federally-Assisted Contracts (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	2.89	2.65	3.00	4.74	2.05	0.00	2.53
Hispanic	2.02	1.63	0.83	0.00	0.51	0.00	1.54
Asian	0.68	11.57	0.03	21.46	0.72	0.77	2.24
Native American	4.28	0.00	0.03	0.00	0.00	0.00	2.62
Minority	9.87	15.86	3.89	26.20	3.28	0.77	8.93
Nonminority Female	18.71	8.25	5.81	1.32	2.17	0.00	13.01
DBE	28.58	24.11	9.70	27.53	5.46	0.77	21.94
Non-DBE	71.42	75.89	90.30	72.47	94.54	99.23	78.06
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	1,882,836,340	377,959,231	147,766,024	35,167,198	367,542,921	266,458,652	3,077,730,366

Source: NERA Master Contract/Subcontract Database.

C. Disparity Analysis

1. MDOT Results By Major Procurement Category

We turn next to a comparison between our estimates of DBE utilization in MDOT's own contracting and subcontracting activities and our estimates of DBE availability in MDOT's geographic and product market area.

¹⁴⁵ Tables 5.1.A-5.4.A, 5.1.B-5.4.B, and 5.1.C-5.4.C in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

Tables 5.5 and 5.6 present the results of this comparison using dollars awarded and dollars paid, respectively, as the metric of utilization. These two tables include all funding sources. Tables 5.7 and 5.8 are restricted to federally-assisted contracts.

In each table, the figures in the utilization column include both prime contract and subcontract dollars and were derived as described above in this chapter. The figures in the availability column were derived as described above in Chapter II. The disparity ratio, which appears in the final column of Tables 5.5 through 5.8, is derived by dividing utilization by availability and then multiplying the result by 100. A disparity ratio below 100 indicates that DBEs are not participating in MDOT's contracting and subcontracting at a level that is consistent with their estimated availability in the relevant market area. A disparity ratio of 80 or lower is considered to be large, or substantively significant. A disparity ratio is said to be statistically significant if it is unlikely to be caused by chance alone. In the tables below, statistical significance is indicated by one or more asterisks to the right of the disparity ratio.¹⁴⁶

In Table 5.5, using award dollars, adverse disparity ratios are observed in 45 out of 49 cases (92%). Adverse disparity ratios of less than or equal to 80 are observed in 40 out of 49 (82%) cases, and are statistically significant in 39 out of 49 (80%) cases.

In Table 5.6, using paid dollars, adverse disparity ratios are observed in 44 out of 49 (90%) cases. Adverse disparity ratios of less than or equal to 80 are observed in 42 out of 49 (86%) cases, and are statistically significant in 40 out of 49 (82%) cases.

In Construction, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, minorities as a group, and DBEs as a group. Disparities are statistically significant for African Americans, Asians/Pacific Islanders, minorities as a group, and DBEs as a group (Table 5.6 only).

In AE-CRS, adverse disparities are observed for African Americans, Hispanics, Native Americans, Asians/Pacific Islanders, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Native Americans, minorities as a group, nonminority women, and DBEs as a group.

In Maintenance, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics,

¹⁴⁶ Statistical significance was determined using Monte Carlo simulation methods. Starting from the project database of contracts and subcontracts, all with differing dollar sizes, these studies simulate the award process by programming a computer to randomly assign awards to the several types of DBEs as well as to non-DBEs, based on their estimated availability. For example, if African American-owned firms in a particular category had estimated availability of 10.0%, then the computer would randomly pick 10.0% of the awards and assign them to African American-owned firms. The value of the randomly-assigned awards would then be totaled and compared to availability to assess whether there was a disparity. The simulation exercise is then repeated a large number of times. If utilization fell below availability in 95% or more of the runs (or 99%, or 90%, or 85%, depending on the significance level chosen), then that disparity is deemed statistically significant. For additional discussion of simulation analysis, see Wainwright and Holt (2010, p. 50).

Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women (Table 5.6 only), and DBEs as a group.

In IT, adverse disparities are observed for African Americans, Hispanics, Native Americans, minorities as a group (Table 5.5 only), nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Native Americans, minorities as a group (Table 5.5 only), nonminority women, and DBEs as a group.

In Services, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group.

In CSE, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group.

When all procurement categories are combined, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Asians/Pacific Islanders, minorities as a group, and DBEs as a group.

Table 5.5. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.42	9.88	34.63 ****
Hispanic	2.67	3.20	83.43
Asian/Pacific Islander	0.55	4.88	11.35 ****
Native American	2.28	0.36	
Minority-owned	8.93	18.32	48.72 ****
Nonminority female	18.08	15.17	
DBE total	27.01	33.49	80.64
AE-CRS			
African American	3.30	10.19	32.40 ****
Hispanic	1.42	3.87	36.85 ****
Asian/Pacific Islander	10.68	11.40	93.68
Native American	0.00	0.40	0.00 ****
Minority-owned	15.40	25.85	59.58 ****
Nonminority female	8.85	15.42	57.41 ****
DBE total	24.25	41.27	58.77 ****
Maintenance			

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
African American	3.45	13.47	25.61 ****
Hispanic	1.80	4.84	37.15 ****
Asian/Pacific Islander	0.09	4.42	2.14 ****
Native American	0.00	0.27	0.00 ****
Minority-owned	5.34	23.01	23.23 ****
Nonminority female	12.08	14.92	80.97
DBE total	17.42	37.92	45.94 ****
IT			
African American	3.62	14.60	24.77 ****
Hispanic	0.00	3.82	0.00 ****
Asian/Pacific Islander	14.75	13.51	
Native American	0.00	0.52	0.00 ****
Minority-owned	18.37	32.45	56.60 ****
Nonminority female	2.30	16.31	14.08 ****
DBE total	20.66	48.76	42.38 ****
Services			
African American	9.75	15.49	62.96 ***
Hispanic	1.30	3.72	34.86 ****
Asian/Pacific Islander	1.00	8.56	11.67 ****
Native American	0.00	0.30	1.19 ****
Minority-owned	12.05	28.07	42.94 ****
Nonminority female	3.28	19.18	17.10 ****
DBE total	15.33	47.25	32.45 ****
CSE			
African American	0.00	8.51	0.00 ****
Hispanic	0.00	2.39	0.00 ****
Asian/Pacific Islander	0.70	8.43	8.28 ****
Native American	0.00	0.91	0.00 ****
Minority-owned	0.70	20.25	3.45 ****
Nonminority female	0.00	15.80	0.00 ****
DBE total	0.70	36.05	1.94 ****
All Contracting			
African American	4.06	10.66	38.11 ****
Hispanic	2.04	3.63	56.23
Asian/Pacific Islander	2.40	7.89	30.48 ****
Native American	1.28	0.37	
Minority-owned	9.78	22.55	43.38 ****
Nonminority female	12.98	15.46	83.95
DBE total	22.76	38.00	59.88 ****

Source: Calculations from NERA Master Contract/Subcontract Database and NERA Baseline Business Universe.

Note: (1) “*” indicates an adverse disparity that is statistically significant at the 15% level or better (85% confidence). “**” indicates the disparity is significant at a 10% level or better (90% confidence). “***” indicates significance at a 5% level or better (95% confidence). “****” indicates significance at

a 1% level or better (99% confidence). (2) An empty cell in the Disparity Ratio column indicates that no adverse disparity was observed for that category.

Table 5.6. Utilization, Availability, and Disparity Results for MDOT Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.10	9.94	31.14 ****
Hispanic	2.89	3.29	87.98
Asian/Pacific Islander	0.67	5.15	13.07 ****
Native American	3.59	0.37	
Minority-owned	10.25	18.76	54.66 ****
Nonminority female	16.82	15.08	
DBE total	27.07	33.84	80.01 *
AE-CRS			
African American	2.59	10.52	24.60 ****
Hispanic	1.60	3.83	41.85 ***
Asian/Pacific Islander	10.89	11.33	96.11
Native American	0.00	0.40	0.00 ****
Minority-owned	15.08	26.08	57.82 ****
Nonminority female	8.30	15.74	52.74 ****
DBE total	23.38	41.82	55.91 ****
Maintenance			
African American	2.80	14.05	19.94 ****
Hispanic	0.73	5.09	14.39 ****
Asian/Pacific Islander	0.05	4.57	1.06 ****
Native American	0.01	0.27	5.44 ****
Minority-owned	3.60	23.97	15.00 ****
Nonminority female	7.36	15.25	48.23 ****
DBE total	10.95	39.22	27.92 ****
IT			
African American	3.49	13.36	26.15 ****
Hispanic	0.00	3.70	0.00 ****
Asian/Pacific Islander	28.81	13.19	
Native American	0.00	0.47	0.00 ****
Minority-owned	32.30	30.71	
Nonminority female	0.93	16.67	5.57 ****
DBE total	33.23	47.39	70.12 ****
Services			
African American	4.55	15.81	28.78 ****
Hispanic	1.21	3.43	35.25 ****
Asian/Pacific Islander	0.69	8.53	8.06 ****
Native American	0.00	0.28	1.01 ****
Minority-owned	6.45	28.05	22.99 ****
Nonminority female	1.97	19.84	9.93 ****
DBE total	8.42	47.89	17.58 ****

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.51	0.00 ****
Hispanic	0.00	2.39	0.00 ****
Asian/Pacific Islander	0.70	8.43	8.28 ****
Native American	0.00	0.91	0.00 ****
Minority-owned	0.70	20.25	3.45 ****
Nonminority female	0.00	15.80	0.00 ****
DBE total	0.70	36.05	1.94 ****
All Contracting			
African American	2.96	10.76	27.50 ****
Hispanic	2.10	3.60	58.44
Asian/Pacific Islander	2.13	7.37	28.92 ****
Native American	2.14	0.38	
Minority-owned	9.33	22.10	42.22 ****
Nonminority female	11.79	15.54	75.85
DBE total	21.12	37.64	56.10 ****

Source and Notes: See Table 5.5.

In Table 5.7, using award dollars on federally-assisted contracts, adverse disparity ratios are observed in 44 out of 49 cases (90%). Adverse disparity ratios of less than or equal to 80 are observed in 39 out of 49 (80%) cases, and are statistically significant in 38 out of 49 cases (78%).

In Table 5.8, using paid dollars on federally-assisted contracts, adverse disparity ratios are observed in 44 out of 49 (90%) cases. Adverse disparity ratios of less than or equal to 80 are observed in 41 out of 49 (84%) cases, and are statistically significant in 39 out of 49 (80%) cases.

In Construction, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, minorities as a group, and DBEs as a group. Disparities are statistically significant for African Americans, Asians/Pacific Islanders, and minorities as a group.

In AE-CRS, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders (Table 5.7 only), Native Americans, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Native Americans, minorities as a group, nonminority women, and DBEs as a group.

In Maintenance, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women (Table 5.8 only), and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women (Table 5.8 only), and DBEs as a group (Table 5.8 only).

In IT, adverse disparities are observed for African Americans, Hispanics, Native Americans, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically

significant for African Americans, Hispanics, Native Americans, nonminority women, and DBEs as a group.

In Services, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group.

In CSE, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics, Asians/Pacific Islanders, Native Americans, minorities as a group, nonminority women, and DBEs as a group.

When all procurement categories are combined, adverse disparities are observed for African Americans, Hispanics, Asians/Pacific Islanders, minorities as a group, nonminority women, and DBEs as a group. Disparities are statistically significant for African Americans, Hispanics (Table 5.7 only), Asians/Pacific Islanders, minorities as a group, and DBEs as a group.

Table 5.7. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.31	9.97	33.23 ****
Hispanic	2.04	3.10	65.76
Asian/Pacific Islander	0.55	5.07	10.82 ****
Native American	2.58	0.36	
Minority-owned	8.49	18.49	45.88 ****
Nonminority female	19.58	15.57	
DBE total	28.06	34.07	82.38
AE-CRS			
African American	3.38	10.05	33.68 ****
Hispanic	1.36	3.90	35.01 ***
Asian/Pacific Islander	11.09	11.41	97.15
Native American	0.00	0.40	0.00 ****
Minority-owned	15.84	25.76	61.48 ****
Nonminority female	8.87	15.26	58.15 ***
DBE total	24.71	41.01	60.24 ****

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Maintenance			
African American	2.30	8.15	28.25 ****
Hispanic	0.91	3.19	28.69 ****
Asian/Pacific Islander	0.10	2.82	3.58 ****
Native American	0.00	0.27	0.00 ****
Minority-owned	3.32	14.42	23.00 ****
Nonminority female	18.18	12.19	
DBE total	21.50	26.61	80.78
IT			
African American	6.19	12.23	50.62 ****
Hispanic	0.00	4.03	0.00 ****
Asian/Pacific Islander	18.92	14.33	
Native American	0.00	0.51	0.00 ****
Minority-owned	25.11	31.11	80.71
Nonminority female	4.13	13.92	29.65 ****
DBE total	29.24	45.04	64.92 ****
Services			
African American	8.30	15.49	53.56 ****
Hispanic	0.68	3.73	18.09 ****
Asian/Pacific Islander	0.84	8.43	10.00 ****
Native American	0.00	0.30	1.52 ****
Minority-owned	9.82	27.96	35.13 ****
Nonminority female	3.08	19.12	16.13 ****
DBE total	12.91	47.08	27.41 ****
CSE			
African American	0.00	8.57	0.00 ****
Hispanic	0.00	2.15	0.00 ****
Asian/Pacific Islander	0.77	7.43	10.34 ****
Native American	0.00	1.03	0.00 ****
Minority-owned	0.77	19.18	4.01 ****
Nonminority female	0.00	15.75	0.00 ****
DBE total	0.77	34.92	2.20 ****
All Contracting			
African American	3.73	10.19	36.61 ****
Hispanic	1.56	3.49	44.83 *
Asian/Pacific Islander	2.65	8.07	32.85 ****
Native American	1.51	0.37	
Minority-owned	9.46	22.12	42.76 ****
Nonminority female	14.27	15.45	92.33
DBE total	23.73	37.58	63.15 ****

Source and Notes: See Table 5.5.

Table 5.8. Utilization, Availability, and Disparity Results for Federally-Assisted MDOT Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	2.89	10.03	28.80 ****
Hispanic	2.02	3.16	63.95
Asian/Pacific Islander	0.68	5.43	12.58 ****
Native American	4.28	0.36	
Minority-owned	9.87	18.97	52.02 ****
Nonminority female	18.71	15.59	
DBE total	28.58	34.56	82.68
AE-CRS			
African American	2.65	10.42	25.42 ****
Hispanic	1.63	3.85	42.45 **
Asian/Pacific Islander	11.57	11.32	
Native American	0.00	0.40	0.00 ****
Minority-owned	15.86	25.99	61.01 ****
Nonminority female	8.25	15.64	52.77 ****
DBE total	24.11	41.63	57.92 ****
Maintenance			
African American	3.00	8.08	37.19 ****
Hispanic	0.83	3.22	25.69 ****
Asian/Pacific Islander	0.03	2.90	0.92 ****
Native American	0.03	0.30	10.46 *
Minority-owned	3.89	14.49	26.83 ****
Nonminority female	5.81	12.65	45.94 ****
DBE total	9.70	27.15	35.74 ****
IT			
African American	4.74	11.51	41.16 ****
Hispanic	0.00	4.03	0.00 ****
Asian/Pacific Islander	21.46	13.75	
Native American	0.00	0.50	0.00 ****
Minority-owned	26.20	29.80	87.93
Nonminority female	1.32	13.89	9.53 ****
DBE total	27.53	43.69	63.00 ****
Services			
African American	2.05	15.69	13.04 ****
Hispanic	0.51	3.45	14.83 ****
Asian/Pacific Islander	0.72	8.50	8.51 ****
Native American	0.00	0.28	1.26 ****
Minority-owned	3.28	27.92	11.76 ****
Nonminority female	2.17	19.85	10.94 ****
DBE total	5.46	47.77	11.42 ****

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.57	0.00 ****
Hispanic	0.00	2.15	0.00 ****
Asian/Pacific Islander	0.77	7.43	10.34 ****
Native American	0.00	1.03	0.00 ****
Minority-owned	0.77	19.18	4.01 ****
Nonminority female	0.00	15.75	0.00 ****
DBE total	0.77	34.92	2.20 ****
All Contracting			
African American	2.53	10.36	24.47 ****
Hispanic	1.54	3.41	45.07
Asian/Pacific Islander	2.24	7.64	29.30 ****
Native American	2.62	0.38	
Minority-owned	8.93	21.79	40.99 ****
Nonminority female	13.01	15.69	82.95
DBE total	21.94	37.47	58.55 ****

Source and Notes: See Table 5.5.

2. SHA Results By Major Procurement Category

Tables 5.9 through 5.12 below document utilization, availability, and disparity results for SHA comparable to those presented above in Tables 5.5 through 5.8.

Table 5.9. Utilization, Availability, and Disparity Results for SHA Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.06	10.06	30.40 ***
Hispanic	2.67	3.16	84.56
Asian/Pacific Islander	0.44	5.09	8.73 ***
Native American	2.50	0.36	
Minority-owned	8.68	18.68	46.45 ***
Nonminority female	19.45	15.63	
DBE total	28.13	34.30	82.00
AE-CRS			
African American	3.21	9.49	33.80 ***
Hispanic	0.27	4.02	6.84 ***
Asian/Pacific Islander	13.32	11.76	
Native American	0.00	0.40	0.00 ***
Minority-owned	16.80	25.68	65.43 **

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Nonminority female	10.15	14.36	70.70
DBE total	26.95	40.04	67.32 ***
Maintenance			
African American	2.63	9.15	28.77 ***
Hispanic	3.47	3.40	
Asian/Pacific Islander	0.19	3.13	6.15 ***
Native American	0.00	0.27	0.00 ***
Minority-owned	6.29	15.95	39.45 ***
Nonminority female	22.80	13.28	
DBE total	29.10	29.24	99.52
IT			
African American	4.97	15.32	32.41 ***
Hispanic	0.00	3.79	0.00 ***
Asian/Pacific Islander	7.86	13.61	57.79 ***
Native American	0.00	0.53	0.00 ***
Minority-owned	12.83	33.25	38.58 ***
Nonminority female	3.15	16.69	18.89 ***
DBE total	15.98	49.94	32.00 ***
Services			
African American	58.81	16.24	
Hispanic	0.21	4.14	4.99 ***
Asian/Pacific Islander	3.47	8.51	40.80 ***
Native American	0.00	0.37	0.00 ***
Minority-owned	62.49	29.26	
Nonminority female	18.52	20.56	90.07
DBE total	81.01	49.82	
CSE			
African American	0.00	8.32	0.00 ***
Hispanic	0.00	0.95	0.00 ***
Asian/Pacific Islander	0.00	10.57	0.00 ***
Native American	0.00	0.92	0.00 ***
Minority-owned	0.00	20.76	0.00 ***
Nonminority female	0.00	20.91	0.00 ***
DBE total	0.00	41.67	0.00 ***
All Contracting			
African American	3.98	10.11	39.41 ***
Hispanic	2.26	3.52	64.18
Asian/Pacific Islander	2.61	7.75	33.70 ***
Native American	1.88	0.38	
Minority-owned	10.73	21.76	49.33 ***
Nonminority female	17.90	15.16	
DBE total	28.63	36.92	77.55 *

Source and Notes: See Table 5.5.

Table 5.10. Utilization, Availability, and Disparity Results for SHA Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	2.59	10.08	25.66 ***
Hispanic	2.87	3.24	88.63
Asian/Pacific Islander	0.53	5.40	9.81 ***
Native American	4.02	0.37	
Minority-owned	10.00	19.09	52.40 ***
Nonminority female	18.22	15.51	
DBE total	28.22	34.60	81.58
AE-CRS			
African American	2.38	9.61	24.76 ***
Hispanic	0.36	4.01	9.09 ***
Asian/Pacific Islander	14.99	11.74	
Native American	0.00	0.40	0.00 ***
Minority-owned	17.73	25.76	68.84 **
Nonminority female	10.45	14.46	72.25
DBE total	28.18	40.22	70.07 ***
Maintenance			
African American	1.42	9.14	15.52 ***
Hispanic	1.24	3.57	34.68 ***
Asian/Pacific Islander	0.10	3.07	3.26 ***
Native American	0.03	0.30	10.08 **
Minority-owned	2.79	16.09	17.34 ***
Nonminority female	13.47	13.24	
DBE total	16.26	29.33	55.44 ***
IT			
African American	5.53	14.69	37.61 ***
Hispanic	0.00	3.57	0.00 ***
Asian/Pacific Islander	23.89	13.30	
Native American	0.00	0.48	0.00 ***
Minority-owned	29.42	32.04	91.81
Nonminority female	1.47	17.78	8.27 ***
DBE total	30.89	49.82	62.00 ***
Services			
African American	7.45	14.83	50.25 ***
Hispanic	1.01	2.56	39.58 **
Asian/Pacific Islander	13.33	9.13	
Native American	0.00	0.29	0.00 ***
Minority-owned	21.80	26.80	81.32
Nonminority female	18.62	23.36	79.72
DBE total	40.42	50.16	80.57 **

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.32	0.00 ***
Hispanic	0.00	0.95	0.00 ***
Asian/Pacific Islander	0.00	10.57	0.00 ***
Native American	0.00	0.92	0.00 ***
Minority-owned	0.00	20.76	0.00 ***
Nonminority female	0.00	20.91	0.00 ***
DBE total	0.00	41.67	0.00 ***
All Contracting			
African American	2.55	10.07	25.31 ***
Hispanic	2.44	3.46	70.55
Asian/Pacific Islander	2.45	7.23	33.94 ***
Native American	3.25	0.38	
Minority-owned	10.70	21.14	50.60 ***
Nonminority female	16.83	15.25	
DBE total	27.53	36.40	75.63 **

Source and Notes: See Table 5.5.

Table 5.11. Utilization, Availability, and Disparity Results for Federally-Assisted SHA Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	3.10	10.17	30.52 ***
Hispanic	1.96	3.08	63.84
Asian/Pacific Islander	0.42	5.29	7.93 ***
Native American	2.77	0.36	
Minority-owned	8.26	18.90	43.69 ***
Nonminority female	20.71	16.02	
DBE total	28.97	34.92	82.96
AE-CRS			
African American	3.24	9.40	34.49 ***
Hispanic	0.28	4.05	6.93 ***
Asian/Pacific Islander	13.43	11.80	
Native American	0.00	0.40	0.00 ***
Minority-owned	16.96	25.65	66.11 **
Nonminority female	9.94	14.22	69.88
DBE total	26.89	39.87	67.45 **
Maintenance			
African American	0.91	7.28	12.44 ***
Hispanic	1.09	3.10	35.27 **
Asian/Pacific Islander	0.16	2.39	6.55 ***
Native American	0.00	0.24	0.00 ***
Minority-owned	2.15	13.00	16.58 ***
Nonminority female	28.10	11.66	
DBE total	30.26	24.66	
IT			
African American	11.94	14.15	84.36
Hispanic	0.00	4.04	0.00 ***
Asian/Pacific Islander	4.97	15.40	32.30 ***
Native American	0.00	0.56	0.00 ***
Minority-owned	16.91	34.14	49.52 ***
Nonminority female	7.96	14.11	56.41 **
DBE total	24.87	48.25	51.54 ***
Services			
African American	69.57	16.26	
Hispanic	0.00	4.16	0.00 ***
Asian/Pacific Islander	4.11	8.68	47.31 **
Native American	0.00	0.38	0.00 ***
Minority-owned	73.68	29.49	
Nonminority female	9.91	20.41	48.54 ***
DBE total	83.59	49.90	

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a
All Contracting			
African American	4.14	9.89	41.85 ***
Hispanic	1.59	3.48	45.68
Asian/Pacific Islander	2.78	7.88	35.26 ***
Native American	2.12	0.38	
Minority-owned	10.62	21.63	49.12 ***
Nonminority female	18.85	15.19	
DBE total	29.48	36.82	80.04

Source and Notes: See Table 5.5. There were no federally-assisted contracts in CSE.

Table 5.12. Utilization, Availability, and Disparity Results for Federally-Assisted SHA Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	2.58	10.19	25.32 ***
Hispanic	1.89	3.13	60.27
Asian/Pacific Islander	0.50	5.67	8.80 ***
Native American	4.66	0.37	
Minority-owned	9.62	19.36	49.70 ***
Nonminority female	19.89	16.01	
DBE total	29.51	35.38	83.42
AE-CRS			
African American	2.41	9.50	25.33 ***
Hispanic	0.38	4.03	9.32 ***
Asian/Pacific Islander	15.32	11.76	
Native American	0.00	0.41	0.00 ***
Minority-owned	18.10	25.69	70.45 *
Nonminority female	10.10	14.32	70.52
DBE total	28.20	40.02	70.47 **
Maintenance			
African American	1.00	7.08	14.09 ***
Hispanic	0.97	3.26	29.67 **
Asian/Pacific Islander	0.05	2.31	2.06 ***
Native American	0.06	0.26	21.79
Minority-owned	2.07	12.91	16.02 ***
Nonminority female	10.22	11.87	86.10
DBE total	12.29	24.78	49.60 ***
IT			
African American	10.00	14.62	68.40
Hispanic	0.00	4.00	0.00 ***
Asian/Pacific Islander	2.94	15.13	19.43 ***
Native American	0.00	0.57	0.00 ***
Minority-owned	12.94	34.32	37.70 ***
Nonminority female	2.79	14.40	19.40 ***
DBE total	15.73	48.72	32.29 ***
Services			
African American	11.32	15.06	75.17
Hispanic	0.00	2.55	0.00 ***
Asian/Pacific Islander	20.25	9.38	
Native American	0.00	0.30	0.00 ***
Minority-owned	31.57	27.29	
Nonminority female	16.73	23.39	71.52
DBE total	48.30	50.68	95.30

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a
All Contracting			
African American	2.59	9.96	25.97 ***
Hispanic	1.64	3.41	48.08
Asian/Pacific Islander	2.44	7.49	32.61 ***
Native American	3.83	0.38	
Minority-owned	10.50	21.24	49.45 ***
Nonminority female	18.12	15.44	
DBE total	28.63	36.68	78.05

Source and Notes: See Table 5.5. There were no federally-assisted contracts in CSE.

3. MTA Results By Major Procurement Category

Tables 5.13 through 5.16 below document utilization, availability, and disparity results for MTA comparable to those presented above in Tables 5.5 through 5.8.

Table 5.13. Utilization, Availability, and Disparity Results for MTA Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	5.55	8.14	68.17
Hispanic	2.42	3.23	74.80
Asian/Pacific Islander	3.23	3.30	97.87
Native American	0.09	0.28	30.44
Minority-owned	11.29	14.96	75.45
Nonminority female	3.73	11.62	32.11 **
DBE total	15.02	26.58	56.50 *
AE-CRS			
African American	3.27	11.64	28.06 **
Hispanic	3.91	3.62	
Asian/Pacific Islander	7.43	10.64	69.83
Native American	0.00	0.39	0.00 ***
Minority-owned	14.61	26.30	55.55 *
Nonminority female	6.88	17.45	39.41 **
DBE total	21.48	43.75	49.11 ***
Maintenance			
African American	4.83	15.19	31.81 **
Hispanic	0.59	3.92	15.08 **
Asian/Pacific Islander	0.00	6.29	0.00 ***
Native American	0.00	0.51	0.00 ***
Minority-owned	5.42	25.90	20.94 ***
Nonminority female	0.16	16.47	0.95 ***
DBE total	5.58	42.37	13.17 ***
IT			
African American	0.00	9.63	0.00 ***
Hispanic	0.00	4.04	0.00 ***
Asian/Pacific Islander	33.23	12.80	
Native American	0.00	0.45	0.00 ***
Minority-owned	33.23	26.92	
Nonminority female	0.00	13.66	0.00 ***
DBE total	33.23	40.58	81.88

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Services			
African American	2.24	15.22	14.71 ***
Hispanic	0.74	3.56	20.82 *
Asian/Pacific Islander	0.56	8.35	6.71 ***
Native American	0.01	0.27	1.85
Minority-owned	3.55	27.40	12.94 ***
Nonminority female	2.41	18.72	12.86 ***
DBE total	5.95	46.11	12.91 ***
CSE			
African American	0.00	8.60	0.00 ***
Hispanic	0.00	2.45	0.00 ***
Asian/Pacific Islander	0.77	8.20	9.37 ***
Native American	0.00	0.92	0.00 ***
Minority-owned	0.77	20.17	3.81 ***
Nonminority female	0.00	15.40	0.00 ***
DBE total	0.77	35.57	2.16 ***
All Contracting			
African American	2.37	11.42	20.73 ***
Hispanic	1.22	3.50	34.73
Asian/Pacific Islander	2.49	8.65	28.82 **
Native American	0.01	0.38	3.12
Minority-owned	6.09	23.96	25.42 ***
Nonminority female	2.51	16.28	15.41 ***
DBE total	8.60	40.24	21.37 ***

Source and Notes: See Table 5.5.

Table 5.14. Utilization, Availability, and Disparity Results for MTA Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	6.81	8.56	79.61
Hispanic	2.57	3.34	76.95
Asian/Pacific Islander	4.08	3.50	
Native American	0.11	0.31	34.66
Minority-owned	13.57	15.71	86.40
Nonminority female	5.72	12.03	47.55
DBE total	19.29	27.74	69.55
AE-CRS			
African American	2.49	12.99	19.17 ***
Hispanic	4.97	3.43	
Asian/Pacific Islander	4.15	10.31	40.28
Native American	0.00	0.40	0.00 ***
Minority-owned	11.61	27.13	42.79 ***
Nonminority female	3.30	18.95	17.43 ***
DBE total	14.91	46.08	32.36 ***
Maintenance			
African American	5.57	13.79	40.42 *
Hispanic	0.65	3.00	21.58
Asian/Pacific Islander	0.00	6.29	0.00 ***
Native American	0.00	0.55	0.00 ***
Minority-owned	6.22	23.63	26.33 ***
Nonminority female	0.15	17.13	0.87 ***
DBE total	6.37	40.76	15.63 ***
IT			
African American	0.00	9.56	0.00 ***
Hispanic	0.00	4.07	0.00 ***
Asian/Pacific Islander	37.24	12.86	
Native American	0.00	0.45	0.00 ***
Minority-owned	37.24	26.94	
Nonminority female	0.00	13.53	0.00 ***
DBE total	37.24	40.47	92.01
Services			
African American	1.84	15.84	11.59 ***
Hispanic	0.52	3.64	14.34 *
Asian/Pacific Islander	0.32	8.31	3.79 ***
Native American	0.00	0.28	1.30
Minority-owned	2.68	28.07	9.54 ***
Nonminority female	1.84	19.08	9.66 ***
DBE total	4.52	47.15	9.59 ***

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.60	0.00 ***
Hispanic	0.00	2.45	0.00 ***
Asian/Pacific Islander	0.77	8.20	9.37 ***
Native American	0.00	0.92	0.00 ***
Minority-owned	0.77	20.17	3.81 ***
Nonminority female	0.00	15.40	0.00 ***
DBE total	0.77	35.57	2.16 ***
All Contracting			
African American	2.16	12.10	17.83 ***
Hispanic	1.00	3.40	29.48
Asian/Pacific Islander	1.99	8.22	24.24 **
Native American	0.01	0.40	3.54
Minority-owned	5.17	24.11	21.42 ***
Nonminority female	1.71	16.86	10.16 ***
DBE total	6.88	40.97	16.79 ***

Source and Notes: See Table 5.5.

Table 5.15. Utilization, Availability, and Disparity Results for Federally-Assisted MTA Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	5.55	8.14	68.17
Hispanic	2.42	3.23	74.80
Asian/Pacific Islander	3.23	3.30	97.87
Native American	0.09	0.28	30.44
Minority-owned	11.29	14.96	75.45
Nonminority female	3.73	11.62	32.11 **
DBE total	15.02	26.58	56.50
AE-CRS			
African American	3.35	11.63	28.82 **
Hispanic	4.04	3.63	
Asian/Pacific Islander	7.40	10.64	69.50
Native American	0.00	0.40	0.00 ***
Minority-owned	14.79	26.29	56.24
Nonminority female	7.08	17.42	40.65 **
DBE total	21.87	43.71	50.02 ***
Maintenance			
African American	4.83	15.19	31.82 **
Hispanic	0.59	3.92	15.09 **
Asian/Pacific Islander	0.00	6.28	0.00 ***
Native American	0.00	0.51	0.00 ***
Minority-owned	5.43	25.90	20.95 ***
Nonminority female	0.16	16.47	0.95 ***
DBE total	5.58	42.37	13.17 ***
IT			
African American	0.00	9.18	0.00 ***
Hispanic	0.00	4.03	0.00 ***
Asian/Pacific Islander	33.95	12.62	
Native American	0.00	0.44	0.00 ***
Minority-owned	33.95	26.28	
Nonminority female	0.00	13.64	0.00 ***
DBE total	33.95	39.91	85.07
Services			
African American	2.24	15.21	14.73 ***
Hispanic	0.74	3.57	20.76
Asian/Pacific Islander	0.52	8.34	6.24 ***
Native American	0.01	0.27	1.86
Minority-owned	3.51	27.39	12.81 ***
Nonminority female	2.41	18.65	12.92 ***
DBE total	5.92	46.04	12.85 ***

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.51	0.00 ***
Hispanic	0.00	2.07	0.00 ***
Asian/Pacific Islander	0.79	7.49	10.61 ***
Native American	0.00	1.03	0.00 ***
Minority-owned	0.79	19.09	4.16 ***
Nonminority female	0.00	15.80	0.00 ***
DBE total	0.79	34.89	2.28 ***
All Contracting			
African American	2.40	11.42	20.99 ***
Hispanic	1.23	3.50	35.21
Asian/Pacific Islander	2.47	8.59	28.75 *
Native American	0.01	0.38	3.16
Minority-owned	6.11	23.88	25.59 ***
Nonminority female	2.54	16.26	15.62 ***
DBE total	8.65	40.13	21.55 ***

Source and Notes: See Table 5.5. There were no federally-assisted contracts in CSE.

Table 5.16. Utilization, Availability, and Disparity Results for Federally-Assisted MTA Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	6.81	8.56	79.61
Hispanic	2.57	3.34	76.95
Asian/Pacific Islander	4.08	3.50	
Native American	0.11	0.31	34.66
Minority-owned	13.57	15.71	86.40
Nonminority female	5.72	12.03	47.55
DBE total	19.29	27.74	69.55
AE-CRS			
African American	2.56	12.96	19.75 ***
Hispanic	5.19	3.44	
Asian/Pacific Islander	3.73	10.34	36.10
Native American	0.00	0.40	0.00 ***
Minority-owned	11.48	27.14	42.31 **
Nonminority female	3.42	18.85	18.13 ***
DBE total	14.90	46.00	32.40 ***
Maintenance			
African American	5.58	13.80	40.43
Hispanic	0.65	3.00	21.61
Asian/Pacific Islander	0.00	6.28	0.00 ***
Native American	0.00	0.55	0.00 ***
Minority-owned	6.23	23.63	26.35 ***
Nonminority female	0.15	17.13	0.87 ***
DBE total	6.37	40.76	15.64 ***
IT			
African American	0.00	9.10	0.00 ***
Hispanic	0.00	4.06	0.00 ***
Asian/Pacific Islander	38.15	12.68	
Native American	0.00	0.44	0.00 ***
Minority-owned	38.15	26.29	
Nonminority female	0.00	13.50	0.00 ***
DBE total	38.15	39.79	95.89
Services			
African American	1.84	15.84	11.61 ***
Hispanic	0.52	3.65	14.32 **
Asian/Pacific Islander	0.28	8.30	3.43 ***
Native American	0.00	0.28	1.31
Minority-owned	2.65	28.06	9.44 ***
Nonminority female	1.85	19.04	9.69 ***
DBE total	4.49	47.11	9.54 ***

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	8.51	0.00 ***
Hispanic	0.00	2.07	0.00 ***
Asian/Pacific Islander	0.79	7.49	10.61 ***
Native American	0.00	1.03	0.00 ***
Minority-owned	0.79	19.09	4.16 ***
Nonminority female	0.00	15.80	0.00 ***
DBE total	0.79	34.89	2.28 ***
All Contracting			
African American	2.18	12.09	18.07 ***
Hispanic	1.02	3.40	29.95
Asian/Pacific Islander	1.96	8.13	24.07 *
Native American	0.01	0.40	3.59
Minority-owned	5.17	24.01	21.54 ***
Nonminority female	1.74	16.81	10.32 ***
DBE total	6.91	40.82	16.92 ***

Source and Notes: See Table 5.5. There were no federally-assisted contracts in CSE.

4. MAA Results By Major Procurement Category

Tables 5.17 through 5.20 below document utilization, availability, and disparity results for MAA comparable to those presented above in Tables 5.5 through 5.8.

Table 5.17. Utilization, Availability, and Disparity Results for MAA Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	8.47	9.28	91.32
Hispanic	2.89	3.84	75.22
Asian/Pacific Islander	0.24	3.46	7.06 ***
Native American	0.00	0.37	0.00 ***
Minority-owned	11.60	16.95	68.46
Nonminority female	4.73	12.47	37.96 **
DBE total	16.33	29.42	55.53 **
AE-CRS			
African American	3.83	11.33	33.75 **
Hispanic	3.40	3.49	97.34
Asian/Pacific Islander	2.36	10.78	21.86 ***
Native American	0.00	0.37	0.00 ***
Minority-owned	9.58	25.98	36.87 ***
Nonminority female	5.35	17.45	30.64 ***
DBE total	14.93	43.43	34.37 ***
Maintenance			
African American	3.97	18.36	21.65 ***
Hispanic	0.00	6.61	0.00 ***
Asian/Pacific Islander	0.00	5.77	0.00 ***
Native American	0.00	0.25	0.00 ***
Minority-owned	3.97	30.98	12.83 ***
Nonminority female	2.39	16.69	14.30 ***
DBE total	6.36	47.67	13.34 ***
IT			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Services			
African American	15.86	15.34	
Hispanic	3.63	3.66	99.21
Asian/Pacific Islander	1.51	10.00	15.10 ***
Native American	0.00	0.30	0.00 ***
Minority-owned	21.00	29.30	71.68
Nonminority female	0.17	18.66	0.91 ***
DBE total	21.17	47.96	44.15 ***
CSE			
African American	0.00	7.89	0.00 ***
Hispanic	0.00	2.37	0.00 ***
Asian/Pacific Islander	0.00	9.64	0.00 ***
Native American	0.00	0.85	0.00 ***
Minority-owned	0.00	20.75	0.00 ***
Nonminority female	0.00	17.43	0.00 ***
DBE total	0.00	38.18	0.00 ***
All Contracting			
African American	7.94	13.10	60.55
Hispanic	2.31	4.49	51.42
Asian/Pacific Islander	0.91	7.70	11.80 ***
Native American	0.00	0.34	0.00 ***
Minority-owned	11.15	25.63	43.51 ***
Nonminority female	2.90	16.21	17.87 ***
DBE total	14.05	41.83	33.58 ***

Source and Notes: See Table 5.5. There were no contracts in IT.

Table 5.18. Utilization, Availability, and Disparity Results for MAA Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	7.78	9.58	81.23
Hispanic	3.46	3.88	89.04
Asian/Pacific Islander	0.23	3.60	6.44 ***
Native American	0.00	0.40	0.00 ***
Minority-owned	11.47	17.46	65.67
Nonminority female	4.59	12.41	36.99 **
DBE total	16.06	29.87	53.76 **
AE-CRS			
African American	3.59	10.81	33.20 **
Hispanic	2.64	3.62	72.88
Asian/Pacific Islander	1.95	11.06	17.59 ***
Native American	0.00	0.38	0.00 ***
Minority-owned	8.17	25.88	31.59 ***
Nonminority female	5.45	16.59	32.88 ***
DBE total	13.63	42.47	32.09 ***
Maintenance			
African American	3.13	19.18	16.29 ***
Hispanic	0.00	6.87	0.00 ***
Asian/Pacific Islander	0.00	5.97	0.00 ***
Native American	0.00	0.21	0.00
Minority-owned	3.13	32.22	9.70 ***
Nonminority female	2.60	17.15	15.18 ***
DBE total	5.73	49.38	11.60 ***
IT			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a
Services			
African American	15.33	17.96	85.34
Hispanic	4.07	3.51	
Asian/Pacific Islander	0.45	9.20	4.84 ***
Native American	0.00	0.30	0.00 ***
Minority-owned	19.84	30.98	64.06
Nonminority female	0.16	18.67	0.85 ***
DBE total	20.00	49.65	40.29 ***

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	7.89	0.00 ***
Hispanic	0.00	2.37	0.00 ***
Asian/Pacific Islander	0.00	9.64	0.00 ***
Native American	0.00	0.85	0.00 ***
Minority-owned	0.00	20.75	0.00 ***
Nonminority female	0.00	17.43	0.00 ***
DBE total	0.00	38.18	0.00 ***
All Contracting			
African American	7.18	13.24	54.25
Hispanic	2.44	4.71	51.78
Asian/Pacific Islander	0.48	7.14	6.70 ***
Native American	0.00	0.34	0.00 ***
Minority-owned	10.10	25.43	39.73 ***
Nonminority female	3.06	15.57	19.64 ***
DBE total	13.16	41.00	32.10 ***

Source and Notes: See Table 5.5. There were no contracts in IT.

Table 5.19. Utilization, Availability, and Disparity Results for Federally-Assisted MAA Contracting, Overall and by Contracting Category (Dollars Awarded)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	7.55	8.16	92.58
Hispanic	4.64	3.75	
Asian/Pacific Islander	0.01	2.00	0.59 ***
Native American	0.00	0.34	0.00 ***
Minority-owned	12.20	14.25	85.63
Nonminority female	5.71	11.33	50.42
DBE total	17.92	25.58	70.04
AE-CRS			
African American	4.50	11.02	40.79
Hispanic	3.41	3.46	98.43
Asian/Pacific Islander	2.03	10.44	19.44 *
Native American	0.00	0.36	0.00 ***
Minority-owned	9.93	25.28	39.30 *
Nonminority female	5.01	17.59	28.47 *
DBE total	14.94	42.87	34.85 ***
Maintenance			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a
IT			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a
Services			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	9.56	0.00 ***
Hispanic	0.00	3.47	0.00 ***
Asian/Pacific Islander	0.00	6.50	0.00 ***
Native American	0.00	0.98	0.00 ***
Minority-owned	0.00	20.51	0.00 ***
Nonminority female	0.00	14.89	0.00 ***
DBE total	0.00	35.40	0.00 ***
All Contracting			
African American	5.38	10.52	51.21
Hispanic	3.67	3.51	
Asian/Pacific Islander	1.13	8.95	12.63 **
Native American	0.00	0.36	0.00 ***
Minority-owned	10.18	23.33	43.63 *
Nonminority female	4.96	16.48	30.11 *
DBE total	15.15	39.82	38.04 ***

Source and Notes: See Table 5.5. There were no federally-assisted contracts in Maintenance, IT, or Services.

Table 5.20. Utilization, Availability, and Disparity Results for Federally-Assisted MAA Contracting, Overall and by Contracting Category (Dollars Paid)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	5.31	8.54	62.16
Hispanic	5.35	3.62	
Asian/Pacific Islander	0.01	2.16	0.57 **
Native American	0.00	0.34	0.00
Minority-owned	10.67	14.66	72.79
Nonminority female	5.30	10.85	48.82
DBE total	15.97	25.51	62.60
AE-CRS			
African American	4.60	10.82	42.49
Hispanic	3.24	3.50	92.63
Asian/Pacific Islander	0.93	10.58	8.83 **
Native American	0.00	0.36	0.00
Minority-owned	8.77	25.26	34.73 *
Nonminority female	5.05	17.25	29.30
DBE total	13.83	42.51	32.53 ***
Maintenance			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a
IT			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a
Services			
African American	n/a	n/a	n/a
Hispanic	n/a	n/a	n/a
Asian/Pacific Islander	n/a	n/a	n/a
Native American	n/a	n/a	n/a
Minority-owned	n/a	n/a	n/a
Nonminority female	n/a	n/a	n/a
DBE total	n/a	n/a	n/a

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
CSE			
African American	0.00	9.56	0.00 ***
Hispanic	0.00	3.47	0.00 ***
Asian/Pacific Islander	0.00	6.50	0.00 ***
Native American	0.00	0.98	0.00 **
Minority-owned	0.00	20.51	0.00 ***
Nonminority female	0.00	14.89	0.00 ***
DBE total	0.00	35.40	0.00 ***
All Contracting			
African American	4.56	10.17	44.82
Hispanic	4.07	3.53	
Asian/Pacific Islander	0.36	8.18	4.36 ***
Native American	0.00	0.36	0.00
Minority-owned	8.99	22.25	40.39
Nonminority female	4.72	15.44	30.59
DBE total	13.71	37.69	36.37 **

Source and Notes: See Table 5.5. There were no federally-assisted contracts in Maintenance, IT, or Services.

It would be a mistake to interpret a lack of statistical significance in any of the categories in Tables 5.5 through 5.20, or in Appendix IV, as a lack of adverse disparity. While statistical significance tests are useful for assessing whether phenomena other than chance can results that we observe, they do have important limitations. First, the fact that a disparity is not statistically significant does not mean that it *is* due to chance. It means only that we cannot rule out chance. Second, there are circumstances under which tests for statistical significance are not helpful for distinguishing disparities due to chance from disparities due to other reasons (*e.g.*, discrimination). In the particular statistical application presented in this chapter, the likelihood that a test for statistical significance will incorrectly attribute to chance disparities that are, in fact, due to discrimination becomes greater when (a) we examine a relatively small number of procurements involving the affected group, (b) the expected utilization of particular race/ethnic/gender groups—measured by their availability—is relatively small, and (c) there are large variations in the relative dollar size of contracts and subcontracts.

5. Results By Detailed Industry

Utilization, availability, and disparity results comparable to those presented above in Tables 5.5 through 5.20 were also produced according to detailed industry categories. In the interest of space, these tables are presented below in Appendix IV.¹⁴⁷

D. Current versus Expected Availability

Finally, Table 5.21 provides a comparison between current levels of DBE availability for MDOT and levels that we would expect to observe in a race- and gender-neutral market area. The latter, referred to as “expected availability,” is derived by dividing the current availability figures, as documented in Tables 2.23 and 2.24, by the disparity ratios documented in column (3) of Table 3.12. If no disparity is present in the relevant market area, the disparity ratio will be equal to 100 and expected availability will be equivalent to current availability. In cases where adverse disparities are present in the relevant market area, the disparity ratio will be less than 100 and, consequently, expected availability will exceed current availability. In all 98 cases examined in Table 5.21, expected DBE availability in MDOT’s market area exceeds current DBE availability.¹⁴⁸

Table 5.21. Current Availability and Expected Availability for MDOT

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CONSTRUCTION				
African American	9.88	13.97	9.94	14.05
Hispanic	3.20	6.25	3.29	6.43
Asian/Pacific Islander	4.88	7.13	5.15	7.53
Native American	0.36	0.56	0.37	0.58
Minority	18.32	33.20	18.76	34.00
Nonminority female	15.17	23.32	15.08	23.19
DBE total	33.49	53.61	33.84	54.17

¹⁴⁷ Disparity tests were also carried out at the NAICS Industry Sub-Sector and NAICS Industry level, with similar results to those observed at the Industry Group level. In the interest of space, these results are not reported here.

¹⁴⁸ Tables 5.21.A-5.21.C in Appendix III show comparable data for SHA, MTA, and MAA, respectively.

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
AE-CRS				
African American	10.19	14.41	10.52	14.87
Hispanic	3.87	7.56	3.83	7.48
Asian/Pacific Islander	11.40	16.66	11.33	16.56
Native American	0.40	0.62	0.40	0.62
Minority	25.85	46.85	26.08	47.26
Nonminority female	15.42	23.71	15.74	24.20
DBE total	41.27	66.06	41.82	66.94
MAINTENANCE				
African American	13.47	19.04	14.05	19.86
Hispanic	4.84	9.45	5.09	9.94
Asian/Pacific Islander	4.42	6.46	4.57	6.68
Native American	0.27	0.42	0.27	0.42
Minority	23.01	41.70	23.97	43.44
Nonminority female	14.92	22.94	15.25	23.45
DBE total	37.92	60.70	39.22	62.78
IT				
African American	14.60	32.89	13.36	30.10
Hispanic	3.82	6.13	3.70	5.94
Asian/Pacific Islander	13.51	17.11	13.19	16.70
Native American	0.52	0.66	0.47	0.60
Minority	32.45	49.53	30.71	46.88
Nonminority female	16.31	20.10	16.67	20.55
DBE total	48.76	65.39	47.39	63.55
SERVICES				
African American	15.49	34.90	15.81	35.62
Hispanic	3.72	5.97	3.43	5.51
Asian/Pacific Islander	8.56	10.84	8.53	10.80
Native American	0.30	0.38	0.28	0.36
Minority	28.07	42.85	28.05	42.82
Nonminority female	19.18	23.64	19.84	24.45
DBE total	47.25	63.36	47.89	64.22
CSE				
African American	8.51	19.17	8.51	19.17
Hispanic	2.39	3.84	2.39	3.84
Asian/Pacific Islander	8.43	10.67	8.43	10.67
Native American	0.91	1.16	0.91	1.16
Minority	20.25	30.91	20.25	30.91
Nonminority female	15.80	19.47	15.80	19.47
DBE total	36.05	48.34	36.05	48.34

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
OVERALL				
African American	10.66	19.67	10.76	19.85
Hispanic	3.63	5.59	3.60	5.55
Asian/Pacific Islander	7.89	9.27	7.37	8.66
Native American	0.37	0.46	0.38	0.47
Minority	22.55	35.00	22.10	34.30
Nonminority female	15.46	19.91	15.54	20.01
DBE total	38.00	52.33	37.64	51.84

Source: See Tables 2.23, 2.24, 3.12.

[This page intentionally left blank]

VI. Qualitative Evidence of Disparity

We have presented a variety of economic and statistical findings above that are consistent with or indicative of the presence of business discrimination against minorities and women in the geographic and product markets that are relevant to MDOT's contracting and procurement activities. Chapters III, IV, and V in particular have documented large and statistically significant adverse disparities in MDOT's relevant markets impacting minority and female entrepreneurs. Commercial loan denial rates are higher, the cost of credit is higher, business formation rates are lower, and business owner earnings are lower—even when comparisons are restricted to similarly situated businesses and business owners.

As a further check on these findings, we investigated qualitative (*i.e.*, anecdotal) evidence of disparities in MDOT's market area.¹⁴⁹ First, we conducted a large scale survey of business establishments in these markets—both DBE and non-DBE—and asked owners directly about their experiences, if any, with contemporary business-related acts of discrimination and other related issues.

Briefly, among respondents to our survey we found that DBEs in MDOT's markets report suffering business-related discrimination in large numbers and with statistically significantly greater frequency than non-DBEs. These differences remain statistically significant when firm size and owner characteristics are held constant. We also find that DBEs in these markets are more likely than similarly situated non-DBEs to report that specific aspects of the regular business environment make it harder for them to conduct business, and less likely than similarly situated non-DBEs to report that specific aspects of the regular business environment make it easier for them to conduct business. Additionally, we find that DBE firms that have been hired in the past by non-DBE prime contractors to work on public sector contracts with DBE goals are rarely hired—or even solicited—by these prime contractors to work on projects without DBE goals. The relative lack of DBE hiring and, even more tellingly, the relative lack of solicitation of DBEs in the absence of affirmative efforts by MDOT, its modal administrations, and other public entities in MDOT's market area shows that business discrimination continues to fetter DBE business opportunities in MDOT's relevant markets. We conclude that the statistical evidence presented in this report is consistent with these anecdotal accounts of contemporary business discrimination.

Next, we conducted in-depth personal interviews with minority, women and majority business owners about their experiences in seeking and performing contracts in MDOT's market area. These focus groups confirmed the results of the statistical evidence and the mail surveys: minorities and women encounter significant barriers to the success of their firms in seeking public and private sector work, and these barriers are often the result of discrimination.

¹⁴⁹ The underlying data in this document is drawn from the NERA's 2011 Study, including the results of the contract and subcontract data collection, telephone surveys, econometric analyses, mail surveys, and business owner interviews. Further, as discussed at the beginning of Chapter II, the term "DBE" is, in general, used interchangeably with "MBE" and "M/WBE" throughout the report.

The remainder of this Chapter is organized as follows. We first discuss the mail survey results in Section A. In Section A.1, we discuss the survey questionnaire, sample frame, and response rate. Section A.2 presents evidence on willingness of firms to do business with the public sector. Section A.3 presents the key findings from the DBE and non-DBE respondents concerning disparate treatment. Section A.4 presents the key findings concerning the impact of the regular business environment on DBEs' ability to conduct their businesses. Section A.5 presents key findings to our questions concerning whether prime contractors solicit or hire DBEs for work on public or private contracts without DBE goals. Section A.6 then examines whether DBEs and non-DBEs that responded to the mail surveys are representative of all DBEs and non-DBEs in the relevant markets. To do so, we surveyed a random sample of DBEs and non-DBEs that did not respond to our mail survey, and then compared their responses to key questions with those of our survey respondents.

Finally, Section B describes the results of the business experience group interviews. Responses are grouped under the headings of the most common cited barriers and issues facing DBEs and non-DBEs.

A. Business Experience Surveys

1. Survey Questionnaire, Sample, and Responses

The survey questionnaires asked whether and with what frequency firms had experienced discrimination in a wide variety of likely business dealings in the previous five years. The survey also inquired about the influence of specific aspects of the everyday business environment, such as bonding and insurance requirements, on each firm's ability to do business in MDOT's relevant markets. We also asked about the relative frequency with which firms that have been used as subcontractors, subconsultants, or suppliers by prime contractors on contracts *with* DBE goals have been hired to work, or even solicited to bid, on similar contracts *without* DBE goals. Finally, we posed questions about the characteristics of the firm, including firm age, owner's education, employment size, and revenue size to facilitate comparisons of similarly situated firms.

The mail survey sample was stratified by industry and drawn directly from the Master DBE Directory and the Baseline Business Universe compiled for this Study. Firms were sampled randomly within strata. DBE firms were oversampled to facilitate statistical comparisons with non-DBEs.¹⁵⁰ Of 18,088 businesses that received the questionnaire,¹⁵¹ 2,210 (12.2 percent)

¹⁵⁰ See Chapter I for a discussion of how the product and geographic markets were defined. See Chapter II for discussion of how the Master M/WBE Directory and the Baseline Business Universe were assembled.

¹⁵¹ These figures exclude surveys that were returned undelivered or were otherwise undeliverable.

provided usable responses.¹⁵² The distribution of total responses according to the race and gender of the business owner, by major procurement category, appears in Table 6.1.

¹⁵² The total number of valid responses to any particular survey question, however, was sometimes lower than this due to item non-response.

Table 6.1. Race, Gender and Procurement Category of Mail Survey Respondents (Number of Respondents)

Group	Construction	AE-CRS	Services	Commodities	Total
African American	99	22	293	35	449
Hispanic	70	8	75	16	169
Asian	32	36	141	17	226
Native American	10	1	21	3	35
Minorities with unknown race/ethnicity	10	2	8	6	26
Nonminority Women	143	48	342	111	644
Total DBE	364	117	880	188	1,549
Nonminority Men	280	46	251	84	661
Total	644	163	1,131	272	2,210

Source: NERA Maryland mail surveys.

2. Willingness of Firms to Contract with the Public Sector

The probative value of anecdotal evidence of discrimination increases when it comes from active businesses in the relevant geographic and procurement markets. The value of such evidence increases further when it comes from firms that have actually worked or attempted to work for the public sector within those markets. Such is the present case.

As shown below in Table 6.2, there is a strong linkage between the firms responding to our mail survey and the public sector of the Maryland economy. All respondents operate establishments in the relevant geographic and product markets. Moreover, significant numbers of survey respondents have worked or attempted to do work for the State of Maryland or other public entities in the market area in the last five years. This is observed for virtually all types of DBEs and non-DBEs in all procurement categories. Overall, more than half of non-DBEs and over three-fifths of DBEs have worked or attempted to work for the State of Maryland or some other public entity in the market area in the previous five years. This phenomenon is especially apparent for DBEs and non-DBEs in Construction, where 69 percent of DBEs and 61 percent of non-DBEs have attempted to work for the State of Maryland or some other public entity in the market area in the previous five years; and in AE-CRS, where 77 percent of DBEs and 59

percent of non-DBEs have attempted to work for the State of Maryland or some other public entity in the market area in the previous five years.

Table 6.2. Survey Respondents Indicating They Had Worked or Attempted to Work for Public Sector Agencies in the Last Five Years

Worked or Attempted to Work, Last Five Years	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
ALL INDUSTRIES								
With Maryland	53.5%	50.9%	50.2%	42.4%	51.7%	40.4%	46.9%	38.5%
	(445)	(167)	(223)	(33)	(868)	(639)	(1507)	(657)
With Other Public Entity in Market Area	59.7%	52.1%	57.1%	61.8%	57.7%	48.4%	53.7%	45.9%
	(444)	(167)	(224)	(34)	(869)	(638)	(1507)	(660)
With any Public Entity in Market Area	67.9%	58.7%	65.0%	61.8%	65.2%	55.3%	61.0%	52.0%
	(443)	(167)	(223)	(34)	(867)	(638)	(1505)	(659)
CONSTRUCTION								
With Maryland	63.3%	57.1%	56.3%	62.5%	60.1%	57.0%	58.9%	47.1%
	(98)	(70)	(32)	(8)	(208)	(142)	(350)	(280)
With Other Public Entity in Market Area	71.1%	58.6%	50.0%	80.0%	64.1%	59.3%	62.2%	53.4%
	(97)	(70)	(32)	(10)	(209)	(140)	(349)	(279)
With any Public Entity in Market Area	75.3%	64.3%	62.5%	80.0%	69.9%	68.6%	69.3%	61.1%
	(97)	(70)	(32)	(10)	(209)	(140)	(349)	(280)
AE-CRS								
With Maryland	63.6%	75.0%	68.6%	100.0%	68.2%	54.2%	62.3%	47.8%
	(22)	(8)	(35)	(1)	(66)	(48)	(114)	(46)
With Other Public Entity in Market Area	63.6%	75.0%	72.2%	100.0%	70.1%	68.8%	69.6%	56.5%
	(22)	(8)	(36)	(1)	(67)	(48)	(115)	(46)
With any Public Entity in Market Area	72.7%	87.5%	80.0%	100.0%	78.8%	75.0%	77.2%	58.7%
	(22)	(8)	(35)	(1)	(66)	(48)	(114)	(46)

Table 6.2. Survey Respondents Indicating They Had Worked or Attempted to Work for Public Sector Agencies in the Last Five Years, (cont'd)

Worked or Attempted to Work, Last Five Years	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
OTHER SERVICES								
With Maryland	49.7%	45.2%	46.0%	38.1%	47.6%	30.9%	41.0%	25.9%
	(290)	(73)	(139)	(21)	(523)	(340)	(863)	(247)
With Other Public Entity in Market Area	56.0%	47.9%	56.8%	60.0%	55.3%	40.2%	49.3%	35.5%
	(291)	(73)	(139)	(20)	(523)	(341)	(864)	(251)
With any Public Entity in Market Area	65.9%	53.4%	63.3%	60.0%	63.2%	46.9%	56.8%	40.6%
	(290)	(73)	(139)	(20)	(522)	(341)	(863)	(249)
COMMODITIES								
With Maryland	51.4%	37.5%	35.3%	0.0%	42.3%	42.2%	42.2%	41.7%
	(35)	(16)	(17)	(3)	(71)	(109)	(180)	(84)
With Other Public Entity in Market Area	55.9%	31.3%	41.2%	0.0%	44.3%	51.4%	48.6%	46.4%
	(34)	(16)	(17)	(3)	(70)	(109)	(179)	(84)
With any Public Entity in Market Area	61.8%	43.8%	52.9%	0.0%	52.9%	56.0%	54.7%	52.4%
	(34)	(16)	(17)	(3)	(70)	(109)	(179)	(84)

Source: NERA calculations from Maryland mail surveys.

Note: Total number of valid responses in parentheses.

3. Experiences of Disparate Treatment in Business Dealings

The survey included questions about instances of disparate treatment based on race and/or gender experienced in various business dealings during the past five years. As shown in the last row of Table 6.3, 44 percent of DBE firms said they had experienced at least one instance of disparate treatment in one or more areas of business dealings identified on the survey. Reports of disparate treatment were substantially and statistically significantly higher for DBEs than for nonminority males, casting doubt on claims of widespread “reverse discrimination.” Reports were highest among African Americans and Native Americans, with overall rates at or near 60 percent. Similar patterns were observed when the results were disaggregated by procurement category.

The balance of Table 6.3 shows results for each of 14 distinct types of disparate treatment inquired about in the survey. In all but one category (hiring workers from union hiring halls), the difference in reported amounts of disparate treatment between DBEs and non-DBEs is large and

statistically significant. In joining or dealing with construction trade associations, for example, DBEs reported being discriminated against almost eight times more frequently than nonminority males. In applying for commercial loans and for surety bonds DBEs reported being discriminated against roughly five times more frequently than nonminority males.¹⁵³ For African Americans and Native Americans, the figures are even more stark. For example, in the three areas identified above, African Americans reported experiencing disparate treatment 11, 8, and 9 times more frequently, respectively, than nonminority males. For Native Americans, the figures are 26, 7, and 16 times more frequently, respectively, than nonminority males. Even where differences are smallest, DBEs report being discriminated against roughly 1.5 to 2 times more frequently than nonminority males.

Evidence of the impact of public sector DBE programs is seen in that the smallest differences between DBEs and non-DBEs appear in the categories of working or attempting to work on public sector prime and subcontracts—although even here the figures are still 1.35 and 1.4 times higher, respectively, for DBEs than for non-DBEs.

Table 6.4 represents the same disparate treatment information as in Table 6.3, but with the frequency percentages replaced by relative rankings. That is, the 14 kinds of disparate treatment are ranked within each race/gender group according to the frequency with which disparate treatment was reported, with “1” representing the most frequent and “14” representing the least frequent.

The worst reported problem overall for DBEs was receiving timely payment for work performed. This was followed closely by working or attempting to work on public sector prime contracts, working or attempting to work on public sector subcontracts, working or attempting to work on private sector prime contracts, working or attempting to work on private sector subcontracts, and applying for commercial loans.

For African Americans, the worst reported problem overall was receiving timely payment for work performed; followed by applying for commercial loans, working or attempting to work on private sector prime contracts, and working or attempting to work on private sector subcontracts, working or attempting to work on public sector prime contracts, and working or attempting to work on public sector subcontracts.

For Hispanics, the worst reported problem overall was receiving timely payment for work performed; followed by working or attempting to work on private sector prime contracts, working or attempting to work on public sector prime contracts, working or attempting to work on private sector subcontracts, applying for commercial loans, and working or attempting to work on public sector subcontracts.

¹⁵³ Discrimination in access to commercial credit and capital is the most widely and commonly cited problem facing minority-owned firms. See Chapter IV for an extensive discussion of the theory and analysis of the evidence behind this phenomenon.

Table 6.3. Firms Indicating They Had Been Treated Less Favorably Due to Race and/or Gender While Participating in Business Dealings

Business Dealings	African American	Hispanic	Asian	Native American	Minority	WBE	DBE	Non-DBE
Applying for commercial loans	43.1%	21.7%	32.2%	38.9%	35.2%	9.5%	25.1%	5.3%
	(239)	(120)	(115)	(18)	(492)	(317)	(809)	(361)
Applying for surety bonds	23.7%	17.8%	12.4%	43.8%	20.4%	4.8%	14.7%	2.7%
	(186)	(101)	(89)	(16)	(392)	(228)	(620)	(297)
Applying for commercial or professional insurance	14.9%	7.1%	12.4%	20.0%	12.7%	2.1%	8.2%	2.0%
	(281)	(127)	(153)	(20)	(581)	(430)	(1011)	(443)
Hiring workers from union hiring halls	9.9%	0.0%	7.8%	0.0%	6.6%	2.6%	5.2%	3.3%
	(142)	(76)	(64)	(8)	(290)	(151)	(441)	(184)
Obtaining price quotes from suppliers or subcontracts	25.6%	15.1%	18.9%	27.8%	21.6%	7.0%	15.6%	4.4%
	(270)	(126)	(127)	(18)	(541)	(374)	(915)	(406)
Working or attempting to obtain work on public-sector prime contracts	38.9%	23.0%	34.3%	37.5%	34.2%	16.4%	27.6%	19.7%
	(283)	(122)	(140)	(16)	(561)	(330)	(891)	(350)
Working or attempting to obtain work on public-sector subcontracts	38.6%	19.5%	35.0%	29.4%	33.5%	17.4%	27.4%	20.3%
	(290)	(118)	(143)	(17)	(568)	(340)	(908)	(360)
Working or attempting to obtain work on private-sector prime contracts	42.3%	24.8%	28.8%	29.4%	34.8%	14.8%	27.1%	9.8%
	(291)	(121)	(146)	(17)	(575)	(358)	(933)	(379)
Working or attempting to obtain work on private-sector subcontracts	40.3%	22.7%	27.4%	27.8%	32.7%	15.5%	26.1%	9.9%
	(283)	(128)	(146)	(18)	(575)	(355)	(930)	(394)
Receiving timely payment for work performed	43.5%	26.7%	24.4%	47.1%	35.0%	19.4%	28.5%	13.7%
	(313)	(135)	(164)	(17)	(629)	(448)	(1077)	(446)
Functioning without hindrance or harassment on the work site	25.1%	12.3%	16.8%	31.3%	20.1%	11.5%	16.5%	5.6%
	(259)	(130)	(143)	(16)	(548)	(392)	(940)	(412)
Joining or dealing with construction trade associations	14.9%	7.9%	12.8%	33.3%	13.2%	5.3%	10.0%	1.3%
	(188)	(101)	(86)	(12)	(387)	(263)	(650)	(319)
Having to do inappropriate or extra work not required of comparable non-DBEs	30.7%	14.3%	23.7%	26.7%	25.0%	11.1%	19.3%	6.0%
	(254)	(119)	(131)	(15)	(519)	(368)	(887)	(386)
Double standards not required of comparable non-DBEs	26.9%	15.0%	20.4%	13.3%	22.1%	7.2%	16.0%	8.8%
	(260)	(127)	(137)	(15)	(539)	(375)	(914)	(397)
In any one of the business dealings listed above	57.3%	50.0%	47.1%	60.0%	53.3%	30.9%	44.1%	27.4%
	(377)	(152)	(191)	(25)	(745)	(518)	(1263)	(500)

Source: See Table 6.2.

Note: Total number of valid responses in parentheses. Figures in **boldface** type are statistically significantly different from non-DBEs using a conventional two-tailed Fisher's Exact Test and within a 95% or better confidence interval. Figures in **boldface italicized** type are significant within a 90% confidence interval.

Table 6.4. Firms Indicating They Had Been Treated Less Favorably Due to Race and/or Gender While Participating in Business Dealings (Rankings)

Business Dealings	African American	Hispanic	Asian	Native American	MBE	WBE	DBE
Applying for commercial loans	2	5	3	3	1	8	6
Applying for surety bonds	11	7	13	2	10	12	11
Applying for commercial or professional insurance	12	13	12	10	13	14	13
Hiring workers from union hiring halls	14	14	14	12	14	13	14
Obtaining price quotes from suppliers or subs	9	8	9	8	9	10	10
Working or attempting to obtain work on public sector prime contracts	5	3	2	4	4	3	2
Working or attempting to obtain work on public sector subcontracts	6	6	1	7	5	2	3
Working or attempting to obtain work on private sector prime contracts	3	2	4	7	3	5	4
Working or attempting to obtain work on private sector subcontracts	4	4	5	8	6	4	5
Receiving timely payment for work performed	1	1	6	1	2	1	1
Functioning without hindrance or harassment on the work site	10	11	10	6	11	6	8
Joining or dealing with trade associations	13	12	11	5	12	11	12
Having to do extra work not required of others	7	10	7	9	7	7	7
Having to meet quality or performance standards not required of others	8	9	8	11	8	9	9

Source: See Table 6.2.

For Asians, the worst reported problem overall was working or attempting to work on public sector subcontracts; followed by working or attempting to work on public sector prime contracts, applying for commercial loans, working or attempting to work on private sector prime contracts,

working or attempting to work on private sector subcontracts, and receiving timely payment for work performed.

For Native Americans, the worst reported problem overall was receiving timely payment for work performed; followed by applying for surety bonds, applying for commercial loans, working or attempting to work on public sector prime contracts, joining or dealing with trade associations, and functioning without hindrance or harassment on the work site.

For nonminority women, the worst reported problem overall was receiving timely payment for work performed; followed by working or attempting to work on public sector subcontracts, working or attempting to work on public sector prime contracts, working or attempting to work on private sector subcontracts, working or attempting to work on private sector prime contracts, and functioning without hindrance or harassment on the work site.

Some courts and other observers have asserted that findings such as those in Tables 6.3 and 6.4 tell us nothing about discrimination against DBEs since, even though they are current, even though they come directly from the businesses alleging disparate treatment, and even though they are restricted to the relevant geographic and product markets, they still do not compare firms of similar size, qualifications, or experience. Elsewhere in this Study, we have argued against such flawed logic (and economics) since size, qualifications, and experience are *precisely* the factors that are adversely impacted by discrimination.¹⁵⁴ Nevertheless, if disparities are still observed even when such “capacity” factors are held constant, the case becomes even more compelling.

The results reported below in Table 6.5 show that even when levels of size, qualifications, and experience are held constant across firms, measures of disparate treatment of African American-, Hispanic-, Asian-, Native American-, and nonminority women-owned businesses are still large, adverse, and statistically significant.

In Table 6.5, we report the results from a series of Probit regressions using the survey data on disparate treatment.¹⁵⁵ As indicated earlier, the survey questionnaire collected data related to each firm’s size, qualifications, and experience. The reported estimates from these models can be interpreted as changes or differences in the probability of disparate treatment conditional on the control variables. The estimates in the table show large differences in disparate treatment probabilities between DBEs and non-DBEs. In column (1) of Table 6.5 (in which the regression model contains only DBE status and procurement category indicators), the estimated coefficient of 0.195 on the DBE indicator indicates that the likelihood of experiencing disparate treatment for DBE firms is 19.5 percentage points higher than that for non-DBE firms.¹⁵⁶ This difference is

¹⁵⁴ See Wainwright and Holt (2010, 65-67); Wainwright (2000, 86-87).

¹⁵⁵ See Chapter III for a description of Probit regression.

¹⁵⁶ This estimate largely replicates the raw difference in disparate treatment rates between M/WBE and non-M/WBE firms reported in the last row of Table 6.3. The raw differential observed there ($44.1\% - 27.4\% = 16.7\%$) differs slightly from the 19.5% differential reported here since the regression specification also controls for industry category.

statistically significant within a 99 percent confidence interval or better. Column (2) of Table 6.5 includes additional explanatory variables to hold constant differences in the characteristics of firms that may vary by race or gender, including the owner's education, the age of the firm, and the size of the firm measured by employment and by sales. Even after controlling for these differences, however, DBE firms remain 18.0 percentage points more likely than non-DBE firms to experience disparate treatment. This difference is also statistically significant within a 99 percent confidence interval.

Table 6.5. Prevalence of Disparate Treatment Facing DBEs

	(1)	(2)	(3)	(4)	(5)	(6)
DBE	0.195 (7.45)	0.180 (6.40)				
MBE			0.293 (9.93)	0.291 (9.12)		
WBE			0.068 (2.08)	0.054 (1.57)	0.069 (2.10)	0.054 (1.57)
African American					0.342 (9.68)	0.340 (8.97)
Hispanic					0.247 (5.30)	0.247 (5.07)
Asian/Pacific Islanders					0.252 (5.73)	0.246 (5.26)
Native American					0.348 (3.47)	0.332 (3.24)
Owner's Education (3 indicator variables)	No	Yes	No	Yes	No	Yes
Firm Age (4 indicators)	No	Yes	No	Yes	No	Yes
Employment size bracket (6 indicators)	No	Yes	No	Yes	No	Yes
Sales/revenue size bracket (4 indicators)	No	Yes	No	Yes	No	Yes
Industry category (3 indicators)	Yes	Yes	Yes	Yes	Yes	Yes
N	1781.00	1716.00	1781.00	1716.00	1781.00	1716.00
Pseudo R²	0.03	0.04	0.06	0.07	0.06	0.07
Chi²	71.12	86.33	136.48	152.94	143.86	160.21
Log likelihood	(1160.01)	(1112.37)	(1127.33)	(1079.07)	(1123.64)	(1075.43)

Source: See Table 6.2.

Note: Reported estimates are coefficients from Probit models (re-expressed as percentage differences), t-statistics are in parentheses; t-statistics of (2.58) (1.96) (1.64) or larger indicate that the result is significant within a (99) (95) (90) percent confidence interval, respectively.

Firm size and other characteristics account for little of the disparate treatment reported by DBEs in the MDOT market area.

The exercise is repeated in columns (3) and (4). The only difference is that the DBE indicator is separated into two components—one for minority-owned firms and one for nonminority-female owned firms. The results in column (3) indicate that minority-owned firms in MDOT’s market area are 29.3 percentage points more likely to experience disparate treatment than non-DBE firms. When controls are added in column (4), this difference falls only slightly to 29.1 percentage points, indicating that disparate treatment is occurring even among similarly sized, qualified, and experienced firms. A similar, though less pronounced, result occurs for nonminority females, although the p-value in column (4) falls just short of the 90 percent threshold.

The exercise is repeated again in columns (5) and (6) with separate indicators for each type of DBE. The results for nonminority females are nearly identical to those in columns (3) and (4). For African American-owned firms, the differential is 34.2 percentage points in column (5), falling only slightly to 34.0 percentage points once controls are added. For Hispanic-owned firms, the differentials are 24.7 percentage points in columns (5) and (6). For Asian-owned firms, the differentials are 25.2 and 24.6 percentage points, respectively. For Native American-owned firms, the differentials are 34.8 and 33.2 percentage points, respectively. All of these differences for African Americans, Hispanics, Asians, and Native Americans are statistically significant.

The regression models reported in Table 6.5 used as their dependent variable an indicator of whether or not a survey respondent reported having been treated less favorably in any of the 14 different types of business dealings described in the first column of Table 6.3.¹⁵⁷ We re-estimated the regression model reported in Column (2) of Table 6.5 separately using as the dependent variable, in turn, each of the 14 types of business dealings and report those results in Table 6.6. As Table 6.6 shows, African American-owned firms in particular experience a wide variety of disparate treatment compared to non-DBEs. In all 14 categories the differences for African American-owned firms are both large and statistically significant. For Hispanic-owned firms, this is true in 11 of 14 cases. For Asian-owned firms, this is true in all 14 cases. For Native American-owned firms, this is true in 9 of 14 cases. For nonminority female-owned firms, this is true in 7 of 14 cases. For DBEs as a group it is true in 13 of the 14 cases.

¹⁵⁷ Our disparate treatment question also allowed respondents to indicate the quantity of disparate treatment experienced (never, 1-5 times, 6-20 times, more than 20-times). Although not reported here, we also ran regressions using a dependent variable measuring high frequency of disparate treatment (6 or more times) during the prior five years. Results were more limited due to smaller sample sizes but were qualitatively similar to those obtained in Tables 6.5 and 6.6.

Table 6.6. Prevalence of Disparate Treatment Facing DBEs, by Type of Business Dealing

Business Dealings	African American	Hispanic	Asian	Native American	MBE	WBE	DBE
Applying for commercial loans	43.5% (9.33)	23.1% (4.28)	36.6% (6.27)	40.6% (3.65)	29.5% (8.70)	5.2% (1.36)	17.6% (6.64)
Applying for surety bonds	24.8% (5.77)	18.5% (3.88)	16.8% (3.27)	52.1% (4.69)	16.0% (5.64)	2.7% (0.82)	9.6% (4.45)
Applying for commercial or professional insurance	14.2% (5.37)	7.6% (2.49)	14.1% (4.25)	24.4% (3.32)	9.6% (5.33)	-0.4% (-0.25)	5.3% (3.74)
Hiring workers from union hiring halls	8.8% (2.45)	0.0% (0.00)	13.5% (2.25)	0.0% (0.00)	4.9% (1.99)	-0.3% (-0.12)	2.9% (1.38)
Obtaining price quotes from suppliers or subcontracts	26.3% (6.92)	18.6% (4.02)	25.4% (5.13)	34.5% (3.34)	19.3% (7.01)	5.5% (1.85)	11.1% (5.45)
Working or attempting to obtain work on public sector prime contracts	19.2% (4.74)	3.2% (0.64)	15.8% (3.11)	14.2% (1.19)	13.9% (4.23)	-5.0% (-1.37)	6.8% (2.28)
Working or attempting to obtain work on public sector subcontracts	18.3% (4.60)	-2.5% (-0.51)	15.0% (2.99)	3.7% (0.34)	12.1% (3.72)	-4.5% (-1.25)	5.7% (1.92)
Working or attempting to obtain work on private sector prime contract	36.6% (8.66)	19.4% (3.64)	24.8% (4.77)	22.0% (1.88)	26.0% (7.94)	6.4% (1.73)	16.4% (6.06)
Working or attempting to obtain work on private sector subcontracts	34.1% (8.24)	15.4% (3.05)	23.1% (4.54)	17.4% (1.58)	23.3% (7.38)	6.8% (1.90)	15.0% (5.75)
Receiving timely payment for work performed	37.6% (9.29)	18.8% (3.70)	21.5% (4.31)	37.4% (3.09)	26.8% (8.43)	11.3% (3.29)	17.4% (6.84)
Functioning without hindrance or harassment on the work site	25.9% (6.77)	10.3% (2.40)	18.6% (4.12)	31.7% (2.85)	16.8% (6.21)	9.1% (3.09)	10.7% (5.33)
Joining or dealing with construction trade associations	23.2% (5.22)	13.7% (2.96)	21.1% (3.83)	48.1% (3.97)	14.4% (5.09)	8.2% (2.70)	7.7% (4.39)
Having to do inappropriate or extra work not required of comparable non-DBEs	32.6% (7.82)	12.4% (2.58)	27.6% (5.35)	27.8% (2.42)	21.8% (7.25)	8.5% (2.60)	13.2% (5.83)
Having to meet quality, inspection, or performance standards not required of comparable non-DBEs	25.6% (6.98)	10.3% (2.48)	20.2% (4.46)	5.9% (0.60)	16.3% (6.27)	-0.6% (-0.22)	8.6% (4.07)
In any one of the business dealings listed above	34.0% (8.97)	24.7% (5.07)	24.6% (5.26)	33.2% (3.24)	29.1% (9.12)	5.4% (1.57)	18.0% (6.40)

Source: See Table 6.2. Note: Reported estimates are coefficients from Probit models (re-expressed as percentage differences) with specification such as in Table 6.5, columns (2); t-statistics are in parentheses; t-statistics of 1.96 (1.64) or larger indicate that the result is significant within a 95 (90) percent confidence interval. Results with t-statistics of 1.96 or higher are **boldfaced**. Results with t-statistics of 1.64 or higher are **boldfaced italicized**.

4. Impact of Current Business Environment on Ability to Win Contracts

The survey asked questions about some common features of the business environment to determine which factors were perceived by DBEs as serious impediments to obtaining contracts.

As Table 6.7 shows, substantial percentages of both DBEs and non-DBEs report that certain factors, such as “Obtaining working capital,” “Late notice of bid/proposal deadlines,” and “Large project sizes,” make it harder or impossible for firms to obtain contracts. Among non-DBEs, for example, 37.4 percent reported that obtaining working capital made it harder or impossible for them to win contracts, 49.1 percent reported that late notice of bid/proposal deadlines made it harder or impossible for them to win contracts, and 38.6 percent reported that large project sizes made it harder or impossible for them to win contracts. The figures for DBEs, however, at 50.9 percent, 56.3 percent, and 53.4 percent, respectively, are significantly higher than for non-DBEs. Indeed, as Table 6.7 shows, DBEs reported relatively more difficulty on all nine factors about which they were polled.

To control for firm and owner characteristics, we used a regression technique known as ordered Probit.¹⁵⁸ Ordered Probit regression is used when the dependent variable is discrete and ordinal (and hence can be ranked). We use ordered Probit to model the ordinal ranking—helps me (1), no effect (2), makes it harder (3), and makes it impossible (4)—of the aspect of procurement under consideration. The firm characteristics used as control variables consist of the age of the firm, the number of employees, the size of revenues, the education level of the primary owner of the firm, and the major industry group. To report results from ordered Probit analysis, we use a “+” to indicate that DBEs had more difficulty than non-DBEs with similar firm characteristics, and a “-” to indicate that DBEs had less difficulty than non-DBEs with similar firm characteristics.

¹⁵⁸ For a textbook discussion of ordered Probit, see, for example, Greene (1997).

Table 6.7. Firms Indicating that Specific Factors in the Business Environment Make It Harder or Impossible to Obtain Contracts, Sample Differences

Business Environment	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
Bonding Requirements	51.6% (223)	40.7% (91)	38.1% (84)	44.4% (18)	46.2% (416)	36.4% (217)	42.8% (633)	31.9% (276)
Insurance Requirements	21.0% (281)	12.5% (96)	24.5% (143)	28.6% (21)	20.7% (541)	14.5% (332)	18.3% (873)	12.8% (384)
Previous Experience Requirements	32.1% (308)	18.5% (108)	30.5% (154)	31.8% (22)	29.2% (592)	18.4% (380)	25.0% (972)	12.7% (394)
Cost of Bidding or Proposing	45.2% (292)	42.3% (104)	43.9% (139)	22.7% (22)	43.4% (557)	35.5% (355)	40.4% (912)	30.6% (372)
Large Project Sizes	60.4% (285)	50.5% (101)	63.4% (134)	50.0% (18)	58.9% (538)	44.4% (333)	53.4% (871)	38.6% (352)
Price of Supplies or Materials	31.8% (277)	35.7% (98)	25.0% (120)	35.0% (20)	31.1% (515)	27.1% (332)	29.5% (847)	28.6% (374)
Obtaining Working Capital	65.2% (296)	58.0% (100)	42.0% (138)	61.9% (21)	58.0% (555)	38.4% (320)	50.9% (875)	37.4% (358)
Late Notice of Bid/Proposal Deadlines	56.8% (292)	50.5% (97)	60.3% (126)	50.0% (18)	56.3% (533)	56.3% (318)	56.3% (851)	49.1% (338)
Prior Dealings with Owner	23.6% (284)	13.7% (102)	21.4% (140)	16.7% (18)	21.0% (544)	9.8% (358)	16.5% (902)	10.0% (379)

Source: See Table 6.2.

Note: Total number of valid responses in parentheses. Figures in **boldface** type are statistically significantly different from non-DBEs using a conventional two-tailed Fisher's Exact Test and within a 95% or better confidence interval. Figures in **boldface italicized** type are significant within a 90% confidence interval.

Table 6.8 reports the sign and statistical significance from the ordered Probit analysis. We find that when observable firm characteristics are controlled for, eight of the nine factors we inquired about prove to be greater difficulties for DBEs than for non-DBEs (as indicated by the “+” sign). In particular, the disparities for “Large project size,” “Obtaining working capital,” and “Late notice of bid/proposal deadlines,” are all statistically significant with respect to DBEs.

Table 6.8. Firms Indicating that Specific Factors in the Business Environment Make It Harder or Impossible to Obtain Contracts, Regression Results

Business Environment	DBE
Bonding Requirements	+
Insurance Requirements	-
Previous Experience Requirements	+
Cost of Bidding or Proposing	+
Large Project Sizes	+*
Price of Supplies or Materials	+
Obtaining Working Capital	+†
Late Notice of Bid/Proposal Deadlines	+†
Prior Dealings with Owner	+

Source: See Table 6.2.

Note: A plus (+) indicates that a group is more likely than non-DBEs to report difficulty with business environment factors. A minus (-) indicates that a group is less likely than non-DBEs to experience difficulty. An asterisk (*) indicates that the disparity is statistically significant within a 95% or better confidence interval. A dagger (†) indicates that the disparity is statistically significant within a 90% or better confidence interval.

5. Solicitation and Use of DBEs on Public and Private Projects Without Affirmative Action Goals

Our second to last survey question asked, “How often do prime contractors who use your firm as a subcontractor on public-sector projects with requirements for minority, women and/or disadvantaged businesses also hire your firm on projects (public or private) *without* such goals or requirements?” As Table 6.9 shows, 70 percent of African American-owned firms, 58 percent of Hispanic-owned firms, 69 percent of Asian-owned firms, 79 percent of Native American-owned

firms, and 63 percent of nonminority female-owned firms, responded that this seldom or never occurs. Similar results were observed in each major procurement category as well.

At least one court has held that the failure of prime contractors to even *solicit* qualified minority- and women-owned firms is a “market failure” that serves to establish a government’s compelling interest in remedying that failure.¹⁵⁹ Among the evidence relied upon for this holding was a NERA survey similar to the current one in which approximately 50 percent of the respondents reported that they were seldom or never even *solicited* for non-goals work.¹⁶⁰

Table 6.9. Percent of DBEs Indicating that Prime Contractors Who Use Them as Subcontractors on Projects with DBE Goals Seldom or Never Hire Them on Projects without Such Goals

DBE Group	All Industries	Construction	AE-CRS	Services	Commodities
African American	70.1% (234)	58.7% (63)	64.3% (14)	74.1% (139)	83.3% (18)
Hispanic	57.8% (90)	52.4% (42)	66.7% (3)	63.2% (38)	57.1% (7)
Asian	69.0% (116)	73.7% (19)	63.2% (19)	68.6% (70)	75.0% (8)
Native American	78.9% (19)	85.7% (7)	- (0)	81.8% (11)	0.0% (1)
MBE	67.3% (474)	59.1% (137)	65.8% (38)	71.0% (262)	73.0% (37)
WBE	63.3% (218)	55.4% (74)	60.0% (20)	67.1% (82)	71.4% (42)
Total DBE	66.0% (692)	57.8% (211)	63.8% (58)	70.1% (344)	72.2% (79)

Source: See Table 6.2.

Note: Total number of valid responses in parentheses.

Our final survey question therefore asked “How often do prime contractors who use your firm as a subcontractor on public-sector projects with requirements for minority, women and/or disadvantaged businesses *solicit* your firm on projects (public or private) without such goals or

¹⁵⁹ *Builders Association of Greater Chicago v. Authority of Chicago*, 298 F.Supp.2d 725, 737 (N.D. Ill. 2003).

¹⁶⁰ *Id.*

requirements?” Responses to this question are tabulated in Table 6.10, which shows the same pattern as in Table 6.9. In Table 6.10, 67 percent of African American-owned firms, 58 percent of Hispanic-owned firms, 69 percent of Asian-owned firms, 63 percent of Native American-owned firms, and 61 percent of nonminority female-owned firms responded that this seldom or never occurs. Similar results were also observed in each major procurement category.

Table 6.10. Percent of DBEs Indicating that Prime Contractors Who Use Them as Subcontractors on Projects with DBE Goals Seldom or Never *Solicit* Them on Projects without Such Goals

DBE Group	All Industries	Construction	AE-CRS	Services	Commodities
African American	66.7% (222)	59.0% (61)	72.7% (11)	68.7% (134)	75.0% (16)
Hispanic	58.0% (88)	52.4% (42)	66.7% (3)	64.9% (37)	50.0% (6)
Asian	69.0% (113)	73.7% (19)	63.2% (19)	66.2% (68)	100.0% (7)
Native American	63.2% (19)	50.0% (8)	100.0% (1)	77.8% (9)	0.0% (1)
MBE	65.1% (458)	56.9% (137)	69.4% (36)	67.5% (252)	75.8% (33)
WBE	61.4% (220)	47.9% (73)	44.4% (18)	72.1% (86)	69.8% (43)
Total DBE	63.9% (678)	53.8% (210)	61.1% (54)	68.6% (338)	72.4% (76)

Source: See Table 6.2.

Note: Total number of valid responses in parentheses.

6. Impact of Survey Non-Response

Since the mail survey was voluntary, it is important to account for the fact that a majority of those who received it did not respond. As a check on the usefulness of the information obtained from our mail survey respondents, we conducted telephone surveys of 1,500 randomly selected DBEs and non-DBEs that did not respond to our mail survey. The purpose of this “non-response” survey is to test whether their answers to key survey questions were different from the answers of respondents in ways that would call into question the relevance of the information obtained from our mail survey respondents.

We obtained responses from 358 firms, for a raw response rate of 26.2 percent. After removing duplicate records, records where the firm was no longer in business, and records where the telephone number was disconnected, the effective response rate was 41.1 percent.

Of the firms with which we completed interviews, 38.8 percent were minority-owned, compared with a rate of 41.0 percent in the mail survey. The percentage of women-owned firms was 39.0 percent, compared to 43.7 percent in the mail survey. Neither difference is statistically significant.

In addition to determining minority-owned and women-owned status, we selected three questions from the mail survey to pose to non-respondents. The first question asked whether large project sizes helped or harmed the firm's ability to obtain public or private sector contracts. The second question asked whether and how frequently the firm had experienced discrimination in attempting to apply for commercial loans. The final question asked whether and how frequently the firm had experienced discrimination in working or attempting to work on private sector prime contracts.

Not surprisingly, one difference that we observed between respondents and non-respondents was greater general interest in the questions being asked. Among survey respondents, only 26.5 percent indicated that the question about large project sizes was "not applicable." Among non-respondents, the figure was 56.6 percent. Only 45.4 percent of survey respondents indicated that the question about discrimination in applying for commercial loans was not applicable, compared to 91.7 percent among non-respondents. Only 38.2 percent of survey respondents indicated that the question about discrimination in working or attempting to work on private sector prime contracts was not applicable, compared to 92.9 percent among non-respondents. This phenomenon was observed regardless of whether the firm was minority-owned, women-owned, or nonminority male-owned.

Among those firms to which the question was applicable, 51.0 percent of DBE firms who did not respond to the mail survey indicated that large project sizes made it harder or impossible to obtain contract awards. Among those who did respond to the survey, the figure was 53.2 percent. This difference is not statistically significant. The comparable figures for non-DBE firms were 25.0 percent and 38.6 percent, respectively. This difference is statistically significant using a 90 percent confidence interval but is not significant using a 95 percent interval. This result implies that the estimate of adverse disparity for DBE firms with regard to large project size that was reported from the mail survey (*see* Table 6.5) may in fact be understated (*i.e.*, less severe) than in the universe as a whole, since the ratio of DBE firms to non-DBE firms reporting that large project sizes make it hard or impossible for them to obtain contracts is actually slightly greater among non-respondents than among respondents. In other words, the disparity between DBEs and non-DBEs was even more pronounced among the non-respondents than among the respondents, indicating that the disparities reported above in this Chapter may be somewhat conservatively estimated.

Among those firms to which the question was applicable, 26.3 percent of minority-owned firms who did not respond to the mail survey indicated that they had experienced one or more

instances of discrimination during the previous five years in applying for commercial loans. Among those who did respond to the survey, the figure was 35.3 percent. This difference is not statistically significant. The comparable figures for women-owned firms were 10 percent and 20.6 percent, respectively. This difference is not statistically significant. The comparable figures for non-DBE firms were 0 percent and 5.3 percent, respectively. This difference is not statistically significant (because few non-DBE firms considered this question to be applicable to them at all).¹⁶¹

Among those firms to which the question was applicable, 25.0 percent of minority-owned firms who did not respond to the mail survey indicated that they had experienced one or more instances of discrimination during the previous five years in working or attempting to work on private sector prime contracts. Among those who did respond to the survey, the figure was 35.3 percent. This difference is not statistically significant. The comparable figures for women-owned firms were 42.9 percent and 22.9 percent, respectively. This difference is not statistically significant. The comparable figures for non-DBE firms were 66.7 percent and 9.8 percent, respectively. This difference is not statistically significant (because few non-DBE firms considered this question to be applicable to them at all).

These results of our non-respondent survey, in general, indicate that both DBEs and non-DBEs are more likely to have responded to the mail survey if they had experienced the difficulties identified in the mail survey. In some cases this means the actual disparities facing DBEs may be somewhat larger than what we have estimated in our mail survey. For all three questions examined, the basic qualitative finding of more problems and greater disparities being observed among DBEs than among non-DBEs is unchanged.

B. Business Owner Interviews

As part of the 2011 Maryland Disparity Study,¹⁶² we explored anecdotal evidence of possible discrimination against minorities and women in Maryland's market area.¹⁶³ We conducted 21 group interviews with 229 business owners from a broad cross section of the industries from which the State purchases services and goods. This effort gathered individual perspectives to augment the statistical information from the business experience and credit access surveys. In general, interviewees' individual experiences mirrored the responses to those surveys.¹⁶⁴

¹⁶¹ The percentages reported in this section may differ slightly from comparable figures reported elsewhere in Chapter VI, since minorities of unknown race or ethnicity were excluded from the tallies in the mail survey.

¹⁶² NERA Economic Consulting (2011).

¹⁶³ As discussed in Chapter I, MDOT's market area is contiguous with Maryland's.

¹⁶⁴ We also elicited feedback regarding Maryland's current MBE, DBE, and ACDBE policies and procedures. This feedback is reported in NERA Economic Consulting (2011) (pp. 499-554). Maryland has adopted a contracting affirmative action program for its State-funded contracts across all industries that largely mirrors the federal DBE program. MDOT serves as the certifying agency for both programs, and many of the policies, procedures and forms are similar. For these reasons, most participants in the interviews did not distinguish between the state and federal programs.

Interviewed firms ranged in size from large national businesses to many decades-old family-owned firms to new start-ups. Owners' backgrounds included individuals with extensive experience in their fields and entrepreneurs beginning their careers. We sought to explore their experiences in seeking and performing public and private sector prime contracts and subcontracts, with emphasis on state-administered contracts, whether federally-assisted or entirely state-funded.

The following are summaries of the issues discussed. Quotations are indented, and are representative of the views expressed over the many sessions by many participants.

1. Barriers to a Level Playing Field for DBEs

a. Stereotypes, Negative Perceptions of Competence, and Higher Performance Standards

Many minority and women owners reported that while progress has been made in integrating them into public sector contracting activities in Maryland through affirmative action contracting programs, many barriers remain. Perhaps the most subtle and difficult to address is that of stereotypes, misperceptions and higher performance standards. These biases, while sometimes subtle,¹⁶⁵ about minorities' and women's lack of competence infect all aspects of their attempts to obtain contracts and to be treated equally in performing contract work. Minorities and women repeatedly discussed their struggles with negative perceptions and attitudes of their capabilities in the business world.

We've worked with minority firms and it hasn't worked out. I have heard that.

I agree [that if people know you are a minority owned that they will therefore assume you are less competent].

No one knew who [name] was because that could have been an Italian guy, you know. And thus, I was extremely successful until they found out I was, in fact, black. Perception. ...Once I became black then all of a sudden the perception of these programs are welfare.

When I do get a contract, a lot of times I do feel like I have to over perform just to show that as a woman that I can do it because I feel like I'm tested against a higher standard all the time. Like oh sure, you can do this. So, we outperform and do really well but I feel like it has to be that. You know, it's always like, I've always got to prove myself. Over and over.

[The perception is that if you are an M/W/DBE] you don't have the background, you don't have the experience. You are small. You may not be able to adapt. And,

¹⁶⁵ See <http://www.projectimplicit.net/articles.php>.

in fact, my first thing, I stopped calling myself [M/W/DBE]. Basically, the way I look at it is at the end of the day, this is like going to a restaurant. You go there for the food, you go there for the service, you go for the ambiance. At the end of the meal he tells you, I will accept American Express, Visa or Discover. That's the way my [M/W/DBE] comes in. So I basically say, you know, you look at my value for what I'm providing. Forget about my certification. At the end of it, you as an agency get to leverage that. That has had some success but it took seven years. Still it could be lot better. No question. But my lights are on.

Yes, I am a minority business but as part of my business values, I did not want to compete as a minority business. I want to compete based on the quality of the service, my past performance, the experience that I brought to the table and I just truly could not justify it.

There are some negatives [being known as an M/W/DBE] and we have built our reputation on quality as well, and oh by the way we just happen to be minority and when people discover that we are a minority business it is sort of a ah-hah moment because when they come to our office they say this is a real good firm here and so I mean, I have a little different position. I am willing to let the law help me if it helps me open the door.... There is kind of a begrudging, oh we have to do this, so once they find out who we are they are very happy to team with us over other firms because they find out we are really faithful.... They just have to meet their percentage so once they get to know us I don't really worry too much about that. We have built our business model on that.

Women of all races often experienced gender bias and exclusion.

I've been in a lot of situations where, you know, I'm dealing with a prime. He's screaming and yelling at me and I'll say, Mr. Jones, and he'll say, don't get "hysterical".... I've been dressed down as a bitch for asking people to adhere to contract documents. You know, yea, I think there is a significant amount of harassment out there. Typically, when, you know, you are doing your job. Yea, there's, you know, there's a lot of effort to sort of get you in line. Knock you back in line.

There's that perception that there must have been the man [involved in a woman-owned business].

A large construction company, I won't name names, did say to me just recently, well you're trying to sell your husband. I have the educational qualifications. I was trying to sell the company and he made this blatant statement, you're trying to sell your husband. And, I just had to stare for a few minutes.

I was at a conference and they wanted to know how I liked working for my [male] sales rep.... I had a call a month ago from an attorney who had asked to speak to the owner and I answered the phone and he said, I don't know who you are but I

asked to speak to the owner.... You find a male voice to represent whatever you do.

I won't go up to a group of men at a conference because they're talking football and golf and they don't want me going up there.... I grew up before there was any perception of women's lib and so you learn to work around it.

Engineering is male dominated.... The older engineers, they want to talk to the men, you know. It's like the old school, boys club.

There are some jobs that I have to send a male project manager. Well I have men and women because construction is still that backward. And if they see a guy show up, they basically, well [assume] he knows what he's talking about. But if I show up, it's like, blonde hair blue eyes what could she possibly know about how to pick up structural steel. So, there definitely is still [discrimination]. I don't know about race but I know when gender is in play that women still, even though there are a lot more of us in the industry, that there definitely is still a perception that we don't really know as much as our male counterparts do.

I've been around for a long time, so my company is well known, so if I feel like when I go on a job and people ask me what department I work in [I'm outraged]. I got to definitely tell you that as an owner of a company, that that discrimination still exists. It's not near as bad as when my grandmother ran the company or whatever. But you don't see women in construction.... [We are] a third generation woman owned construction company.

Women in architecture, women in construction, have been and continue to be discriminated against. I've been in this business over twenty years. I have not seen it get any better. So we have more women, I mean more than 50 percent are in architecture schools than are out there but you will not see 50 percent of architectural firm, a large firm, being 50 percent women. I've seen women basically run out of large firms. In fact, that's why I'm independent.... It is a problem and we keep bucking our heads against it and we keep on trying to get equal pay for equal work.

I tend to let my, please no offense, but my older white guys go out and talk to the contractor.

When I show up I'm probably the only female minority that's in the room at our pre-bid meetings or even, even companies, insurance companies when I go out to their product fairs they always ask me, who do I work for, who do you work for? And I will bring maybe one of my employees, which is a male. And this one particular time this young man that I brought with me, I said I'm stepping into the ladies room and you know, I'll be right back out. I come back out and I didn't see him and there was this gentleman and he was like, your boss just left.... African Americans make up less than five percent of the financial industry and African

American women make up even less than that, so when we show up it's like, who did she work for? Who are you representing?

I've been in the construction management industry for about seven, eight years. And I, I still feel like every time I go into, you know, a pre bid or what have you, I'm the only black female in the room. And I mean that's okay with me. I don't have a problem with that. But I just wish that and hope and hopefully this, it'll come to this at some point where, when you walk in the room it's not automatically assumed you're you know, the, the employee or the you know, don't have any credibility walking in.

Two woman in construction reported that they had not been subjected to discrimination.

People always say, well you know, you being a woman in construction, you know, how does it feel? I don't know. I mean, as far as I'm concerned I, it's something that I'm very comfortable and I've never been approached. Maybe they do [have] eyebrows raised.

I've been in the business for seven years [as a woman-owned firm] and it's been very well received.... I spearhead the company, I'm the decision maker and not only am I a decision maker, when I started the company I have scars on my knees and you know, I've learned the business. So, when I go in it's very easily they're convinced. And on top of that, you have this nurturing spirit which has been a benefit for me to go in and really care about them. So, it's like construction, caring, and then you know, that combination has actually worked out very well for me.

Despite the barriers experienced by almost all minorities and women, many participants advocated the need to persevere and succeed.

Perceptions can be changed.

I will say there [are] barriers [because he is an African American man] but you can get through those just by being the businessperson, the best businessperson that you can be. Service is number one. You got to be a people person. And know when you're not. When people just don't want your service. And don't take it personally. Just keep it moving.

b. *Exclusion from Industry Networks*

Many minorities and women reported that there still exists a “good old boys” network that makes it difficult for them to fairly obtain contract opportunities.

If you think the good old boy network is not alive in Maryland, you all got a real serious issue.

[It's alive] everywhere.

There are informal networks to which we don't have access. This, I haven't been in a room with this many women in five years.

It's almost like it's a fraternity and in a way it is a good old boys' club.... If you're not part of that, the way things are done it's kind of like you're left on the outside. You're not part of that fraternity.

All of us know that it's a good old boy network. And if we don't want you in, you're not going to get in. We'll do it through bonding. We'll do it through pricing. But we're going to do it [because it's both monopolistic behavior and part of the monopoly is that everybody in it is big and white].

A good old boy network exists because it's allowed to exist.... What we have here is a situation where we're trying to correct something that's been wrong for a long, long time. There are a lot of people who don't want it corrected. Okay? They have most of the money and most of the guns.

Eighty percent, if not more, of the school work being done in state are being done by a group of six or seven firms.... It is a good old boy system.

c. *Discrimination in Applying for Commercial Loans*

Many women owners reported that sexist assumptions and barriers still hamper their ability to obtain working capital.

I went to get a loan about five years ago and went in with a non-liquid asset to collateralize the loan. And they told me that they would be happy to give me the money if my husband would cosign for it.... I have been told, bring your husband in here. You know, we'll put your muni bonds in an account, but bring your husband in here and we'll give you the money.

I had exactly that same experience where when I went for my first line of credit it was, bring your husband in and he has to cosign.... But I refused. And I borrowed from another investor. And, in order to get through that period. But, it's still happening now. Now I've been in business for fifteen years. Just two weeks ago, I had to renegotiate my line of credit. And I'm in [a business group] now here and so I'm with CEOs of other types of businesses and, yes, there's one woman but the rest of them are men. And, interestingly enough, we swapped who's paying what in, on their line of credit and what the terms of their lines of credit are, and I am always paying more. My interest rate is higher and my terms are more stringent and I always have to give a personal guarantee. And more collateral. No question about it. It just infuriates me.

d. Barriers to Obtaining Work on Public Sector Projects

i. Prime Contracts

Most M/W/DBEs expressed frustration with obtaining public sector contracts as prime contractors. This sentiment crossed industries, size of firms, and length of time in business. While all small firms find it more difficult to receive prime contract awards than do large firms, minorities and women felt that their race, ethnicity and gender created additional barriers. That the Maryland program, unlike the federal program, did not permit M/W/DBEs to count their own participation as prime vendors to meet contract goals was a particular source of frustration.¹⁶⁶

I want the State to be allowed to count me as the [M/W/DBE]. Instead, I'm being requested to give five percent to another [M/W/DBE].

You work very hard to get to be a prime and then you eliminate yourself from the process.

It's beyond wrong, it's just stupid.

i. Subcontracts

Most M/W/DBEs reported that without the requirement that prime firms make good faith efforts to meet contract goals, they would receive little or no work. While minorities and women found it is easier to obtain subcontracts than prime contracts on public projects because of affirmative action goals, it is still difficult to get work, receive fair treatment, and be paid on time. Many believed that majority prime firms use them only if forced to do so.

The goals are critical.... If there wasn't a [M/W/DBE] goal, they wouldn't have called us. They would use their own people.

If there are no goals, you won't get selected. Period.

Right.

You won't get solicited, you won't get called.

[You won't get solicited] even from your good friends or good friend colleague company.

¹⁶⁶ Although at the time of the business owner interviews, Maryland MBE program law did not allow MBEs to count their own participation, the law (at Md. Code Ann., State Fin. & Proc. § 14-302(7)) was changed in 2012 to provide for the establishment of procedures governing how the participation of MBEs is to be counted toward contract goals.

You are dead in the water if there are no goals. Nobody's going to call you. Nobody, I mean, I'll give you an example. They are doing, they are rebuilding the stop centers on the way to Delaware, two stop centers. Maryland House and Chesapeake House. And they invited me, I wonder why, but I was invited out to an outreach. I drove all the way to Aberdeen for this outreach. You know, and they have giant companies that they do the financing and rebuild. People like HMS Host. The first statement by the people from the Maryland Department of Transportation were that there were no goals on this contract because the companies were financing these things themselves.... Nobody was interested in talking to me anymore except for HMS Host, which on their own, realizing that the State of Maryland would like to see [M/W/DBEs] but can't enforce it, HMS Host has taken [the] initiative and said we will use [M/W/DBEs] and we will require everybody working on the project to come with [M/W/DBEs]. No other group [did that].... It was like I was invisible.

If there is no requirement, they won't use you. I mean there are contracts that come out, RFPs that come out and say, you know, [M/W/DBE] is encouraged. There is no goals but it's encouraged. And nine out of ten times, they're not going to use [M/W/DBE] because it's not a requirement. It's like, okay, we're only doing this to be compliant. We're not doing this because this is the right thing to do. This is the most professional thing to do. But it is a requirement that the state has in order for me to gain this contract I'm going to use [M/W/DBE].

I think that that is a, a perception to some degree, that [using M/W/DBEs] makes [the cost of the job] much higher. It does take the cost up some. I'm not going to sit here and say it doesn't. But it doesn't take it up through the roof like some would like to make you believe.... If everybody runs the program then there's nobody way underbidding everybody. Because everybody's using the same guidelines. If everybody is using [M/W/DBEs] and minority participation then there is nobody who is way lower than anybody else. Everybody's participating. Everybody's going to be at about the same, same place.... But, if we allow people to go around that with waivers, then it does create a real big gap.

Some owners reported that although their firms have been listed on the contract, they were underutilized or not utilized at all.

We oftentimes find that we will, on the front end of a contract, get a contract for \$75,000 or \$100,000 and by the end of the work we've done \$1,200 worth of work. Now what they've done is they've doctored their numbers so that they are, you know, they're compliant on the front end but there really isn't any effort to make certain that, you know, that that work was, in fact, done.

Some firms had their names listed by bidders without even being contacted, let alone reaching an agreement.

Compliance notified me and said, well we want to know how this job is going? How are you working with this company? Whatever, whatever. Then, I said, what are you talking about? They never notified me of anything.

e. *Barriers to Obtaining Work on Private Sector or “Non- Goals” Projects*

Many M/W/DBEs reported that they had not received work on non-goal State contracts, and rarely are even solicited for private jobs.

Never.

Not, no.

In the private sector, we’re still a little bit short.

If they call now and there’s no goals, I’m almost reluctant to participate in any pre discussions because I think they’re going to use my information again without putting me on the team.

Only firms with unusual niches reported much success outside of affirmative action contracting programs.

Yea [we get private work], because our discipline is a specialty discipline.

A few women reported that they found private sector work easier to obtain than public contracts.

Those are the better conversations I’ve had... I’m significant in the non-goal. For some reason it reverses. I have value in the non-goal. The goal is like, pulling these ridiculous technical specifications to match me and to match their compliance.

We do 90 percent of our work private and most again, the work we do are because of price and because of the quality of our workmanship so while I’m [M/W/DBE] certified I get most of my contracts based on merit basically because they know.

Some certified firms, especially those owned by White women, stated that once they were used on public jobs, they were solicited on that prime contractor’s projects.

I do probably 50/50 with contracts with goals and contracts without goals and the contracts without goals are much more difficult to get because you’re competing against a pool of everyone versus a contract with goals... But I find that when I get a contract with a goal and I do a good job for that contractor that they will use me a lot of times on contracts without goals regardless if they need to use me or not.

C. Conclusion

Consistent with other evidence reported in this Study, anecdotal interview information strongly suggests that DBEs continue to suffer discriminatory barriers to full and fair access to State and private sector contracts. This evidence includes stereotypes, perceptions of DBE incompetence and being subject to higher performance standards; discrimination in access to commercial loans; difficulties in receiving fair treatment in obtaining public sector prime contracts and subcontracts; and exclusion from private sector opportunities to perform as either prime contractors or as subcontractors. While not definitive proof that MDOT has a compelling interest in implementing race- and gender-conscious remedies for these impediments, the results of the surveys and the personal interviews are the types of evidence that, especially when considered alongside the numerous pieces of statistical evidence assembled, the courts have found to be highly probative of whether MDOT would be a passive participant in a discriminatory market area without affirmative interventions.

References

- Acs, Z. and D. Evans (1994), “The determinants of variations in self-employment rates across countries and over time,” working paper.
- Alba-Ramirez, A. (1994), “Self-employment in the midst of unemployment; the case of Spain and the United States,” Applied Economics, 2, 189-204.
- Arai A. B. (1997), “The road not taken, The transition from unemployment to self-employment in Canada, 1961-1994,” Canadian Journal of Sociology 22, Summer, 365-382.
- Areeda, P., L. Kaplow, and A. Edlin (2004). Antitrust Analysis: Problems, Text, Cases. New York: Aspen Publishers, 6th ed.
- Aronson, R. L. (1991), Self-employment. ILR Press, Ithaca, NY, ILR Press.
- Bates, T. (1973), Black capitalism, a quantitative analysis. New York, Praeger.
- Bates, T. (1989), “The changing nature of minority business, a comparative analysis of Asian, non-minority, and black-owned businesses,” The Review of Black Political Economy, 25-42.
- Bates, T. (1991a), “Discrimination and the capacity of Chicago metropolitan area minority and women-owned businesses,” Report to the City of Chicago Department of Law.
- Bates, T. (1991b), “Commercial bank financing of white- and black-owned small business startups,” Quarterly Review of Economics and Business, 31(1), 64-80.
- Bates, T. (1993), “Banking on black enterprise, the potential of emerging firms for revitalizing urban economies,” Washington D.C., Joint Center for Political and Economic Studies.
- Bauer, P. W. and B. A. Cromwell (1994), “A Monte Carlo examination of bias tests in mortgage lending,” Federal Reserve Bank of Cleveland Economic Review, 30(3), 27-40.
- Becker, G. S. (1957), The economics of discrimination, University of Chicago Press, Chicago, Illinois.
- Bernhardt, I. (1994) “Comparative advantage in self-employment and paid work,” Canadian Journal of Economics, May 1994, 273-289.
- Black, J., D. de Meza, and D. Jeffreys (1996), “House price, the supply of collateral and the enterprise economy,” Economic Journal, 106(434), January, 60-75.
- Blanchflower, D.G. (2000), “Self-employment in OECD countries,” Labour Economics, 7, September, 471-505.

- Blanchflower, D.G. (2009), "Minority self-employment in the United States and the impact of affirmative action programs," Annals of Finance, (5)3-4, 361-396.
- Blanchflower, D.G., P. Levine and D. Zimmerman (2003), "Discrimination In The Small Business Credit Market," Review of Economics and Statistics, 85(4), 930-943.
- Blanchflower, D.G. and B. Meyer (1994), "A longitudinal analysis of the young self-employed in Australia and the United States," Small Business Economics, 6, 1-20.
- Blanchflower, D.G. and A. J. Oswald (1990), "Self-employment and the enterprise culture," British Social Attitudes: The 1990 Report. Edited by R. Jowell, S. Witherspoon and L. Brook, Gower.
- Blanchflower, D.G. and A. J. Oswald (1998), "What makes an entrepreneur?," Journal of Labor Economics, 16(1), January, 26-60.
- Blanchflower, D.G. and A.J. Oswald (2008), "What makes a young entrepreneur?," International Handbook on Youth and Young Adulthood edited by Andy Furlong, in the Routledge International Handbook series.
- Blanchflower, D.G., A. J. Oswald, and A. Stutzer (2001), "Latent entrepreneurship across nations," European Economic Review, 45, no.4-6, May, 680-691.
- Blanchflower, D.G. and C. Shadforth (2007), "Entrepreneurship in the UK," Foundations and Trends in Entrepreneurship, 3(4), 257-364.
- Blanchflower, D.G. and J. S. Wainwright (2005), "An Analysis of the Impact of Affirmative Action Programs on Self-Employment in the Construction Industry?," National Bureau of Economic Research Working Paper Series, #11793, November.
- Blau, D. (1987), "A time-series analysis of self-employment in the United States," Journal of Political Economy, 95, 445-467.
- Bogenhold, D. and U. Staber (1991), "The decline and rise of self-employment," Employment and Society, 5, 223-239.
- Borjas, G.J. and S. Bronars (1989), "Consumer discrimination and self-employment," Journal of Political Economy, 97, 581-605.
- Bourdon, C. C. and R. E. Levitt (1980), Union and open-shop construction, compensation, work practices, and labor markets. Lexington, MA: Lexington Books.
- Broussard, N., R. Chami, and G. Hess (2003), "(Why) do self-employed parents have more children?," working paper, September.
- Browne, L.E. and G. M. B. Tootell (1995), "Mortgage Lending in Boston-A Response to the Critics," New England Economic Review, September-October, 53-78.

- Cagetti, M., and M. DeNardi (2006), "Entrepreneurship, frictions and wealth," Journal of Political Economy, 114(5), 835-70.
- Cavalluzzo, K. S. and L. C. Cavalluzzo (1998), "Market structure and discrimination, the case of small businesses," Journal of Money, Credit, and Banking, 30(4), November, 771-792.
- Cavalluzzo, K. S., L. C. Cavalluzzo, and J. Wolken (1999), "Competition, small business financing, and discrimination, evidence from a new survey," unpublished manuscript, Georgetown University, February.
- Cloud, C. and G. Galster (1993), "What do we know about racial discrimination in mortgage markets," Review of Black Political Economy, 22(1), Summer, 101-120.
- Coate, S. and S. Tennyson (1992), "Labor market discrimination, imperfect information and self-employment," Oxford Economic Papers, 44, 272-288.
- Cole, R. A. (1998), "Availability of credit to small and minority-owned businesses, evidence from the 1993 National Survey of Small Business Finances," unpublished manuscript, Employment Policies Institute, Washington, DC. April 13.
- Cowling, M. and P. Mitchell (1997), "The evolution of UK self-employment, A study of government policy and the role of the macroeconomy," Manchester School of Economic and Social Studies, 65 no.4, September, 427-442.
- Day, T. S. and S. J. Liebowitz (1998), "Mortgage lending to minorities, where's the bias?," Economic Inquiry, XXXVI, January, 3-28.
- DeWit, G. and F. A. Van Winden (1990), "An empirical analysis of self-employment in the Netherlands," Economics Letters, 32, 97-100.
- Dunn, T. A. and D.J. Holtz-Eakin (2000), "Financial capital, human capital, and the transition to self-employment: evidence from intergenerational links," Journal of Labor Economics, 18 (2): 282-305.
- Eccles, R. G. (1981), "Bureaucratic versus craft administration: The relationship of market structure to the construction Firm." Administrative Science Quarterly, 26.
- Enchautegui, Maria E., M. Fix, P. Loprest, S. von der Lippe, D. Wissoker (1996), Do minority-owned businesses get a fair share of government contracts? Washington, DC.: The Urban Institute.
- Evans, D. and B. Jovanovic (1989), "An estimated model of entrepreneurial choice under liquidity constraints," Journal of Political Economy, 97, 808-827.
- Evans, D. and L. Leighton (1989), "Some empirical aspects of entrepreneurship," American Economic Review, 79, 519-535.

Executive Office of the President, Office of Management and Budget (2007), North American Industrial Classification system: United States, 2007, Lanham, MD: Bernan.

Fairlie, R. W. (1999), "The absence of the African American owned business, an analysis of the dynamics of self-employment," Journal of Labor Economics, 17(1), 80-108.

Fairlie, R.W. (2006), "Entrepreneurship among Disadvantaged Groups: An Analysis of the Dynamics of Self-Employment by Gender, Race and Education," Handbook of Entrepreneurship, Volume 2, eds. Simon C. Parker, Zoltan J. Acs, and David R. Audretsch, New York: Springer Verlag.

Fairlie R. W. and B. D. Meyer (1996), "Ethnic and Racial Self-Employment Differences and Possible Explanations," Journal of Human Resources, 31(4), 757-793.

Fairlie R. W. and B. D. Meyer (1998), "Does immigration hurt Black self-employment?" Help or Hindrance? The Economic Implications of Immigration for Blacks. Edited by D. S. Hamermesh and F. D. Bean. New York, Russell Sage Foundation.

Fairlie R. W. and B. D. Meyer (2003), "The effect of immigration on native self-employment," Journal of Labor Economics, 21(3), 619-650.

Fairlie, R.W. and B.D. Meyer (2000), "Trends in self-employment among white and black men during the twentieth century," Journal of Human Resources, XXXV(4), 643-669.

Fairlie, R.W. and H.A. Krashinsky (2006), "Liquidity constraints, household wealth and entrepreneurship revisited," Working Paper, University of California, Santa Cruz.

Fairlie, R.W. and A. Robb (2007a), "Why are black-owned businesses less successful than white-owned businesses? The role of families, inheritances, and business human capital," Journal of Labor Economics, 25(2), 289-323.

Fairlie, R.W. and A. Robb (2007b) "Families, human capital, and small business: evidence from the Characteristics of Business Owners Survey," Industrial and Labor Relations Review, 60(2), 225-245.

Ferri, G. and P. Simon (1997), "Constrained consumer lending, exploring business cycle patterns using the Survey of Consumer Finances," working paper, Princeton University.

Foti, A. and M. Vivarelli (1994), "An econometric test of the self-employment model - the case of Italy," Small Business Economics, 6, no.2, April, 81-93.

Fuchs, V. (1982), "Self-employment and labor force participation of older males," Journal of Human Resources 17, Fall, 339-357.

Gould, F. E. (1980), "Investigation in construction entrepreneurship" Masters Thesis, MIT, May.

Greene, W. H. (1997), Econometric Analysis, Third Edition, New Jersey, Prentice-Hall, 926-931.

- Haggerty, C., K. Grigorian, R. Harter and J. D. Wolken (2000), "The 1998 Survey of Small Business Finances: Sampling and Level of Effort Associated with Gaining Cooperation from Minority-Owned Businesses," *Proceedings of the Second International Conference on Establishment Surveys*, Buffalo, NY, June 17-21.
- Hall, R. E. and F. Mishkin (1982), "The sensitivity of consumption to transitory income, estimates from panel data on households," *Econometrica*, 50(2), 461-81.
- Harrison, G. W. (1998), "Mortgage lending in Boston, a reconsideration of the evidence," *Economic Inquiry*, XXXVI, January, 29-38.
- Hayashi, F. (1985), "The effect of liquidity constraints on consumption, a cross-sectional analysis," *Quarterly Journal of Economics*, 100(1), February, 183-206.
- Heckman, J. J. (1998), "Detecting discrimination," *Journal of Economic Perspectives*, 12(2), Spring, pp. 101-116.
- Holmes T. J. and J. A. Schmitz (1990), "A theory of entrepreneurship and its application to the study of business transfers," *Journal of Political Economy* 89, 265-294.
- Holtz-Eakin, D. D. Joulfaian, and R. S. Harvey (1994a), "Entrepreneurial decisions and liquidity constraints," *Journal of Political Economy*, 102, 53-75.
- Holtz-Eakin, D. D. Joulfaian, and R. S. Harvey, (1994b), "Sticking it out, entrepreneurial survival and liquidity constraints," *Rand Journal of Economics*, 25(2), Summer, 334-347.
- Horne, D. (1994), "Evaluating the role of race in mortgage lending," *FDIC Banking Review*, 7(1), Spring/Summer, 1-15.
- Hout, M. and H. Rosen (2000), "Self-Employment, family background, and race," *Journal of Human Resources*, 35 no.4, Fall, 670-92.
- Hurst, E. and A. Lusardi (2004), "Liquidity Constraints, Household Wealth, and Entrepreneurship," *Journal of Political Economy*, April, Vol. 112(2), 319-347.
- Jappelli, J. (1990), "Who is credit constrained in the U.S. economy?," *Quarterly Journal of Economics*, 105(1), February, 219-234.
- Kanbur, S.M.R. (1990), "Entrepreneurial risk taking, inequality, and public policy, an application of inequality decomposition analysis to the general equilibrium effects of progressive taxation," *Journal of Political Economy*, 90, 1-21.
- Kidd, M. (1993) "Immigrant wage differentials and the role of self-employment in Australia," *Australian Economic Papers*, 32, no.60, June, 92-115.
- Kihlstrom, R.E. and J. J. Laffont (1979), "A general equilibrium entrepreneurial theory of firm formation based on risk aversion," *Journal of Political Economy*, 87, 719-848.

Kuhn, P.J. and H. J. Schuetze (1998), "The dynamics of self-employment in Canada," working paper, McMaster University.

La Noue, G. (2006), "Remarks of George LaNoue" in Disparity Studies as Evidence of Discrimination in Federal Contracting, U.S. Commission on Civil Rights, Washington DC.

Ladd, H.F. (1998), "Evidence on discrimination in mortgage lending," Journal of Economic Perspectives, 12(2), Spring, 41-62.

Laferrere, A. and P. McEntee (1995), "Self-employment and intergenerational transfers of physical and human capital, An empirical analysis of French data," Economic and Social Review 27 no.1, October, 43-54.

Lentz, B. F. and D. N. Laband (1990), "Entrepreneurial success and occupational inheritance among proprietors," Canadian Journal of Economics, 23, 563-579.

Lindh, T. and H. Ohlsson (1996), "Self-employment and windfall gains, Evidence from the Swedish lottery," Economic Journal, 106(439), November, 1515-1526.

Long, J. E., (1982), "The income tax and self-employment," National Tax Journal 35, March, 31-42.

Mach, T.L. and J.D. Wolken (2006). "Financial services used by small businesses: evidence from the 2003 Survey of Small Business Finances," Federal Reserve Bulletin, October 2006.

Maddala, G.S. (1983) Limited Dependent and Qualitative Variables in Econometrics, Cambridge, Cambridge University Press.

Maddala, G. S. and R. P. Trost (1994), "On measuring discrimination in loan markets," United Kingdom, Elgar, G.S. Maddala (ed.), Econometric Methods and Applications, 2, 267-290.

Meager, N. (1992), "Does unemployment lead to self-employment?," Small Business Economics, 4, 87-103.

Mora, M.T. and A. Dávila (2006), "Mexican immigrant self-employment along the U.S.-Mexico border: an analysis of 2000 Census data", Social Science Quarterly, 87(1), March.

Munnell, A. G., M. B. Tootell, L. E. Browne, and J. McEneaney (1996), "Mortgage lending in Boston, interpreting HMDA data," American Economic Review, March 1996, 86(1), 25-53.

Myrdal, G. (1944), An American dilemma, the negro problem and modern democracy, Volume 1, New York, Harper & Row.

NERA Economic Consulting (2011). The State of Minority- and Women-Owned Business Enterprise: Evidence from Maryland.

- Oaxaca, R. L. (1973), "Male-female wage differences in urban labor markets," International Economic Review, 14(3), October, 693-709.
- Olson, P.D., V. S. Zuiker and C.P. Montalto (2000), "Self-employed Hispanics and Hispanic wage earners: differences in earnings," Hispanic Journal of Behavioral Sciences, 22, 114-130.
- Parker, S. C. (2004), The Economics of Self-Employment and Entrepreneurship. Cambridge: Cambridge University Press.
- Pickles, A. R. A. R. and P. N. O'Farrell (1987), "An analysis of entrepreneurial behavior from male work histories," Regional Studies, 21, 425-444.
- Quinn, J. F. (1980), "Labor force participation patterns of older self-employed workers," Social Security Bulletin, 43, 17-28.
- Reardon, E. (1998), "Are the self-employed misfits or superstars?" working paper, Rand Corporation.
- Rees, H. and A. Shah (1986), "An empirical analysis of self-employment in the UK," Journal of Applied Econometrics, 1, 95-108.
- Robb, A. (2012). "Access to Capital among Young Firms, Minority-owned Firms, Women-owned Firms, and High-tech Firms," for SBA Office of Advocacy. April.
- Robb, A. (2010). "Beyond the Late, Lamented Survey of Small Business Finances," *Newsletter of the Association of Public Data Users*, 33, no. 2, March/April.
- Robles, B.J. and H. Cordero-Guzmán (2007), "Latino self-employment and entrepreneurship in the United States: an overview of the literature and data sources," The Annals of the American Academy of Political and Social Science, 613; 18-31.
- Robson, M. T. (1998a), "The rise in self-employment amongst UK males," Small Business Economics, 10, no.3, 199-212
- Robson, M. T. (1998b), "Self-employment in the UK regions," Applied Economics, 30, no.3, March, pp. 313-322.
- Schuetze, H.J. (1998), "Taxes, economic conditions and recent trends in male self-employment; a Canada-U.S. comparison," working paper, McMaster University, Hamilton, Ontario, Canada.
- Taylor, M. P. (1996), "Earnings, independence or unemployment; why become self-employed?" Oxford Bulletin of Economics and Statistics, 58, 2, 253-265.
- Taylor, P., R. Kochhar, R. Fry, G. Velasco, and S. Motel, (2011), "Twenty-to-One: Wealth Gaps Rise to Record Highs Between Whites, Blacks and Hispanics," Washington, DC: Pew Research Center.

- Tootell, G. M. B. (1996), "Turning a critical eye on the critics," Mortgage lending, racial discrimination and federal policy, edited by J. Goering and R. Wienk, Urban Institute Press, Washington, D.C.
- U.S. Chamber of Commerce (2005), Access to capital, what funding sources work for you? U.S. Chamber of Commerce, Washington DC.
- Yezer, M. J., R. F. Phillips, and R. P. Trost (1994), "Bias in estimates of discrimination and default in mortgage lending; the effects of simultaneity and self-selection," Journal of Real Estate Finance and Economics, 9(3), 196-215.
- Wainwright, J. (2012), Report of Defendant Intervenor's Expert in Geyer Signal, Inc. and Kevin Kissell v. Minnesota Department of Transportation, Thomas K. Sorel in his capacity as the Minnesota Commissioner of Transportation, and Mary Prescott in her capacity as Acting Director of the Office of Civil Rights, United States District Court for the District of Minnesota, Case No. 0:11-cv-00321-JRT, December 30.
- Wainwright, J. S. (2010), Report of Defendant's Expert in Kevcon, Inc. v. The United States, No. 09 625C (United States Court of Federal Claims), April 29.
- Wainwright, J. S. (2008), "Discrimination Facing Small Minority-Owned and Women-Owned Businesses in Commercial Credit Markets." Testimony before the United States Senate, Committee on Small Business and Entrepreneurship, Hearing on "Business Start-up Hurdles in Underserved Communities: Access to Venture Capital and Entrepreneurship Training," September 11.
- Wainwright, J. S. (2000), "Racial discrimination and minority business enterprise, evidence from the 1990 Census," Studies in Entrepreneurship Series. Edited by S. Bruchey. New York, Garland Publishing.
- Wainwright, J. and C. Holt (2010), Guidelines for Conducting a Disparity and Availability Study for the Federal DBE Program, Transportation Research Board of the National Academies, NCHRP Report, Issue No. 644.

Appendix I. Glossary

Aggregation, aggregated: Refers to the practice of combining smaller groups into larger groups. In the present context this term is typically used in reference to the presentation of utilization, availability, or related statistics according to industry. For example, statistics presented for the “Construction” sector as a whole are more aggregated than separate statistics for “Building Construction,” “Heavy Construction,” and “Special Trades Construction” industries. See also “Disaggregation, disaggregated.”

Anecdotal evidence: Qualitative data regarding business owners’ accounts of experiences with disparate treatment and other barriers to business success.

Availability: A term of art in disparity studies that refers to the percentage of a given population of businesses owned by one or more groups of interest. For example. *See also* Utilization, Disparity Ratio.

Baseline Business Universe: The underlying population of business establishments that is used in an availability analysis. The denominator in an M/WBE availability measure.

Capacity: This term has no single definition. See Chapter II for an extended discussion of this concept and its role in disparity studies.

MSA: Metropolitan Statistical Area. As defined by the federal Office of Management and Budget, contains at least one urbanized area that has a total population of 50,000 or more, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.

Constitutional significance or substantive significance: An indication of the how large or small a given disparity is. Under the EEOC’s “four-fifths” rule, a disparity ratio is substantively significant if it is 0.8 or less on a scale of 0 to 1 or 80 or less on a scale of 1 to 100.

DBE: Disadvantaged Business Enterprise. In this document, DBE is used interchangeably with MBE and M/WBE. See the discussion above at Chapter II, Section A. For the formal definition, governing participation in the federal program, *see* 49 CFR Part 26.5.

Decennial: Refers to the census conducted every decade by the U.S. Census Bureau. The last decennial census was conducted in 2000. The next is currently underway as of this writing (in 2010).

Demand-side: Refers to activity on the demand-side of an economic market. For example, when State agencies hire contractors or vendors they are creating market demand. *See also* “Supply-side.”

Dependent variable: In a regression analysis, a variable whose value is postulated to be influenced by one or more other, “independent” or “exogenous” or “explanatory,” variables. For example, in business owner earnings regressions, business owner earnings is the dependent

variable, and other variables, such as industry, geographic location, or age are the explanatory variables. *See also* “Independent variable,” “Exogenous variable.”

Disaggregation, disaggregated: Refers to the practice of splitting larger groups into smaller groups. In the present context this term is typically used in reference to the presentation of utilization, availability, or related statistics according to industry. For example, statistics presented for “Building Construction,” “Heavy Construction,” and “Special Trades Construction” industries are more disaggregated than statistics for the “Construction” sector as a whole.

Disparate impact: A synonym for “disparity,” often used in the employment discrimination litigation context. A disparate impact occurs when a “good” outcome for a given group occurs significantly less often than expected given that group’s relative size, or when a “bad” outcome occurs significantly more often than expected.

Disparity ratio: A measure derived from dividing utilization by availability and multiplying the result by 100. A disparity ratio of less than 100 indicates that utilization is less than availability. A disparity ratio of 80 or less can be taken as evidence of disparate impact. *See also* Availability, Constitutional Significance, Utilization.

Econometrics, econometrically: Econometrics is the field of economics that concerns itself with the application of statistical inference to the empirical measurement of relationships postulated by economic theory. *See also* “Regression.”

Endogenous variable: A variable that is correlated with the residual in a regression analysis or equation. Endogenous variables should not be used in statistical tests for the presence of disparities. *See also* “Exogenous variable.”

Exogenous variable: A variable that is uncorrelated with the residual in a regression analysis or equation. Exogenous variables are appropriate for use in statistical tests for the presence of disparities. *See also* “Endogenous variable,” “Independent variable,” “Dependent variable.”

SFY: State Fiscal Year. Maryland’s State Fiscal Year runs from July 1 through June 30.

First-tier subcontractors: Subcontractors or suppliers hired directly by the prime contractor.

Independent variable: In a regression analysis, one or more variables that are postulated to influence or explain the value of another, “dependent” variable. For example, in business owner earnings regressions, business owner earnings is the dependent variable, and other variables, such as industry, geographic location, or age are the independent or explanatory variables. *See also* “Dependent variable,” “Exogenous variable.”

MBE: Minority-Owned Business Enterprise. A business establishment that is 51 percent or more owned and controlled by racial or ethnic minorities (*i.e.* African Americans, Hispanics, Asians, or Native Americans).

Mean: A term of art in statistics, synonymous in this context with the arithmetic average. For example, the mean value of the series 1, 1, 2, 2, 2, 4, 5 is 2.43. This is derived by calculating the sum of all the values in the series (*i.e.* 17) and dividing that sum by the number of elements in the series (*i.e.* 7).

Median: A term of art in statistics, meaning the middle value of a series of numbers. For example, the median value of the series 1, 1, 2, 2, 2, 4, 5 is 2.

Microdata or micro-level data: Quantitative data rendered at the level of the individual person or business, as opposed to data rendered for groups or aggregates of individuals or businesses. For example, Dun and Bradstreet provides micro-level data on business establishments. The Census Bureau's *Survey of Business Owners*, provides grouped or aggregated data on businesses.

Misclassification: In the present context, this term refers to a situation when a listing or directory of minority-owned or women-owned firms has incorrectly classified a firm's race or gender status. For example, when a firm listed as Hispanic-owned is actually African American owned, or when a firm listed as White female-owned is actually White male-owned. *See also* "Nonclassification."

M/WBE. *See* MBE and WBE.

NAICS: North American Industry Classification System. The standard system for classifying industry-based data in the U.S. Superseded the Standard Industrial Classification (SIC) System in 1997. *See also* "SIC."

Nonclassification: In the present context, this term refers to a type of misclassification when a listing or directory has not identified firms as minority-owned or women-owned when, in fact, they are. *See* "Misclassification."

PUMS: Public Use Microdata Sample. Both the decennial census and the American Community Survey publish PUMS products.

p-value: A standard measure used to represent the level of statistical significance. It states the numerical probability that the stated relationship is due to chance alone. For example, a p-value of 0.05 or 5% indicates that the chance a given statistical difference is due purely to chance is 1-in-20. *See also* "Statistical Significance."

Regression, multiple regression, multivariate regression: A type of statistical analysis which examines the correlation between two variables ("regression") or three or more variables ("multiple regression" or "multivariate regression") in a mathematical model by determining the line of best fit through a series of data points. Econometric research typically employs regression analysis. *See also* "Econometrics."

SBO: The Census Bureau's *Survey of Business Owners* statistical data series. Part of the five-year *Economic Census* series.

Set-aside, set-asides: A contracting practice where certain contracts or classes of contracts are reserved for competitive bidding exclusively among a given subset of contractors, for example minority-owned and women-owned contractors.

SIC: Standard Industrial Classification System. Prior to 1997, the standard system for classifying industry-based data in the U.S. Superseded by the North American Industry Classification System (NAICS). *See also* “NAICS.”

Statistical significance: A statistical outcome or result that is unlikely to have occurred as the result of random chance alone. The greater the statistical significance, the smaller the probability that it resulted from random chance alone. *See also* “p-value.”

Stratified: In the present context, this refers to a statistical practice where random samples are drawn within different categories or “strata” such as time period, industry sector, or DBE status.

Substantive significance or constitutional significance: An indication of the how large or small a given disparity is. Under the EEOC’s “four-fifths” rule, a disparity ratio is substantively significant if it is 0.8 or less on a scale of 0 to 1.

Supply-side: Refers to activity on the supply-side of an economic market. For example, when new businesses are formed, other things equal, the supply of contractors to the market is increased. *See also* “Demand-side.”

t-test, t-statistic, t-distribution: Often employed in disparity studies to determine the statistical significance of a particular disparity statistic. A t-test is a statistical hypothesis test based on a test statistic whose sampling distribution is a t-distribution. Various t-tests, strictly speaking, are aimed at testing hypotheses about populations with normal probability distributions. However, statistical research has shown that t-tests often provide quite adequate results for non-normally distributed populations as well.

Two-tailed (or two-sided) statistical test: A “two-tailed” test means that one is testing the hypothesis that two values, say u (utilization) and a (availability), are equal against the alternate hypothesis that u is not equal to a . In contrast, a one-sided test means that you are testing the hypothesis that u and a are equal against the alternate hypothesis u is not equal to a in only one direction. That is, that it is either larger than a or smaller than a .

Utilization: A term of art in disparity studies that refers to the percentage of a given amount of contracting and/or procurement dollars that is awarded or paid to businesses owned by one or more groups of interest. *See also* Availability, Disparity Ratio.

WBE: Women-Owned Business Enterprise: A business establishment that is 51 percent or more owned and controlled by nonminority women. In this Study, unless otherwise indicated, WBE refers to nonminority women-owned firms.

Appendix II. Master Directory Sources

A. Entities with lists of M/W/DBE firms that were duplicative of previously collected lists

African American Business Association of Montgomery County
 African American Chamber of Commerce of Montgomery County
 Anne Arundel County Economic Development Corporation
 Arlington County
 Baltimore City Public School System
 Baltimore County Dept of Economic Development
 Baltimore County Office of Fair Practices and Community Affairs
 Baltimore County Public Schools
 Baltimore-Washington International Airport
 Bowie State University
 Cecil County
 Charles County Economic Development Commission
 City of Annapolis, Small and Minority Business Enterprise Development
 City of Baltimore
 Coppin State University
 Dorchester County
 Dulles International Airport
 Frederick County – Office of Economic Development
 Frostburg State University
 Greater Baltimore Committee
 Harford County
 Howard County Government Administration Office
 Maryland Aviation Administration
 Maryland Department of Business and Economic Development
 Maryland Department of General Services
 Maryland Department of Labor, Licensing & Regulation
 Maryland Department of Public Safety and Correctional Services
 Maryland Dept of Budget and Management
 Maryland Dept of Education
 Maryland Dept of Human Resources
 Maryland Dept of Information Technology (through DBM)
 Maryland Dept of Juvenile Services
 Maryland Dept of Mental Health and Hygiene
 Maryland Environmental Service
 Maryland Interagency Commission for Public School Construction
 Maryland Mass Transit Administration-Baltimore
 Maryland Minority Contractors Association, Inc.
 Maryland Port Authority
 Maryland Small Business Development Center – Frederick County

Maryland Small Business Development Center – Garrett County
 Maryland Small Business Development Center – Central Region
 Maryland Stadium Authority
 Maryland State Highway
 Maryland State Lottery Agency
 Maryland State Police
 Maryland Transit Administration
 Maryland Transportation Authority
 Maryland Vehicle Administration
 MDOT – The Secretary’s Office
 Minority Business Advocacy Council
 Montgomery County
 Montgomery County Minority Procurement Officer
 Morgan State University
 National Association of Women in Construction – Virginia – Central Virginia
 National Association of Women in Construction – Virginia – Blue Ridge
 National Association of Women in Construction – Virginia – Roanoke
 National Association of Women in Construction – Virginia – Richmond
 National Association of Women in Construction – Washington DC
 National Association of Women in Construction – Maryland (chapter 135)
 National Association of Women in Construction – Delaware (chapter 96)
 Naval Air Systems Command
 Prince George County Public Schools
 Prince George’s County
 Prince George’s County Minority Business Opportunity Commission
 Queen Anne’s County – Department of Economic Development and Agriculture
 Queen Anne’s County – Department of Business & Tourism
 Salisbury State University
 St. Mary’s County, MD
 Towson University
 University of Baltimore
 University of Maryland Baltimore
 University of Maryland Baltimore County
 University of Maryland College Park
 University of Maryland Eastern Shore
 University of Maryland University College
 Virginia Department of Transportation
 Washington County
 Washington Suburban Sanitary Commission
 West Virginia Small Business Development Center
 Women Presidents’ Educational Organization

B. Entities from which lists or directories were not available

Allegany County
 Allegany County Chamber of Commerce
 Asian Pacific American Chamber of Commerce
 Baltimore American Indian Center
 Baltimore City Chamber of Commerce
 Baltimore Development Corporation
 Berkeley County
 Berkeley County Chamber of Commerce
 Brunswick MD Economic Development Commission
 Calvert County Economic Development Corporation
 Caroline County
 Cecil County
 Coalition of Korean American Organizations
 DC Sports and Entertainment Commission
 District of Columbia Public Schools
 Downtown Frederick Partnership
 Downtown Partnership of Baltimore
 Economic Alliance of Greater Baltimore
 Empower Baltimore
 Entrepreneur Council of Frederick MD
 Fiesta DC
 Frederick County Chamber of Commerce
 Harford County
 Host Marriott
 Howard County Chamber of Commerce
 Japan-America Society
 Jefferson County Chamber of Commerce
 Jefferson County Development Authority
 Kent County Chamber of Commerce
 Kent County, MD
 Maryland Commission for Women
 Maryland Small Business Development Center – Capital Region Serving
 Maryland Small Business Development Center – Northern Region
 Maryland State Conference of NAACP Branches
 Minority Business Enterprise Coalition
 National Black Chamber of Commerce
 Norfolk International Airport
 Ocean City Chamber of Commerce
 Prince George’s County
 Prince George’s County Black Chamber of Commerce
 Queen Anne’s County Chamber of Commerce
 Salisbury – Wicomico Economic Development
 Small Business Resource Center (Baltimore)

Somerset County, MD
 Southern Maryland Consortium of African American Community Organizations
 St. Mary's County Chamber of Commerce
 St. Mary's County Community Development Corporation Inc.
 St. Mary's County, MD
 Talbot Chamber of Commerce
 Upper Shore Workforce Investment Board
 Virginia Department of Transportation
 Virginia State Conference of NAACP Branches
 West Virginia Secretary of State
 Wicomico County, MD
 Women Business Owners of Montgomery County
 Women's Business Network
 Women's Transportation Seminar – National
 Women's Transportation Seminar – Baltimore
 Worcester County, MD
 American Subcontractors Association of Baltimore
 Annapolis & Anne Arundel Chamber of Commerce
 Asian American Business Development Council
 Baltimore Black Pages
 Baltimore Gas & Energy Supplier Diversity Program
 Baltimore Washington Corridor Chamber of Commerce
 Black Chamber of Commerce of Anne Arundel County
 Building Congress and Exchange of Metropolitan Baltimore
 Calvert County Chamber of Commerce
 Cecil County Chamber of Commerce
 Charles County Business Network
 Charles County Chamber of Commerce
 Charles County Technology Council
 Chesapeake Women's Network
 City of Frederick Department of Economic Development
 DC Department of Public Works
 Dorchester County Chamber of Commerce
 Frederick County – Fort Detrick Business Development Office
 Garrett County Chamber of Commerce
 Howard County
 Jacob France Institute (University of Baltimore)
 Maryland Chamber of Commerce
 Maryland Hispanic Chamber of Commerce
 Mid-Atlantic Hispanic Chamber of Commerce – District of Columbia
 Mid-Atlantic Hispanic Chamber of Commerce – Bowie
 Mid-Atlantic Hispanic Chamber of Commerce – Hyattsville
 Mid-Atlantic Hispanic Chamber of Commerce – Gaithersburg/Rockville/Germantown
 Mid-Atlantic Hispanic Chamber of Commerce – Frederick
 Mid-Atlantic Hispanic Chamber of Commerce – Hagerstown/Washington City

Mid-Atlantic Hispanic Chamber of Commerce – Northern Virginia
 Minority Business & Consumer Resource Directory
 Montgomery County Chamber of Commerce
 National Association of Minority Contractors (DC)
 National Association of Women in Construction
 Prince George’s Chamber of Commerce Small and Minority Business Committee
 Richmond Metropolitan Business League
 Talbot County, MD
 UGI Electric
 USAMRMC Office of Small Business Programs
 West Virginia Small Business Development Center
 City of Richmond Virginia
 Concerned Black Women of Calvert County
 DC Conference of NAACP Branches
 Frederick County African American Chamber of Commerce
 Governor’s Commission on Hispanic Affairs
 Governor’s Commission on Indian Affairs
 Greater Baltimore Black Chamber of Commerce
 Hispanic Chamber of Commerce of Montgomery County
 Korean American Association of the State of Maryland
 Korean Business Enterprise Association
 Korean MBE Association
 Korean Society of Maryland
 Maryland Alliance of Black Chambers of Commerce
 Minority Building Industry Association
 Prince George’s Hispanic/Latino Chamber of Commerce
 Virginia Asian Chamber of Commerce
 Virginia Hispanic Chamber of Commerce
 West Virginia Dept of Commerce
 Women Construction Owners and Executives
 Allegany Trade/Business Association
 Baltimore Hispanic Chamber of Commerce
 Baltimore Orioles
 Caribbean-American Chamber of Commerce and Industry for the Greater Washington Area
 Network
 Dominion Electric
 Greater Washington Hispanic Chamber of Commerce
 Maryland Small Business Development Center – Allegany County
 Maryland Small Business Development Center – Washington County
 Maryland Small Business Development Center – Southern Region
 Maryland Small Business Development Center – Eastern Region
 Maryland/DC Minority Supplier Development Council
 National Association of Minority Contractors
 National Association of Women Business Owners – Baltimore Regional
 National Association of Women Business Owners – Greater DC

National Association of Women Business Owners – National Chapter
Tri-State Minority Supplier Development Council
Virginia Minority Supplier Development Council
Women Business Owners of Prince George’s County
Women Entrepreneurs of Baltimore
Women’s Business Enterprise National Council
Women’s Transportation Seminar

Appendix III. Individual Modal Administration Tables

Table 1.2.A. Distribution of SHA Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities

Procurement Category	In the Sample Universe		Total
	No	Yes	
CONSTRUCTION	26	543	569
	4.57	95.43	100.00
	3.70	29.85	22.57
AE-CRS	3	355	358
	0.84	99.16	100.00
	0.43	19.52	14.20
MAINTENANCE	180	761	941
	19.13	80.87	100.00
	25.64	41.84	37.33
IT	82	54	136
	60.29	39.71	100.00
	11.68	2.97	5.39
SERVICES	40	106	146
	27.40	72.60	100.00
	5.70	5.83	5.79
CSE	371	0	371
	100.00	0.00	100.00
	52.85	0.00	14.72
TOTAL	702	1,819	2,521
	27.85	72.15	100.00
	100.00	100.00	100.00

Table 1.2.B. Distribution of MTA Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities

Procurement Category	In the Sample Universe		Total
	No	Yes	
CONSTRUCTION	2	50	53
	3.85	96.15	100.00
	0.21	17.79	4.24
AE-CRS	0	46	46
	0.00	100.00	100.00
	0.00	16.37	3.76
MAINTENANCE	32	67	99
	32.32	67.68	100.00
	3.39	23.84	8.08
IT	53	23	76
	69.74	30.26	100.00
	5.61	8.19	6.20
SERVICES	35	95	131
	26.92	73.08	100.00
	3.71	33.81	10.61
CSE	822	0	822
	100.00	0.00	100.00
	87.08	0.00	67.10
TOTAL	944	281	1,225
	77.06	22.94	100.00
	100.00	100.00	100.00

Table 1.2.C. Distribution of MAA Prime Contracts and Purchase Orders by Procurement Category and Subcontracting Opportunities

Procurement Category	In the Sample Universe		Total
	No	Yes	
CONSTRUCTION	3	64	67
	4.48	95.52	100.00
	1.20	27.83	13.99
AE-CRS	1	36	37
	2.70	97.30	100.00
	0.40	15.65	7.72
MAINTENANCE	10	54	64
	15.62	84.38	100.00
	4.02	23.48	13.36
IT	2	0	2
	100.00	0.00	100.00
	0.80	0.00	0.42
SERVICES	23	76	99
	23.23	76.77	100.00
	9.24	33.04	20.67
CSE	210	0	210
	100.00	0.00	100.00
	84.34	0.00	43.84
TOTAL	249	230	479
	51.98	48.02	100.00
	100.00	100.00	100.00

Table 1.3.A. Summary of Master Contract/Subcontract Database: SHA Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			2,798,100,819	1,444,270,830
<i>Prime Contracts</i>	176	167	1,585,339,129	784,472,360
<i>Subcontracts</i>	2,542	2,218	1,212,761,690	659,798,470
<i>AE-CRS</i>			584,695,286	193,895,924
<i>Prime Contracts</i>	146	142	380,070,407	139,829,236
<i>Subcontracts</i>	697	628	204,624,879	54,066,688
<i>MAINTENANCE</i>			218,437,685	145,589,903
<i>Prime Contracts</i>	124	112	179,954,606	110,566,184
<i>Subcontracts</i>	464	411	38,483,079	35,023,719
<i>IT</i>			56,994,821	25,175,125
<i>Prime Contracts</i>	15	14	44,481,655	18,865,647
<i>Subcontracts</i>	19	18	12,513,166	6,309,478
<i>SERVICES</i>			60,166,414	12,259,463
<i>Prime Contracts</i>	33	33	51,692,874	8,442,478
<i>Subcontracts</i>	94	94	8,473,540	3,816,985
<i>CSE</i>			4,599,560	4,599,560
<i>Prime Contracts</i>	3	3	4,599,560	4,599,560
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			3,722,994,585	1,825,790,805
<i>Prime Contracts</i>	497	471	2,246,138,231	1,066,775,465
<i>Subcontracts</i>	3,816	3,369	1,476,856,354	759,015,340

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

Table 1.3.B. Summary of Master Contract/Subcontract Database: MTA Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			130,703,368	98,683,931
<i>Prime Contracts</i>	19	17	68,291,292	38,868,559
<i>Subcontracts</i>	207	171	62,412,076	59,815,372
<i>AE-CRS</i>			178,271,741	78,357,873
<i>Prime Contracts</i>	30	28	119,988,251	56,355,106
<i>Subcontracts</i>	229	212	58,283,490	22,002,767
<i>MAINTENANCE</i>			69,909,940	64,747,088
<i>Prime Contracts</i>	18	18	65,792,370	60,416,206
<i>Subcontracts</i>	13	13	4,117,570	4,330,882
<i>IT</i>			21,241,881	13,013,933
<i>Prime Contracts</i>	13	12	19,324,989	13,013,933
<i>Subcontracts</i>	18	0	1,916,892	0
<i>SERVICES</i>			514,970,126	335,334,741
<i>Prime Contracts</i>	53	51	462,822,303	314,822,837
<i>Subcontracts</i>	354	347	52,147,823	20,511,904
<i>CSE</i>			266,255,412	266,255,412
<i>Prime Contracts</i>	44	44	266,255,412	266,255,412
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			1,181,352,468	856,392,978
<i>Prime Contracts</i>	177	170	1,002,474,617	749,732,053
<i>Subcontracts</i>	821	743	178,877,851	106,660,925

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

Table 1.3.C. Summary of Master Contract/Subcontract Database: MAA Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			146,627,925	137,940,405
<i>Prime Contracts</i>	18	18	80,151,868	75,361,700
<i>Subcontracts</i>	206	206	66,476,057	62,578,705
<i>AE-CRS</i>			116,216,425	62,058,726
<i>Prime Contracts</i>	24	23	88,156,504	47,259,635
<i>Subcontracts</i>	190	184	28,059,921	14,799,091
<i>MAINTENANCE</i>			155,678,879	93,139,873
<i>Prime Contracts</i>	18	15	127,006,428	72,133,585
<i>Subcontracts</i>	40	36	28,672,451	21,006,288
<i>IT</i>			0	0
<i>Prime Contracts</i>	0	0	0	0
<i>Subcontracts</i>	0	0	0	0
<i>SERVICES</i>			150,481,244	86,123,564
<i>Prime Contracts</i>	20	19	118,697,806	67,802,494
<i>Subcontracts</i>	39	33	31,783,438	18,321,070
<i>CSE</i>			22,281,691	22,281,691
<i>Prime Contracts</i>	15	15	22,281,691	22,281,691
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			591,286,164	401,544,259
<i>Prime Contracts</i>	95	90	436,294,297	284,839,105
<i>Subcontracts</i>	475	459	154,991,867	116,705,154

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

Table 1.4.A. Summary of Master Contract/Subcontract Database: Federally-Assisted SHA Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			2,496,792,072	1,154,485,707
<i>Prime Contracts</i>	120	112	1,428,961,587	641,059,090
<i>Subcontracts</i>	1,780	1,475	1,067,830,485	513,426,617
<i>AE-CRS</i>			573,453,575	186,338,177
<i>Prime Contracts</i>	141	138	373,290,029	134,618,685
<i>Subcontracts</i>	589	536	200,163,546	51,719,492
<i>MAINTENANCE</i>			126,834,343	78,177,334
<i>Prime Contracts</i>	43	35	110,623,796	61,641,615
<i>Subcontracts</i>	224	188	16,210,547	16,535,719
<i>IT</i>			22,420,445	16,667,231
<i>Prime Contracts</i>	4	4	11,345,915	11,613,736
<i>Subcontracts</i>	7	7	11,074,530	5,053,495
<i>SERVICES</i>			50,862,705	8,070,208
<i>Prime Contracts</i>	11	11	43,704,281	5,568,339
<i>Subcontracts</i>	84	84	7,158,424	2,501,869
<i>CSE</i>			0	0
<i>Prime Contracts</i>	0	0	0	0
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			3,270,363,140	1,443,738,657
<i>Prime Contracts</i>	319	300	1,967,925,608	854,501,465
<i>Subcontracts</i>	2,684	2,290	1,302,437,532	589,237,192

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

Table 1.4.B. Summary of Master Contract/Subcontract Database: Federally-Assisted MTA Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			130,703,368	98,683,931
<i>Prime Contracts</i>	19	17	68,291,292	38,868,559
<i>Subcontracts</i>	207	171	62,412,076	59,815,372
<i>AE-CRS</i>			172,719,483	74,830,771
<i>Prime Contracts</i>	28	26	117,223,738	55,607,973
<i>Subcontracts</i>	200	183	55,495,745	19,222,798
<i>MAINTENANCE</i>			69,855,878	64,693,026
<i>Prime Contracts</i>	16	16	65,738,308	60,362,144
<i>Subcontracts</i>	13	13	4,117,570	4,330,882
<i>IT</i>			20,788,208	12,560,260
<i>Prime Contracts</i>	7	6	18,871,316	12,560,260
<i>Subcontracts</i>	18	0	1,916,892	0
<i>SERVICES</i>			514,486,907	334,947,018
<i>Prime Contracts</i>	44	42	462,508,772	314,528,960
<i>Subcontracts</i>	353	346	51,978,135	20,418,058
<i>CSE</i>			257,616,760	257,616,760
<i>Prime Contracts</i>	37	37	257,616,760	257,616,760
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			1,166,170,604	843,331,766
<i>Prime Contracts</i>	151	144	990,250,186	739,544,656
<i>Subcontracts</i>	791	713	175,920,418	103,787,110

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

Table 1.4.C. Summary of Master Contract/Subcontract Database: Federally-Assisted MAA Prime Contracts and Subcontracts by Procurement Category, 2005-2009

CONTRACT CATEGORY	NUMBER OF AWARDED CONTRACTS	NUMBER OF PAID CONTRACTS	DOLLARS AWARDED	DOLLARS PAID
<i>CONSTRUCTION</i>			54,020,779	51,732,495
<i>Prime Contracts</i>	3	3	34,451,792	33,270,189
<i>Subcontracts</i>	36	36	19,568,987	18,462,306
<i>AE-CRS</i>			78,307,424	36,309,909
<i>Prime Contracts</i>	12	12	59,545,255	27,608,975
<i>Subcontracts</i>	100	100	18,762,169	8,700,934
<i>MAINTENANCE</i>			0	0
<i>Prime Contracts</i>	0	0	0	0
<i>Subcontracts</i>	0	0	0	0
<i>IT</i>			0	0
<i>Prime Contracts</i>	0	0	0	0
<i>Subcontracts</i>	0	0	0	0
<i>SERVICES</i>			0	0
<i>Prime Contracts</i>	0	0	0	0
<i>Subcontracts</i>	0	0	0	0
<i>CSE</i>			8,841,892	8,841,892
<i>Prime Contracts</i>	4	4	8,841,892	8,841,892
<i>Subcontracts</i>	0	0	0	0
<i>GRAND TOTAL</i>			141,170,095	96,884,296
<i>Prime Contracts</i>	19	19	102,838,939	69,721,056
<i>Subcontracts</i>	136	136	38,331,156	27,163,240

Source: NERA calculations from Master Contract/Subcontract Database. Note: Prime Contract dollar amounts are net of subcontract amounts.

Table 1.5.A. Distribution of SHA Contracting and Procurement Dollars by Geographic Location

Location	Construc- tion (%)	AE-CRS (%)	Main- tenance (%)	IT (%)	Services (%)	CSE (%)	Overall (%)
	Awarded Dollars						
Inside SHA Market Area	90.9	91.0	88.8	87.3	94.2	0.0	90.8
Outside SHA Market Area	9.1	9.0	11.2	12.7	5.8	0.0	9.2
Inside State of Maryland	84.2	88.9	84.4	77.4	91.3	67.4	84.9
Outside State of Maryland	15.8	11.1	15.6	22.6	8.7	32.6	15.1
	Paid Dollars						
Inside SHA Market Area	87.1	94.3	86.8	90.0	83.4	0.0	87.9
Outside SHA Market Area	12.9	5.7	13.2	10.0	16.6	0.0	12.1
Inside State of Maryland	81.4	92.8	85.0	73.1	73.1	67.4	82.7
Outside State of Maryland	18.6	7.2	15.0	26.9	26.9	32.6	17.3

Source: See Table 1.3.

Table 1.5.B. Distribution of MTA Contracting and Procurement Dollars by Geographic Location

Location	Construc- tion (%)	AE-CRS (%)	Main- tenance (%)	IT (%)	Services (%)	CSE (%)	Overall (%)
	Awarded Dollars						
Inside MTA Market Area	93.1	94.4	93.2	79.7	79.4	58.1	79.2
Outside MTA Market Area	6.9	5.6	6.8	20.3	20.6	41.9	20.8
Inside State of Maryland	93.0	92.1	73.6	79.7	78.3	58.1	77.2
Outside State of Maryland	7.0	7.9	26.4	20.3	21.7	41.9	22.8
	Paid Dollars						
Inside MTA Market Area	90.9	94.5	92.7	79.6	71.8	58.1	73.5
Outside MTA Market Area	9.1	5.5	7.3	20.4	28.2	41.9	26.5
Inside State of Maryland	90.8	92.2	71.5	79.6	71.0	58.1	71.4
Outside State of Maryland	9.2	7.8	28.5	20.4	29.0	41.9	28.6

Source: See Table 1.3.

Table 1.5.C. Distribution of MAA Contracting and Procurement Dollars by Geographic Location

Location	Construc- tion (%)	AE-CRS (%)	Main- tenance (%)	IT (%)	Services (%)	CSE (%)	Overall (%)
	Awarded Dollars						
Inside MAA Market Area	88.2	83.5	94.0	0.0	88.2	46.2	87.3
Outside MAA Market Area	11.8	16.5	6.0	0.0	11.8	53.8	12.7
Inside State of Maryland	87.7	77.2	80.9	0.0	84.6	46.2	81.5
Outside State of Maryland	12.3	22.8	19.1	0.0	15.4	53.8	18.5
	Paid Dollars						
Inside MAA Market Area	88.9	82.3	94.0	0.0	89.8	46.2	86.9
Outside MAA Market Area	11.1	17.7	6.0	0.0	10.2	53.8	13.1
Inside State of Maryland	88.4	76.0	75.0	0.0	86.2	46.2	80.5
Outside State of Maryland	11.6	24.0	25.0	0.0	13.8	53.8	19.5

Source: See Table 1.3.

Table 1.6.A. Distribution of SHA Prime Contract and Subcontract Award Dollars by State and County, 2005-2009

STATE	COUNTY	AMOUNT	PERCENT	CUMULATIVE PERCENT
MD	Montgomery	\$447,886,244	21.77	21.77
MD	Baltimore	\$366,471,349	17.81	39.58
MD	Baltimore City	\$338,040,964	16.43	56.01
MD	Howard	\$216,087,268	10.50	66.51
MD	Frederick	\$141,514,646	6.88	73.39
MD	Anne Arundel	\$107,424,681	5.22	78.61
MD	Prince George's	\$101,359,167	4.93	83.53
MD	Kent	\$53,869,402	2.62	86.15
MD	Carroll	\$41,342,476	2.01	88.16
MD	Wicomico	\$38,056,309	1.85	90.01
MD	Harford	\$31,115,331	1.51	91.52
VA	Fairfax	\$29,433,424	1.43	92.95
MD	Garrett	\$23,879,869	1.16	94.11
MD	Washington	\$15,679,916	0.76	94.88
DC	District of Columbia	\$14,508,056	0.71	95.58
DE	New Castle	\$12,141,421	0.59	96.17
MD	Allegany	\$11,696,949	0.57	96.74
VA	Prince William	\$11,604,218	0.56	97.30
VA	Falls Church City	\$8,725,777	0.42	97.73
VA	Loudoun	\$7,715,520	0.37	98.10
MD	Calvert	\$5,372,358	0.26	98.36
MD	Queen Anne's	\$5,017,776	0.24	98.61
DE	Kent	\$4,589,969	0.22	98.83
MD	Worcester	\$4,262,029	0.21	99.04
Balance (15 counties)		\$19,815,927	0.96	100.00

Table 1.6.B. Distribution of MTA Prime Contract and Subcontract Award Dollars by State and County, 2005-2009

STATE	COUNTY	AMOUNT	PERCENT	CUMULATIVE PERCENT
MD	Baltimore City	\$521,676,634	62.02	62.02
MD	Anne Arundel	\$107,380,175	12.77	74.79
MD	Baltimore	\$106,434,309	12.65	87.44
MD	Charles	\$26,446,430	3.14	90.58
MD	Howard	\$19,864,146	2.36	92.94
DC	District of Columbia	\$19,304,317	2.30	95.24
MD	Montgomery	\$15,567,205	1.85	97.09
MD	Frederick	\$6,692,097	0.80	97.89
MD	Prince Georges	\$3,547,746	0.42	98.31
MD	Allegany	\$3,235,565	0.38	98.69
DE	New Castle	\$1,957,793	0.23	98.93
MD	Carroll	\$1,910,810	0.23	99.15
Balance (18 counties)		\$7,128,359	0.85	100.00

Table 1.6.C. Distribution of MAA Prime Contract and Subcontract Award Dollars by State and County, 2005-2009

STATE	COUNTY	AMOUNT	PERCENT	CUMULATIVE PERCENT
MD	Baltimore City	\$158,286,310	32.16	32.16
MD	Anne Arundel	\$151,590,325	30.80	62.97
MD	Baltimore	\$74,936,117	15.23	78.20
MD	Prince Georges	\$32,625,310	6.63	84.83
MD	Howard	\$20,406,004	4.15	88.97
VA	Arlington	\$14,586,930	2.96	91.94
MD	Harford	\$12,625,322	2.57	94.50
DE	New Castle	\$9,040,734	1.84	96.34
VA	Prince William	\$5,322,804	1.08	97.42
MD	Montgomery	\$3,980,505	0.81	98.23
DC	District of Columbia	\$3,106,227	0.63	98.86
MD	Carroll	\$1,228,273	0.25	99.11
Balance (9 counties)		\$4,373,815	0.89	100.00

Table 1.7.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Construction

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
237	Heavy and Civil Engineering Construction	48.33	48.33
238	Specialty Trade Contractors	12.02	60.35
332	Fabricated Metal Product Manufacturing	10.24	70.59
236	Construction of Buildings	9.51	80.10
541	Professional, Scientific, and Technical Services	6.65	86.76
327	Nonmetallic Mineral Product Manufacturing	4.57	91.33
561	Administrative and Support Services	2.79	94.12
423	Merchant Wholesalers, Durable Goods	1.86	95.98
484	Truck Transportation	1.74	97.72
531	Real Estate	0.48	98.20
339	Miscellaneous Manufacturing	0.43	98.63
444	Building Material and Garden Equipment and Supplies Dealers	0.31	98.94
324	Petroleum and Coal Products Manufacturing	0.25	99.19
	Balance of industries (31 industry sub-sectors)	0.81	100.00
	<i>TOTAL - \$2,798,100,819</i>		

Source: See Table 1.3.

**Table 1.7.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector:
Construction**

NAICS Sub- sector	NAICS Description	Percentage	Cumulative Percentage
238	Specialty Trade Contractors	56.93	56.93
237	Heavy and Civil Engineering Construction	18.48	75.41
236	Construction of Buildings	13.62	89.03
811	Repair and Maintenance	2.87	91.90
541	Professional, Scientific, and Technical Services	2.85	94.74
334	Computer and Electronic Product Manufacturing	1.08	95.82
332	Fabricated Metal Product Manufacturing	1.06	96.88
423	Merchant Wholesalers, Durable Goods	0.81	97.69
561	Administrative and Support Services	0.64	98.33
327	Nonmetallic Mineral Product Manufacturing	0.49	98.82
336	Transportation Equipment Manufacturing	0.33	99.15
	Balance of industries (10 industry sub-sectors)	0.85	100.00
	<i>TOTAL - \$130,703,368</i>		

Source: See Table 1.3.

Table 1.7.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Construction

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
237	Heavy and Civil Engineering Construction	40.90	40.90
238	Specialty Trade Contractors	26.01	66.91
236	Construction of Buildings	15.19	82.10
518	Data Processing, Hosting and Related Services	7.22	89.33
541	Professional, Scientific, and Technical Services	2.79	92.12
423	Merchant Wholesalers, Durable Goods	1.42	93.54
327	Nonmetallic Mineral Product Manufacturing	1.35	94.89
484	Truck Transportation	1.09	95.98
561	Administrative and Support Services	1.02	97.00
811	Repair and Maintenance	0.83	97.84
488	Support Activities for Transportation	0.54	98.37
335	Electrical Equipment, Appliance, and Component Manufacturing	0.35	98.73
332	Fabricated Metal Product Manufacturing	0.33	99.06
	Balance of industries (6 industry sub-sectors)	0.94	100.00
	<i>TOTAL - \$146,627,925</i>		

Source: See Table 1.3.

Table 1.8.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
541	Professional, Scientific, and Technical Services	98.37	98.37
236	Construction of Buildings	0.42	98.80
561	Administrative and Support Services	0.26	99.05
	Balance of industries (25 industry sub-sectors)	0.95	100.00
	<i>TOTAL - \$584,695,286</i>		

Source: See Table 1.3.

Table 1.8.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
541	Professional, Scientific, and Technical Services	94.61	94.61
238	Specialty Trade Contractors	3.40	98.01
334	Computer and Electronic Product Manufacturing	1.60	99.61
	Balance of industries (12 industry sub-sectors)	0.39	100.00
	<i>TOTAL - \$178,271,741</i>		

Source: See Table 1.3.

Table 1.8.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: AE-CRS

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
541	Professional, Scientific, and Technical Services	95.55	95.55
561	Administrative and Support Services	2.30	97.85
237	Heavy and Civil Engineering Construction	1.10	98.96
323	Printing and Related Support Activities	0.45	99.41
	Balance of industries (14 industry sub-sectors)	0.59	100.00
	<i>TOTAL - \$116,216,425</i>		

Source: See Table 1.3.

Table 1.9.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
238	Specialty Trade Contractors	34.08	34.08
237	Heavy and Civil Engineering Construction	31.51	65.59
561	Administrative and Support Services	8.25	73.84
236	Construction of Buildings	7.78	81.62
811	Repair and Maintenance	5.06	86.68
339	Miscellaneous Manufacturing	3.35	90.03
541	Professional, Scientific, and Technical Services	2.24	92.26
335	Electrical Equipment, Appliance, and Component Manufacturing	1.89	94.16
423	Merchant Wholesalers, Durable Goods	1.17	95.33
621	Ambulatory Health Care Services	1.15	96.48
334	Computer and Electronic Product Manufacturing	0.87	97.35
812	Personal and Laundry Services	0.51	97.86
327	Nonmetallic Mineral Product Manufacturing	0.50	98.35
484	Truck Transportation	0.39	98.75
115	Support Activities for Agriculture and Forestry	0.32	99.07
	Balance of industries (19 industry sub-sectors)	0.93	100.00
	<i>TOTAL - \$218,437,685</i>		

Source: See Table 1.3.

Table 1.9.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
485	Transit and Ground Passenger Transportation	34.67	34.67
811	Repair and Maintenance	20.50	55.17
336	Transportation Equipment Manufacturing	19.63	74.80
624	Social Assistance	9.81	84.60
238	Specialty Trade Contractors	6.04	90.64
334	Computer and Electronic Product Manufacturing	3.15	93.79
484	Truck Transportation	2.97	96.76
333	Machinery Manufacturing	1.20	97.96
482	Rail Transportation	0.71	98.67
561	Administrative and Support Services	0.65	99.32
	Balance of industries (6 industry sub-sectors)	0.68	100.00
	<i>TOTAL - \$69,909,940</i>		

Source: See Table 1.3.

Table 1.9.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Maintenance

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
561	Administrative and Support Services	54.41	54.41
221	Utilities	7.73	62.14
541	Professional, Scientific, and Technical Services	7.07	69.21
238	Specialty Trade Contractors	5.57	74.78
237	Heavy and Civil Engineering Construction	5.54	80.32
236	Construction of Buildings	5.37	85.70
488	Support Activities for Transportation	5.10	90.79
562	Waste Management and Remediation Services	4.32	95.12
447	Gasoline Stations	1.75	96.87
484	Truck Transportation	1.69	98.56
423	Merchant Wholesalers, Durable Goods	0.64	99.19
	Balance of industries (4 industry sub-sectors)	0.81	100.00
	<i>TOTAL - \$155,678,879</i>		

Source: See Table 1.3.

Table 1.10.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: IT

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
541	Professional, Scientific, and Technical Services	92.35	92.35
511	Publishing Industries (except Internet)	6.85	99.20
	Balance of industries (3 industry sub-sectors)	0.80	100.00
	<i>TOTAL - \$56,994,821</i>		

Source: See Table 1.3.

Table 1.10.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: IT

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
541	Professional, Scientific, and Technical Services	70.50	70.50
334	Computer and Electronic Product Manufacturing	16.10	86.60
423	Merchant Wholesalers, Durable Goods	5.53	92.13
453	Miscellaneous Store Retailers	3.05	95.18
443	Electronics and Appliance Stores	1.83	97.02
482	Rail Transportation	0.74	97.75
335	Electrical Equipment, Appliance, and Component Manufacturing	0.71	98.46
561	Administrative and Support Services	0.54	99.00
	Balance of industries (4 industry sub-sectors)	1.00	100.00
	<i>TOTAL - \$21,241,881</i>		

Source: See Table 1.3.

Table 1.11.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
561	Administrative and Support Services	65.02	65.02
541	Professional, Scientific, and Technical Services	28.53	93.55
624	Social Assistance	3.48	97.02
323	Printing and Related Support Activities	0.68	97.70
334	Computer and Electronic Product Manufacturing	0.42	98.12
481	Air Transportation	0.40	98.53
512	Motion Picture and Sound Recording Industries	0.30	98.82
812	Personal and Laundry Services	0.16	98.98
237	Heavy and Civil Engineering Construction	0.13	99.11
	Balance of industries (18 industry sub-sectors)	0.89	100.00
	<i>TOTAL - \$60,166,414</i>		

Source: See Table 1.3.

Table 1.11.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
485	Transit and Ground Passenger Transportation	49.69	49.69
482	Rail Transportation	31.06	80.75
541	Professional, Scientific, and Technical Services	5.32	86.07
532	Rental and Leasing Services	2.84	88.91
423	Merchant Wholesalers, Durable Goods	1.86	90.77
522	Credit Intermediation and Related Activities	1.52	92.29
424	Merchant Wholesalers, Nondurable Goods	1.00	93.29
488	Support Activities for Transportation	0.91	94.20
238	Specialty Trade Contractors	0.87	95.07
721	Accommodation	0.76	95.83
561	Administrative and Support Services	0.73	96.56
453	Miscellaneous Store Retailers	0.60	97.15
524	Insurance Carriers and Related Activities	0.55	97.71
811	Repair and Maintenance	0.53	98.24
621	Ambulatory Health Care Services	0.30	98.54
221	Utilities	0.26	98.80
337	Furniture and Related Product Manufacturing	0.26	99.06
	Balance of industries (29 industry sub-sectors)	0.94	100.00
	<i>TOTAL - \$514,970,126</i>		

Source: See Table 1.3.

Table 1.11.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: Services

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
485	Transit and Ground Passenger Transportation	85.29	85.29
541	Professional, Scientific, and Technical Services	12.52	97.82
236	Construction of Buildings	0.59	98.41
532	Rental and Leasing Services	0.41	98.82
447	Gasoline Stations	0.37	99.19
	Balance of industries (11 industry sub-sectors)	0.81	100.00
	<i>TOTAL - \$150,481,244</i>		

Source: See Table 1.3.

Table 1.12.A. Distribution of SHA Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
424	Merchant Wholesalers, Nondurable Goods	43.48	43.48
423	Merchant Wholesalers, Durable Goods	32.61	76.09
323	Printing and Related Support Activities	23.91	100.00
	<i>TOTAL - \$4,599,560</i>		

Source: See Table 1.3.

Table 1.12.B. Distribution of MTA Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
336	Transportation Equipment Manufacturing	82.30	82.30
441	Motor Vehicle and Parts Dealers	5.72	88.02
541	Professional, Scientific, and Technical Services	2.10	90.12
811	Repair and Maintenance	2.05	92.17
423	Merchant Wholesalers, Durable Goods	2.01	94.18
448	Clothing and Clothing Accessories Stores	1.91	96.09
331	Primary Metal Manufacturing	1.43	97.52
333	Machinery Manufacturing	0.75	98.27
532	Rental and Leasing Services	0.66	98.93
517	Telecommunications	0.32	99.26
	Balance of industries (3 industry sub-sectors)	0.74	100.00
	<i>TOTAL - \$266,255,412</i>		

Source: See Table 1.3.

Table 1.12.C. Distribution of MAA Contract and Subcontract Dollars Awarded by Industry Sub-sector: CSE

NAICS Sub-sector	NAICS Description	Percentage	Cumulative Percentage
334	Computer and Electronic Product Manufacturing	31.12	31.12
423	Merchant Wholesalers, Durable Goods	28.04	59.16
441	Motor Vehicle and Parts Dealers	11.54	70.71
325	Chemical Manufacturing	9.42	80.13
333	Machinery Manufacturing	5.98	86.11
332	Fabricated Metal Product Manufacturing	5.38	91.50
236	Construction of Buildings	3.29	94.78
481	Air Transportation	2.83	97.61
532	Rental and Leasing Services	2.39	100.00
	<i>TOTAL - \$22,281,691</i>		

Source: See Table 1.3.

Table 2.1.A. Construction—Number of Businesses and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	872	47.05	47.05
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	306	9.82	56.87
2362	Nonresidential Building Construction	3007	9.06	65.93
2381	Foundation, Structure, and Building Exterior Contractors	3794	6.47	72.40
5413	Architectural, Engineering, and Related Services	9207	6.00	78.40
3273	Cement and Concrete Product Manufacturing	247	4.52	82.92
2382	Building Equipment Contractors	9288	2.76	85.68
5614	Business Support Services	16807	2.12	87.80
2389	Other Specialty Trade Contractors	5383	1.80	89.60
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	246	1.45	91.05
2371	Utility System Construction	531	1.20	92.25
4842	Specialized Freight Trucking	855	1.12	93.36
2383	Building Finishing Contractors	5479	0.98	94.35
4841	General Freight Trucking	3643	0.62	94.97
5416	Management, Scientific, and Technical Consulting Services	30840	0.60	95.57
5312	Offices of Real Estate Agents and Brokers	10717	0.48	96.05
2361	Residential Building Construction	16765	0.46	96.51
5617	Services to Buildings and Dwellings	9843	0.45	96.95
3399	Other Miscellaneous Manufacturing	1083	0.43	97.38
3323	Architectural and Structural Metals Manufacturing	434	0.42	97.80
4442	Lawn and Garden Equipment and Supplies Stores	474	0.30	98.09
4233	Lumber and Other Construction Materials Merchant Wholesalers	1496	0.26	98.35
3241	Petroleum and Coal Products Manufacturing	102	0.25	98.60
1151	Support Activities for Crop Production	74	0.24	98.84
5612	Facilities Support Services	311	0.13	98.96
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.12	99.09
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	2459	0.10	99.18
2123	Nonmetallic Mineral Mining and Quarrying	85	0.07	99.25
2372	Land Subdivision	1480	0.06	99.31
4889	Other Support Activities for Transportation	1164	0.05	99.36
5616	Investigation and Security Services	2115	0.05	99.41
5619	Other Support Services	1147	0.05	99.46
3351	Electric Lighting Equipment Manufacturing	21	0.04	99.50
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.04	99.53
4543	Direct Selling Establishments	308	0.03	99.57
5415	Computer Systems Design and Related Services	12903	0.03	99.60
3271	Clay Product and Refractory Manufacturing	12	0.03	99.62
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.03	99.65

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3279	Other Nonmetallic Mineral Product Manufacturing	76	0.02	99.68
5622	Waste Treatment and Disposal	300	0.02	99.70
2379	Other Heavy and Civil Engineering Construction	118	0.02	99.72
4471	Gasoline Stations	1925	0.02	99.74
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	201	0.02	99.76
3339	Other General Purpose Machinery Manufacturing	128	0.02	99.78
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.02	99.80
4539	Other Miscellaneous Store Retailers	3201	0.02	99.82
4441	Building Material and Supplies Dealers	1807	0.01	99.83
5418	Advertising, Public Relations, and Related Services	891	0.01	99.85
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	597	0.01	99.86
3311	Iron and Steel Mills and Ferroalloy Manufacturing	53	0.01	99.87
4246	Chemical and Allied Products Merchant Wholesalers	282	0.01	99.88
8111	Automotive Repair and Maintenance	3735	0.01	99.89
3329	Other Fabricated Metal Product Manufacturing	79	0.01	99.90
5322	Consumer Goods Rental	383	0.01	99.90
5613	Employment Services	2505	0.01	99.91
4239	Miscellaneous Durable Goods Merchant Wholesalers	972	0.01	99.92
5419	Other Professional, Scientific, and Technical Services	3353	0.01	99.92
8139	Business, Professional, Labor, Political, and Similar Organizations	1733	0.01	99.93
3315	Foundries	4	0.01	99.93
4884	Support Activities for Road Transportation	853	0.01	99.94
6211	Offices of Physicians	15872	0.00	99.94
5179	Other Telecommunications	1387	0.00	99.95
5629	Remediation and Other Waste Management Services	307	0.00	99.95
3332	Industrial Machinery Manufacturing	37	0.00	99.96
5311	Lessors of Real Estate	852	0.00	99.96
3219	Other Wood Product Manufacturing	16	0.00	99.96
2211	Electric Power Generation, Transmission and Distribution	38	0.00	99.97
3353	Electrical Equipment Manufacturing	46	0.00	99.97
3372	Office Furniture (including Fixtures) Manufacturing	2	0.00	99.97
3149	Other Textile Product Mills	78	0.00	99.98
5172	Wireless Telecommunications Carriers (except Satellite)	756	0.00	99.98
5321	Automotive Equipment Rental and Leasing	417	0.00	99.98
1119	Other Crop Farming	2303	0.00	99.98
3231	Printing and Related Support Activities	1206	0.00	99.98
4232	Furniture and Home Furnishing Merchant Wholesalers	398	0.00	99.99
5242	Agencies, Brokerages, and Other Insurance Related Activities	5011	0.00	99.99
8114	Personal and Household Goods Repair and Maintenance	3000	0.00	99.99
3326	Spring and Wire Product Manufacturing	31	0.00	99.99
3344	Semiconductor and Other Electronic Component Manufacturing	202	0.00	99.99

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	127	0.00	99.99
4532	Office Supplies, Stationery, and Gift Stores	386	0.00	99.99
5221	Depository Credit Intermediation	488	0.00	100.00
5171	Wired Telecommunications Carriers	124	0.00	100.00
2213	Water, Sewage and Other Systems	142	0.00	100.00
4422	Home Furnishings Stores	180	0.00	100.00
3362	Motor Vehicle Body and Trailer Manufacturing	21	0.00	100.00
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	29	0.00	100.00
3331	Agriculture, Construction, and Mining Machinery Manufacturing	56	0.00	100.00
3335	Metalworking Machinery Manufacturing	29	0.00	100.00
5152	Cable and Other Subscription Programming	257	0.00	100.00
2212	Natural Gas Distribution	87	0.00	100.00
5621	Waste Collection	190	0.00	100.00
3261	Plastics Product Manufacturing	139	0.00	100.00
4241	Paper and Paper Product Merchant Wholesalers	332	0.00	100.00
8129	Other Personal Services	9147	0.00	100.00
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	267	0.00	100.00
1114	Greenhouse, Nursery, and Floriculture Production	104	0.00	100.00
3255	Paint, Coating, and Adhesive Manufacturing	25	0.00	100.00
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	13	0.00	100.00
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	123	0.00	100.00

Source: See Table 2.1.

Table 2.1.B. Construction—Number of Businesses and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2382	Building Equipment Contractors	9288	44.90	44.90
2373	Highway, Street, and Bridge Construction	872	17.65	62.55
2362	Nonresidential Building Construction	3007	12.57	75.12
2381	Foundation, Structure, and Building Exterior Contractors	5010	7.19	82.32
2389	Other Specialty Trade Contractors	5383	3.91	86.23
5413	Architectural, Engineering, and Related Services	9207	2.56	88.79
8111	Automotive Repair and Maintenance	940	1.54	90.33
8114	Personal and Household Goods Repair and Maintenance	1333	1.19	91.52
3344	Semiconductor and Other Electronic Component Manufacturing	202	1.08	92.60
2361	Residential Building Construction	12000	1.05	93.65
3323	Architectural and Structural Metals Manufacturing	218	0.93	94.57
2383	Building Finishing Contractors	5223	0.92	95.49
2371	Utility System Construction	420	0.83	96.32
3273	Cement and Concrete Product Manufacturing	246	0.49	96.81
5614	Business Support Services	16807	0.43	97.24
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.39	97.64
3365	Railroad Rolling Stock Manufacturing	13	0.33	97.97
4233	Lumber and Other Construction Materials Merchant Wholesalers	1288	0.27	98.24
3399	Other Miscellaneous Manufacturing	608	0.22	98.46
5416	Management, Scientific, and Technical Consulting Services	15824	0.19	98.65
5617	Services to Buildings and Dwellings	3782	0.16	98.82
3372	Office Furniture (including Fixtures) Manufacturing	24	0.15	98.96
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.13	99.10
4841	General Freight Trucking	2725	0.13	99.23
5311	Lessors of Real Estate	3726	0.12	99.35
3325	Hardware Manufacturing	35	0.12	99.47
5415	Computer Systems Design and Related Services	8643	0.10	99.57
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.08	99.65
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1249	0.07	99.71
4239	Miscellaneous Durable Goods Merchant Wholesalers	972	0.06	99.78
2123	Nonmetallic Mineral Mining and Quarrying	27	0.05	99.83
4242	Drugs and Druggists' Sundries Merchant Wholesalers	312	0.05	99.88
5616	Investigation and Security Services	925	0.04	99.92
3241	Petroleum and Coal Products Manufacturing	57	0.04	99.95
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	306	0.01	99.97
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	238	0.01	99.98

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	246	0.01	99.99
5619	Other Support Services	1147	0.01	99.99
5419	Other Professional, Scientific, and Technical Services	662	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	89	0.00	100.00
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	13	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	269	0.00	100.00

Source: See Table 2.1.

Table 2.1.C. Construction—Number of Businesses and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	872	38.46	38.46
2382	Building Equipment Contractors	9373	19.03	57.49
2362	Nonresidential Building Construction	3007	11.48	68.97
5182	Data Processing, Hosting, and Related Services	1340	7.22	76.19
2381	Foundation, Structure, and Building Exterior Contractors	4697	3.73	79.93
2361	Residential Building Construction	4365	3.71	83.64
2371	Utility System Construction	420	2.44	86.08
2389	Other Specialty Trade Contractors	5383	2.36	88.44
5413	Architectural, Engineering, and Related Services	7420	1.92	90.35
3273	Cement and Concrete Product Manufacturing	104	1.35	91.71
2383	Building Finishing Contractors	5515	0.89	92.59
5416	Management, Scientific, and Technical Consulting Services	15824	0.84	93.43
8112	Electronic and Precision Equipment Repair and Maintenance	691	0.83	94.26
4841	General Freight Trucking	2725	0.81	95.07
5619	Other Support Services	1147	0.67	95.74
4889	Other Support Activities for Transportation	1164	0.54	96.28
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.53	96.81
4233	Lumber and Other Construction Materials Merchant Wholesalers	1399	0.49	97.29
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	815	0.40	97.69
3351	Electric Lighting Equipment Manufacturing	21	0.35	98.05
3323	Architectural and Structural Metals Manufacturing	337	0.33	98.38
5629	Remediation and Other Waste Management Services	75	0.32	98.70
4842	Specialized Freight Trucking	336	0.28	98.98
5617	Services to Buildings and Dwellings	8129	0.26	99.25
2123	Nonmetallic Mineral Mining and Quarrying	10	0.21	99.46
4422	Home Furnishings Stores	792	0.17	99.62
4246	Chemical and Allied Products Merchant Wholesalers	282	0.10	99.72
3339	Other General Purpose Machinery Manufacturing	100	0.10	99.82
5616	Investigation and Security Services	925	0.09	99.91
4441	Building Material and Supplies Dealers	501	0.04	99.95
5414	Specialized Design Services	1717	0.04	99.98
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	597	0.01	99.99
4232	Furniture and Home Furnishing Merchant Wholesalers	499	0.00	99.99
4239	Miscellaneous Durable Goods Merchant Wholesalers	972	0.00	100.00
8114	Personal and Household Goods Repair and Maintenance	1164	0.00	100.00
5614	Business Support Services	16807	0.00	100.00
5415	Computer Systems Design and Related Services	8643	0.00	100.00

Source: See Table 2.1.

Table 2.2.A. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	9207	88.28	88.28
5416	Management, Scientific, and Technical Consulting Services	32871	7.85	96.13
5415	Computer Systems Design and Related Services	13366	0.95	97.09
5418	Advertising, Public Relations, and Related Services	2550	0.59	97.68
2362	Nonresidential Building Construction	385	0.42	98.10
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	4999	0.34	98.45
5411	Legal Services	14396	0.23	98.67
5614	Business Support Services	16807	0.21	98.89
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	21	0.17	99.06
5419	Other Professional, Scientific, and Technical Services	3353	0.10	99.16
8134	Civic and Social Organizations	4249	0.09	99.25
2382	Building Equipment Contractors	9288	0.08	99.34
5629	Remediation and Other Waste Management Services	349	0.07	99.41
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1611	0.07	99.47
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.07	99.54
2389	Other Specialty Trade Contractors	5383	0.07	99.61
2371	Utility System Construction	420	0.06	99.67
2381	Foundation, Structure, and Building Exterior Contractors	1015	0.04	99.71
2373	Highway, Street, and Bridge Construction	872	0.03	99.74
4532	Office Supplies, Stationery, and Gift Stores	386	0.03	99.78
5613	Employment Services	1184	0.03	99.80
4821	Rail Transportation	55	0.02	99.83
5417	Scientific Research and Development Services	1787	0.02	99.84
5611	Office Administrative Services	1035	0.02	99.86
5622	Waste Treatment and Disposal	300	0.02	99.88
4812	Nonscheduled Air Transportation	84	0.01	99.89
4246	Chemical and Allied Products Merchant Wholesalers	282	0.01	99.91
4841	General Freight Trucking	2725	0.01	99.92
5182	Data Processing, Hosting, and Related Services	1340	0.01	99.93
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.01	99.94
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	113	0.01	99.95
5322	Consumer Goods Rental	383	0.01	99.96
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.01	99.96
6117	Educational Support Services	812	0.01	99.97
2123	Nonmetallic Mineral Mining and Quarrying	34	0.00	99.97
4543	Direct Selling Establishments	205	0.00	99.98
3271	Clay Product and Refractory Manufacturing	12	0.00	99.98
2383	Building Finishing Contractors	3272	0.00	99.98
8111	Automotive Repair and Maintenance	940	0.00	99.99
3329	Other Fabricated Metal Product Manufacturing	11	0.00	99.99

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	565	0.00	99.99
3273	Cement and Concrete Product Manufacturing	215	0.00	99.99
6215	Medical and Diagnostic Laboratories	539	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	893	0.00	100.00
5619	Other Support Services	1147	0.00	100.00
1151	Support Activities for Crop Production	74	0.00	100.00
4244	Grocery and Related Product Merchant Wholesalers	612	0.00	100.00
2131	Support Activities for Mining	18	0.00	100.00
4854	School and Employee Bus Transportation	164	0.00	100.00
5612	Facilities Support Services	311	0.00	100.00
5617	Services to Buildings and Dwellings	3782	0.00	100.00
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.00	100.00
4239	Miscellaneous Durable Goods Merchant Wholesalers	972	0.00	100.00
3399	Other Miscellaneous Manufacturing	9	0.00	100.00

Source: See Table 2.1.

Table 2.2.B. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	9463	68.84	68.84
5416	Management, Scientific, and Technical Consulting Services	32677	19.21	88.05
5415	Computer Systems Design and Related Services	13207	5.06	93.11
2382	Building Equipment Contractors	3734	3.40	96.51
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	70	1.52	98.03
5418	Advertising, Public Relations, and Related Services	2166	1.08	99.11
5419	Other Professional, Scientific, and Technical Services	743	0.28	99.39
4885	Freight Transportation Arrangement	598	0.21	99.60
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2441	0.08	99.68
3341	Computer and Peripheral Equipment Manufacturing	123	0.07	99.75
5417	Scientific Research and Development Services	1781	0.06	99.81
5182	Data Processing, Hosting, and Related Services	1340	0.05	99.86
2371	Utility System Construction	420	0.05	99.92
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	858	0.03	99.95
5612	Facilities Support Services	311	0.02	99.96
4236	Electrical and Electronic Goods Merchant Wholesalers	1188	0.01	99.97
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.01	99.98
6211	Offices of Physicians	15872	0.01	99.99
3342	Communications Equipment Manufacturing	67	0.00	99.99
2389	Other Specialty Trade Contractors	1204	0.00	100.00
5616	Investigation and Security Services	925	0.00	100.00
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	328	0.00	100.00
4441	Building Material and Supplies Dealers	501	0.00	100.00
5322	Consumer Goods Rental	383	0.00	100.00
1151	Support Activities for Crop Production	74	0.00	100.00
3329	Other Fabricated Metal Product Manufacturing	11	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	893	0.00	100.00
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	815	0.00	100.00

Source: See Table 2.1.

Table 2.2.C. AE-CRS—Number of Businesses and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	7582	67.56	67.56
5416	Management, Scientific, and Technical Consulting Services	32533	22.98	90.55
5415	Computer Systems Design and Related Services	8947	4.50	95.05
5614	Business Support Services	16807	2.22	97.26
2371	Utility System Construction	420	0.96	98.22
3231	Printing and Related Support Activities	911	0.45	98.67
5418	Advertising, Public Relations, and Related Services	2166	0.34	99.01
8114	Personal and Household Goods Repair and Maintenance	1333	0.19	99.20
2373	Highway, Street, and Bridge Construction	872	0.15	99.34
5419	Other Professional, Scientific, and Technical Services	5005	0.12	99.47
4885	Freight Transportation Arrangement	598	0.09	99.56
5616	Investigation and Security Services	1444	0.09	99.64
4431	Electronics and Appliance Stores	1303	0.07	99.71
5313	Activities Related to Real Estate	800	0.05	99.76
2389	Other Specialty Trade Contractors	5383	0.05	99.81
6215	Medical and Diagnostic Laboratories	539	0.05	99.86
5112	Software Publishers	1070	0.04	99.90
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	237	0.04	99.94
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2441	0.02	99.96
5417	Scientific Research and Development Services	1787	0.02	99.98
1151	Support Activities for Crop Production	74	0.01	99.99
5322	Consumer Goods Rental	383	0.00	100.00
3342	Communications Equipment Manufacturing	67	0.00	100.00
7115	Independent Artists, Writers, and Performers	1269	0.00	100.00
6117	Educational Support Services	812	0.00	100.00

Source: See Table 2.1.

Table 2.3.A. Maintenance—Number of Businesses and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	872	31.13	31.13
2382	Building Equipment Contractors	9373	21.83	52.96
2381	Foundation, Structure, and Building Exterior Contractors	1148	6.96	59.92
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	4.98	64.90
2362	Nonresidential Building Construction	3007	4.74	69.64
2383	Building Finishing Contractors	3272	4.50	74.14
5616	Investigation and Security Services	671	3.64	77.79
3399	Other Miscellaneous Manufacturing	614	3.35	81.13
2361	Residential Building Construction	16365	3.05	84.18
5617	Services to Buildings and Dwellings	10546	2.39	86.57
5613	Employment Services	2505	1.93	88.50
3351	Electric Lighting Equipment Manufacturing	51	1.89	90.39
5416	Management, Scientific, and Technical Consulting Services	30840	1.78	92.17
6212	Offices of Dentists	5627	1.14	93.31
2389	Other Specialty Trade Contractors	5383	0.78	94.09
3344	Semiconductor and Other Electronic Component Manufacturing	202	0.59	94.69
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1533	0.56	95.25
8129	Other Personal Services	299	0.51	95.76
5413	Architectural, Engineering, and Related Services	7420	0.39	96.15
4841	General Freight Trucking	3639	0.38	96.53
3271	Clay Product and Refractory Manufacturing	12	0.37	96.90
4233	Lumber and Other Construction Materials Merchant Wholesalers	1399	0.36	97.26
1151	Support Activities for Crop Production	74	0.32	97.58
3342	Communications Equipment Manufacturing	90	0.27	97.85
5619	Other Support Services	1147	0.24	98.09
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	1443	0.22	98.31
2371	Utility System Construction	531	0.21	98.52
2379	Other Heavy and Civil Engineering Construction	118	0.17	98.69
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.14	98.84
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	306	0.12	98.96
3273	Cement and Concrete Product Manufacturing	215	0.12	99.09
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	29	0.12	99.20
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	246	0.11	99.31
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.09	99.40
2123	Nonmetallic Mineral Mining and Quarrying	77	0.09	99.49
5622	Waste Treatment and Disposal	46	0.07	99.55

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4431	Electronics and Appliance Stores	1144	0.05	99.61
5614	Business Support Services	16807	0.05	99.66
5418	Advertising, Public Relations, and Related Services	151	0.05	99.70
8112	Electronic and Precision Equipment Repair and Maintenance	39	0.04	99.74
8111	Automotive Repair and Maintenance	4524	0.03	99.77
4921	Couriers and Express Delivery Services	249	0.02	99.79
5415	Computer Systems Design and Related Services	8643	0.02	99.81
4451	Grocery Stores	3432	0.02	99.83
3339	Other General Purpose Machinery Manufacturing	100	0.02	99.85
4842	Specialized Freight Trucking	336	0.02	99.86
4543	Direct Selling Establishments	560	0.02	99.88
4884	Support Activities for Road Transportation	853	0.01	99.89
4853	Taxi and Limousine Service	664	0.01	99.91
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.01	99.92
5322	Consumer Goods Rental	383	0.01	99.93
3323	Architectural and Structural Metals Manufacturing	84	0.01	99.94
5242	Agencies, Brokerages, and Other Insurance Related Activities	5011	0.01	99.95
5241	Insurance Carriers	250	0.01	99.96
6211	Offices of Physicians	15872	0.01	99.96
7211	Traveler Accommodation	2047	0.01	99.97
5629	Remediation and Other Waste Management Services	307	0.00	99.97
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	70	0.00	99.98
3353	Electrical Equipment Manufacturing	46	0.00	99.98
4441	Building Material and Supplies Dealers	501	0.00	99.98
5179	Other Telecommunications	782	0.00	99.99
8114	Personal and Household Goods Repair and Maintenance	1333	0.00	99.99
5321	Automotive Equipment Rental and Leasing	417	0.00	99.99
4539	Other Miscellaneous Store Retailers	3201	0.00	99.99
5323	General Rental Centers	14	0.00	100.00
4532	Office Supplies, Stationery, and Gift Stores	386	0.00	100.00
3221	Pulp, Paper, and Paperboard Mills	16	0.00	100.00
3255	Paint, Coating, and Adhesive Manufacturing	25	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	269	0.00	100.00
5171	Wired Telecommunications Carriers	124	0.00	100.00
3279	Other Nonmetallic Mineral Product Manufacturing	14	0.00	100.00

Source: See Table 2.1.

Table 2.3.B. Maintenance—Number of Businesses and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4851	Urban Transit Systems	150	34.67	34.67
8114	Personal and Household Goods Repair and Maintenance	1333	19.80	54.46
3365	Railroad Rolling Stock Manufacturing	13	19.63	74.10
6241	Individual and Family Services	589	9.81	83.90
2382	Building Equipment Contractors	9373	6.04	89.94
3342	Communications Equipment Manufacturing	253	3.15	93.09
4841	General Freight Trucking	2725	2.97	96.06
3339	Other General Purpose Machinery Manufacturing	30	1.20	97.26
4821	Rail Transportation	55	0.71	97.97
8111	Automotive Repair and Maintenance	3735	0.70	98.67
2373	Highway, Street, and Bridge Construction	872	0.38	99.05
5616	Investigation and Security Services	671	0.31	99.36
5619	Other Support Services	1147	0.15	99.51
4236	Electrical and Electronic Goods Merchant Wholesalers	619	0.15	99.66
5613	Employment Services	27	0.11	99.78
5617	Services to Buildings and Dwellings	3782	0.07	99.85
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	139	0.06	99.91
5171	Wired Telecommunications Carriers	124	0.04	99.95
5417	Scientific Research and Development Services	1781	0.04	99.99
2362	Nonresidential Building Construction	385	0.01	99.99
2123	Nonmetallic Mineral Mining and Quarrying	10	0.01	100.00

Source: See Table 2.1.

Table 2.3.C. Maintenance—Number of Businesses and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5617	Services to Buildings and Dwellings	8834	49.15	49.15
2211	Electric Power Generation, Transmission and Distribution	4	7.73	56.89
2362	Nonresidential Building Construction	2622	5.37	62.26
5416	Management, Scientific, and Technical Consulting Services	16296	5.27	67.52
4881	Support Activities for Air Transportation	63	5.10	72.62
2373	Highway, Street, and Bridge Construction	872	5.05	77.67
5622	Waste Treatment and Disposal	46	4.17	81.84
2389	Other Specialty Trade Contractors	1204	3.26	85.10
5616	Investigation and Security Services	1336	2.70	87.80
5611	Office Administrative Services	1035	2.55	90.35
2382	Building Equipment Contractors	9288	2.23	92.58
4471	Gasoline Stations	1925	1.75	94.33
4841	General Freight Trucking	3639	1.69	96.02
5413	Architectural, Engineering, and Related Services	7312	1.28	97.30
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1249	0.64	97.94
5415	Computer Systems Design and Related Services	4260	0.53	98.47
2371	Utility System Construction	420	0.49	98.96
6243	Vocational Rehabilitation Services	783	0.32	99.27
8123	Drycleaning and Laundry Services	31	0.24	99.51
3259	Other Chemical Product and Preparation Manufacturing	89	0.22	99.73
5629	Remediation and Other Waste Management Services	274	0.15	99.89
2381	Foundation, Structure, and Building Exterior Contractors	1015	0.06	99.94
8111	Automotive Repair and Maintenance	3735	0.03	99.97
2383	Building Finishing Contractors	837	0.03	100.00

Source: See Table 2.1.

Table 2.4.A. IT—Number of Businesses and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5415	Computer Systems Design and Related Services	13062	79.59	79.59
5416	Management, Scientific, and Technical Consulting Services	12354	10.72	90.31
5112	Software Publishers	1070	6.85	97.16
5413	Architectural, Engineering, and Related Services	7312	2.02	99.18
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	833	0.68	99.87
5614	Business Support Services	16807	0.11	99.98
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2441	0.02	100.00
2382	Building Equipment Contractors	3734	0.00	100.00

Source: See Table 2.1.

Table 2.4.B. IT—Number of Businesses and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	5431	33.23	33.23
5416	Management, Scientific, and Technical Consulting Services	219	29.71	62.94
3342	Communications Equipment Manufacturing	253	15.58	78.52
5415	Computer Systems Design and Related Services	12903	7.56	86.08
4236	Electrical and Electronic Goods Merchant Wholesalers	569	4.68	90.75
4532	Office Supplies, Stationery, and Gift Stores	386	3.05	93.81
4431	Electronics and Appliance Stores	1303	1.83	95.64
4232	Furniture and Home Furnishing Merchant Wholesalers	398	0.85	96.50
4821	Rail Transportation	55	0.74	97.23
3353	Electrical Equipment Manufacturing	46	0.71	97.94
5613	Employment Services	1184	0.54	98.48
3341	Computer and Peripheral Equipment Manufacturing	94	0.52	99.00
5112	Software Publishers	1070	0.32	99.33
3333	Commercial and Service Industry Machinery Manufacturing	50	0.32	99.65
3323	Architectural and Structural Metals Manufacturing	317	0.26	99.91
4543	Direct Selling Establishments	457	0.09	100.00

Source: See Table 2.1.

Table 2.5.A. Services—Number of Businesses and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5613	Employment Services	2505	65.01	65.01
5413	Architectural, Engineering, and Related Services	7326	10.88	75.90
5415	Computer Systems Design and Related Services	13207	7.23	83.12
5416	Management, Scientific, and Technical Consulting Services	18486	4.96	88.08
5418	Advertising, Public Relations, and Related Services	2367	3.73	91.82
6242	Community Food and Housing, and Emergency and Other Relief Services	15	3.32	95.14
5419	Other Professional, Scientific, and Technical Services	3057	1.61	96.75
3231	Printing and Related Support Activities	1478	0.68	97.43
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	239	0.42	97.85
4812	Nonscheduled Air Transportation	84	0.40	98.25
5121	Motion Picture and Video Industries	1644	0.22	98.48
8129	Other Personal Services	299	0.16	98.64
6243	Vocational Rehabilitation Services	783	0.15	98.79
2371	Utility System Construction	420	0.13	98.92
5411	Legal Services	14396	0.12	99.04
8139	Business, Professional, Labor, Political, and Similar Organizations	1733	0.10	99.14
5511	Management of Companies and Enterprises	1001	0.10	99.24
3399	Other Miscellaneous Manufacturing	608	0.10	99.34
5622	Waste Treatment and Disposal	122	0.08	99.42
3351	Electric Lighting Equipment Manufacturing	30	0.08	99.50
5122	Sound Recording Industries	419	0.07	99.57
3372	Office Furniture (including Fixtures) Manufacturing	53	0.07	99.64
2213	Water, Sewage and Other Systems	6	0.07	99.71
4431	Electronics and Appliance Stores	1144	0.06	99.77
5191	Other Information Services	621	0.05	99.82
7211	Traveler Accommodation	2047	0.05	99.86
7223	Special Food Services	960	0.05	99.91
5171	Wired Telecommunications Carriers	124	0.04	99.95
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	801	0.01	99.97
2389	Other Specialty Trade Contractors	4179	0.01	99.98
7111	Performing Arts Companies	680	0.01	99.98
5179	Other Telecommunications	1387	0.00	99.99
5615	Travel Arrangement and Reservation Services	1624	0.00	99.99
7115	Independent Artists, Writers, and Performers	1269	0.00	100.00
4921	Couriers and Express Delivery Services	249	0.00	100.00
4232	Furniture and Home Furnishing Merchant Wholesalers	499	0.00	100.00
4532	Office Supplies, Stationery, and Gift Stores	386	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	269	0.00	100.00

Source: See Table 2.1.

Table 2.5.B. Services—Number of Businesses and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4821	Rail Transportation	55	31.06	31.06
4859	Other Transit and Ground Passenger Transportation	361	17.88	48.94
4851	Urban Transit Systems	150	13.44	62.38
4855	Charter Bus Industry	143	12.43	74.81
4854	School and Employee Bus Transportation	164	5.13	79.94
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	240	2.81	82.75
5413	Architectural, Engineering, and Related Services	9164	2.79	85.54
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	267	1.83	87.37
5221	Depository Credit Intermediation	2782	1.52	88.89
5416	Management, Scientific, and Technical Consulting Services	33738	1.34	90.23
4247	Petroleum and Petroleum Products Merchant Wholesalers	281	0.99	91.22
4885	Freight Transportation Arrangement	598	0.82	92.04
4853	Taxi and Limousine Service	370	0.81	92.85
2381	Foundation, Structure, and Building Exterior Contractors	2338	0.77	93.62
7211	Traveler Accommodation	2047	0.76	94.38
5415	Computer Systems Design and Related Services	12903	0.75	95.13
4532	Office Supplies, Stationery, and Gift Stores	2395	0.60	95.72
5242	Agencies, Brokerages, and Other Insurance Related Activities	5011	0.55	96.28
8111	Automotive Repair and Maintenance	5464	0.50	96.77
6213	Offices of Other Health Practitioners	1226	0.30	97.08
5418	Advertising, Public Relations, and Related Services	1775	0.30	97.38
5613	Employment Services	2505	0.29	97.67
5617	Services to Buildings and Dwellings	8129	0.28	97.95
2212	Natural Gas Distribution	87	0.26	98.21
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	57	0.26	98.47
3365	Railroad Rolling Stock Manufacturing	13	0.21	98.68
4543	Direct Selling Establishments	205	0.15	98.83
5616	Investigation and Security Services	925	0.13	98.96
2373	Highway, Street, and Bridge Construction	872	0.10	99.06
4889	Other Support Activities for Transportation	1164	0.09	99.15
3231	Printing and Related Support Activities	1411	0.08	99.23
2382	Building Equipment Contractors	9288	0.08	99.31
4921	Couriers and Express Delivery Services	249	0.07	99.37
3353	Electrical Equipment Manufacturing	95	0.06	99.44
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2441	0.06	99.49
5417	Scientific Research and Development Services	3568	0.05	99.55
5622	Waste Treatment and Disposal	168	0.03	99.58
5311	Lessors of Real Estate	3726	0.03	99.62
5322	Consumer Goods Rental	867	0.03	99.64
5419	Other Professional, Scientific, and Technical Services	1405	0.03	99.67

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5191	Other Information Services	191	0.03	99.70
2389	Other Specialty Trade Contractors	5383	0.02	99.72
4236	Electrical and Electronic Goods Merchant Wholesalers	1188	0.02	99.74
2362	Nonresidential Building Construction	2622	0.02	99.77
3271	Clay Product and Refractory Manufacturing	1	0.02	99.79
5614	Business Support Services	17099	0.02	99.81
3133	Textile and Fabric Finishing and Fabric Coating Mills	230	0.02	99.82
3399	Other Miscellaneous Manufacturing	640	0.02	99.84
8112	Electronic and Precision Equipment Repair and Maintenance	691	0.02	99.86
5111	Newspaper, Periodical, Book, and Directory Publishers	982	0.01	99.87
8114	Personal and Household Goods Repair and Maintenance	1164	0.01	99.89
8129	Other Personal Services	299	0.01	99.90
5172	Wireless Telecommunications Carriers (except Satellite)	756	0.01	99.91
4842	Specialized Freight Trucking	406	0.01	99.92
4441	Building Material and Supplies Dealers	1684	0.01	99.94
4812	Nonscheduled Air Transportation	84	0.01	99.94
8123	Drycleaning and Laundry Services	31	0.01	99.95
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1249	0.01	99.96
3351	Electric Lighting Equipment Manufacturing	51	0.01	99.96
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	122	0.01	99.97
5414	Specialized Design Services	2202	0.00	99.97
5121	Motion Picture and Video Industries	1644	0.00	99.98
3359	Other Electrical Equipment and Component Manufacturing	14	0.00	99.98
4241	Paper and Paper Product Merchant Wholesalers	112	0.00	99.99
4431	Electronics and Appliance Stores	541	0.00	99.99
3323	Architectural and Structural Metals Manufacturing	33	0.00	99.99
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	524	0.00	99.99
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	269	0.00	99.99
5239	Other Financial Investment Activities	2194	0.00	100.00
5223	Activities Related to Credit Intermediation	166	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	89	0.00	100.00
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	69	0.00	100.00
3363	Motor Vehicle Parts Manufacturing	7	0.00	100.00
3341	Computer and Peripheral Equipment Manufacturing	94	0.00	100.00
3219	Other Wood Product Manufacturing	161	0.00	100.00
2383	Building Finishing Contractors	837	0.00	100.00
8139	Business, Professional, Labor, Political, and Similar Organizations	1849	0.00	100.00
3315	Foundries	5	0.00	100.00

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4233	Lumber and Other Construction Materials Merchant Wholesalers	893	0.00	100.00
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	70	0.00	100.00
3339	Other General Purpose Machinery Manufacturing	100	0.00	100.00
3369	Other Transportation Equipment Manufacturing	15	0.00	100.00
5171	Wired Telecommunications Carriers	124	0.00	100.00
3326	Spring and Wire Product Manufacturing	3	0.00	100.00
3329	Other Fabricated Metal Product Manufacturing	1	0.00	100.00
4246	Chemical and Allied Products Merchant Wholesalers	282	0.00	100.00
3372	Office Furniture (including Fixtures) Manufacturing	2	0.00	100.00

Source: See Table 2.1.

Table 2.5.C. Services—Number of Businesses and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4851	Urban Transit Systems	44	82.35	82.35
5418	Advertising, Public Relations, and Related Services	2166	7.85	90.21
4853	Taxi and Limousine Service	370	2.94	93.15
5416	Management, Scientific, and Technical Consulting Services	31059	2.27	95.41
5415	Computer Systems Design and Related Services	12903	1.75	97.16
2362	Nonresidential Building Construction	385	0.59	97.75
5413	Architectural, Engineering, and Related Services	7175	0.50	98.25
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	181	0.41	98.66
4471	Gasoline Stations	1925	0.37	99.03
6213	Offices of Other Health Practitioners	1302	0.31	99.35
5614	Business Support Services	16807	0.19	99.54
5417	Scientific Research and Development Services	1787	0.13	99.67
8111	Automotive Repair and Maintenance	3735	0.07	99.74
5121	Motion Picture and Video Industries	1644	0.06	99.80
8139	Business, Professional, Labor, Political, and Similar Organizations	1849	0.05	99.85
5171	Wired Telecommunications Carriers	124	0.04	99.89
6113	Colleges, Universities, and Professional Schools	1040	0.04	99.93
4539	Other Miscellaneous Store Retailers	3201	0.03	99.96
5414	Specialized Design Services	2265	0.02	99.99
5179	Other Telecommunications	1387	0.01	100.00
7111	Performing Arts Companies	401	0.00	100.00
3231	Printing and Related Support Activities	67	0.00	100.00
3399	Other Miscellaneous Manufacturing	608	0.00	100.00
5419	Other Professional, Scientific, and Technical Services	662	0.00	100.00

Source: See Table 2.1.

Table 2.6.A. CSE—Number of Businesses and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4241	Paper and Paper Product Merchant Wholesalers	332	43.48	43.48
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	833	32.61	76.09
3231	Printing and Related Support Activities	911	23.91	100.00

Source: See Table 2.1.

Table 2.6.B. CSE—Number of Businesses and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3362	Motor Vehicle Body and Trailer Manufacturing	19	46.58	46.58
3365	Railroad Rolling Stock Manufacturing	13	33.80	80.38
4411	Automobile Dealers	1267	5.72	86.10
8111	Automotive Repair and Maintenance	3735	2.05	88.15
4481	Clothing Stores	793	1.91	90.06
5413	Architectural, Engineering, and Related Services	5431	1.63	91.70
3311	Iron and Steel Mills and Ferroalloy Manufacturing	53	1.43	93.12
3369	Other Transportation Equipment Manufacturing	15	1.16	94.29
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	815	1.08	95.37
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	893	0.93	96.30
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	54	0.75	97.05
3363	Motor Vehicle Parts Manufacturing	67	0.75	97.80
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	181	0.66	98.46
5416	Management, Scientific, and Technical Consulting Services	219	0.47	98.93
5179	Other Telecommunications	1387	0.32	99.26
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	69	0.28	99.54
3231	Printing and Related Support Activities	911	0.26	99.81
3342	Communications Equipment Manufacturing	90	0.19	100.00

Source: See Table 2.1.

Table 2.6.C. CSE—Number of Businesses and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3342	Communications Equipment Manufacturing	253	31.12	31.12
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	1741	22.77	53.89
4413	Automotive Parts, Accessories, and Tire Stores	1051	11.54	65.44
3259	Other Chemical Product and Preparation Manufacturing	89	9.42	74.86
3331	Agriculture, Construction, and Mining Machinery Manufacturing	56	5.98	80.84
3329	Other Fabricated Metal Product Manufacturing	5	5.38	86.23
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	267	5.27	91.50
2362	Nonresidential Building Construction	2622	3.29	94.78
4811	Scheduled Air Transportation	85	2.83	97.61
5321	Automotive Equipment Rental and Leasing	413	2.39	100.00

Source: See Table 2.1.

Table 2.7.A. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	135	47.05	47.05
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	46	9.82	56.87
2362	Nonresidential Building Construction	618	9.06	65.93
2381	Foundation, Structure, and Building Exterior Contractors	470	6.47	72.40
5413	Architectural, Engineering, and Related Services	1667	6.00	78.40
3273	Cement and Concrete Product Manufacturing	21	4.52	82.92
2382	Building Equipment Contractors	870	2.76	85.68
5614	Business Support Services	1989	2.12	87.80
2389	Other Specialty Trade Contractors	525	1.80	89.60
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	21	1.45	91.05
2371	Utility System Construction	68	1.20	92.25
4842	Specialized Freight Trucking	160	1.12	93.36
2383	Building Finishing Contractors	583	0.98	94.35
4841	General Freight Trucking	494	0.62	94.97
5416	Management, Scientific, and Technical Consulting Services	8380	0.60	95.57
5312	Offices of Real Estate Agents and Brokers	1138	0.48	96.05
2361	Residential Building Construction	1029	0.46	96.51
5617	Services to Buildings and Dwellings	1884	0.45	96.95
3399	Other Miscellaneous Manufacturing	226	0.43	97.38
3323	Architectural and Structural Metals Manufacturing	53	0.42	97.80
4442	Lawn and Garden Equipment and Supplies Stores	69	0.30	98.09
4233	Lumber and Other Construction Materials Merchant Wholesalers	127	0.26	98.35
3241	Petroleum and Coal Products Manufacturing	10	0.25	98.60
1151	Support Activities for Crop Production	13	0.24	98.84
5612	Facilities Support Services	118	0.13	98.96
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.12	99.09
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	279	0.10	99.18
2123	Nonmetallic Mineral Mining and Quarrying	7	0.07	99.25
2372	Land Subdivision	62	0.06	99.31
4889	Other Support Activities for Transportation	118	0.05	99.36
5616	Investigation and Security Services	428	0.05	99.41
5619	Other Support Services	269	0.05	99.46
3351	Electric Lighting Equipment Manufacturing	5	0.04	99.50
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.04	99.53
4543	Direct Selling Establishments	25	0.03	99.57
5415	Computer Systems Design and Related Services	4564	0.03	99.60
3271	Clay Product and Refractory Manufacturing	3	0.03	99.62
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.03	99.65

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3279	Other Nonmetallic Mineral Product Manufacturing	12	0.02	99.68
5622	Waste Treatment and Disposal	41	0.02	99.70
2379	Other Heavy and Civil Engineering Construction	25	0.02	99.72
4471	Gasoline Stations	138	0.02	99.74
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	29	0.02	99.76
3339	Other General Purpose Machinery Manufacturing	9	0.02	99.78
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.02	99.80
4539	Other Miscellaneous Store Retailers	393	0.02	99.82
4441	Building Material and Supplies Dealers	154	0.01	99.83
5418	Advertising, Public Relations, and Related Services	227	0.01	99.85
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	61	0.01	99.86
3311	Iron and Steel Mills and Ferroalloy Manufacturing	4	0.01	99.87
4246	Chemical and Allied Products Merchant Wholesalers	36	0.01	99.88
8111	Automotive Repair and Maintenance	191	0.01	99.89
3329	Other Fabricated Metal Product Manufacturing	9	0.01	99.90
5322	Consumer Goods Rental	46	0.01	99.90
5613	Employment Services	706	0.01	99.91
4239	Miscellaneous Durable Goods Merchant Wholesalers	120	0.01	99.92
5419	Other Professional, Scientific, and Technical Services	398	0.01	99.92
8139	Business, Professional, Labor, Political, and Similar Organizations	12	0.01	99.93
3315	Foundries	0	0.01	99.93
4884	Support Activities for Road Transportation	63	0.01	99.94
6211	Offices of Physicians	1232	0.00	99.94
5179	Other Telecommunications	154	0.00	99.95
5629	Remediation and Other Waste Management Services	35	0.00	99.95
3332	Industrial Machinery Manufacturing	3	0.00	99.96
5311	Lessors of Real Estate	92	0.00	99.96
3219	Other Wood Product Manufacturing	2	0.00	99.96
2211	Electric Power Generation, Transmission and Distribution	0	0.00	99.97
3353	Electrical Equipment Manufacturing	6	0.00	99.97
3372	Office Furniture (including Fixtures) Manufacturing	0	0.00	99.97
3149	Other Textile Product Mills	22	0.00	99.98
5172	Wireless Telecommunications Carriers (except Satellite)	33	0.00	99.98
5321	Automotive Equipment Rental and Leasing	11	0.00	99.98
1119	Other Crop Farming	76	0.00	99.98
3231	Printing and Related Support Activities	228	0.00	99.98
4232	Furniture and Home Furnishing Merchant Wholesalers	77	0.00	99.99
5242	Agencies, Brokerages, and Other Insurance Related Activities	466	0.00	99.99
8114	Personal and Household Goods Repair and Maintenance	322	0.00	99.99
3326	Spring and Wire Product Manufacturing	3	0.00	99.99
3344	Semiconductor and Other Electronic Component Manufacturing	27	0.00	99.99

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	20	0.00	99.99
4532	Office Supplies, Stationery, and Gift Stores	93	0.00	99.99
5221	Depository Credit Intermediation	0	0.00	100.00
5171	Wired Telecommunications Carriers	14	0.00	100.00
2213	Water, Sewage and Other Systems	5	0.00	100.00
4422	Home Furnishings Stores	51	0.00	100.00
3362	Motor Vehicle Body and Trailer Manufacturing	5	0.00	100.00
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	0	0.00	100.00
3331	Agriculture, Construction, and Mining Machinery Manufacturing	4	0.00	100.00
3335	Metalworking Machinery Manufacturing	6	0.00	100.00
5152	Cable and Other Subscription Programming	13	0.00	100.00
2212	Natural Gas Distribution	4	0.00	100.00
5621	Waste Collection	33	0.00	100.00
3261	Plastics Product Manufacturing	15	0.00	100.00
4241	Paper and Paper Product Merchant Wholesalers	114	0.00	100.00
8129	Other Personal Services	1430	0.00	100.00
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	16	0.00	100.00
1114	Greenhouse, Nursery, and Floriculture Production	17	0.00	100.00
3255	Paint, Coating, and Adhesive Manufacturing	2	0.00	100.00
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2	0.00	100.00
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	6	0.00	100.00

Source: See Table 2.1.

Table 2.7.B. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2382	Building Equipment Contractors	870	44.90	44.90
2373	Highway, Street, and Bridge Construction	135	17.65	62.55
2362	Nonresidential Building Construction	618	12.57	75.12
2381	Foundation, Structure, and Building Exterior Contractors	553	7.19	82.32
2389	Other Specialty Trade Contractors	525	3.91	86.23
5413	Architectural, Engineering, and Related Services	1667	2.56	88.79
8111	Automotive Repair and Maintenance	70	1.54	90.33
8114	Personal and Household Goods Repair and Maintenance	181	1.19	91.52
3344	Semiconductor and Other Electronic Component Manufacturing	27	1.08	92.60
2361	Residential Building Construction	704	1.05	93.65
3323	Architectural and Structural Metals Manufacturing	24	0.93	94.57
2383	Building Finishing Contractors	572	0.92	95.49
2371	Utility System Construction	46	0.83	96.32
3273	Cement and Concrete Product Manufacturing	21	0.49	96.81
5614	Business Support Services	1989	0.43	97.24
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.39	97.64
3365	Railroad Rolling Stock Manufacturing	3	0.33	97.97
4233	Lumber and Other Construction Materials Merchant Wholesalers	107	0.27	98.24
3399	Other Miscellaneous Manufacturing	133	0.22	98.46
5416	Management, Scientific, and Technical Consulting Services	4495	0.19	98.65
5617	Services to Buildings and Dwellings	307	0.16	98.82
3372	Office Furniture (including Fixtures) Manufacturing	12	0.15	98.96
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.13	99.10
4841	General Freight Trucking	357	0.13	99.23
5311	Lessors of Real Estate	130	0.12	99.35
3325	Hardware Manufacturing	2	0.12	99.47
5415	Computer Systems Design and Related Services	3210	0.10	99.57
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.08	99.65
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	143	0.07	99.71
4239	Miscellaneous Durable Goods Merchant Wholesalers	120	0.06	99.78
2123	Nonmetallic Mineral Mining and Quarrying	1	0.05	99.83
4242	Drugs and Druggists' Sundries Merchant Wholesalers	65	0.05	99.88
5616	Investigation and Security Services	194	0.04	99.92
3241	Petroleum and Coal Products Manufacturing	4	0.04	99.95
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	46	0.01	99.97
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	50	0.01	99.98

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	21	0.01	99.99
5619	Other Support Services	269	0.01	99.99
5419	Other Professional, Scientific, and Technical Services	121	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	14	0.00	100.00
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	2	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	35	0.00	100.00

Source: See Table 2.1.

Table 2.7.C. Construction—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	135	38.46	38.46
2382	Building Equipment Contractors	885	19.03	57.49
2362	Nonresidential Building Construction	618	11.48	68.97
5182	Data Processing, Hosting, and Related Services	379	7.22	76.19
2381	Foundation, Structure, and Building Exterior Contractors	520	3.73	79.93
2361	Residential Building Construction	289	3.71	83.64
2371	Utility System Construction	46	2.44	86.08
2389	Other Specialty Trade Contractors	525	2.36	88.44
5413	Architectural, Engineering, and Related Services	1336	1.92	90.35
3273	Cement and Concrete Product Manufacturing	4	1.35	91.71
2383	Building Finishing Contractors	584	0.89	92.59
5416	Management, Scientific, and Technical Consulting Services	4495	0.84	93.43
8112	Electronic and Precision Equipment Repair and Maintenance	67	0.83	94.26
4841	General Freight Trucking	357	0.81	95.07
5619	Other Support Services	269	0.67	95.74
4889	Other Support Activities for Transportation	118	0.54	96.28
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.53	96.81
4233	Lumber and Other Construction Materials Merchant Wholesalers	122	0.49	97.29
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	90	0.40	97.69
3351	Electric Lighting Equipment Manufacturing	5	0.35	98.05
3323	Architectural and Structural Metals Manufacturing	40	0.33	98.38
5629	Remediation and Other Waste Management Services	24	0.32	98.70
4842	Specialized Freight Trucking	79	0.28	98.98
5617	Services to Buildings and Dwellings	1646	0.26	99.25
2123	Nonmetallic Mineral Mining and Quarrying	0	0.21	99.46
4422	Home Furnishings Stores	168	0.17	99.62
4246	Chemical and Allied Products Merchant Wholesalers	36	0.10	99.72
3339	Other General Purpose Machinery Manufacturing	8	0.10	99.82
5616	Investigation and Security Services	194	0.09	99.91
4441	Building Material and Supplies Dealers	33	0.04	99.95
5414	Specialized Design Services	811	0.04	99.98
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	61	0.01	99.99
4232	Furniture and Home Furnishing Merchant Wholesalers	72	0.00	99.99
4239	Miscellaneous Durable Goods Merchant Wholesalers	120	0.00	100.00
8114	Personal and Household Goods Repair and Maintenance	73	0.00	100.00
5614	Business Support Services	1989	0.00	100.00
5415	Computer Systems Design and Related Services	3210	0.00	100.00

Source: See Table 2.1.

Table 2.8.A. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	1667	88.28	88.28
5416	Management, Scientific, and Technical Consulting Services	8825	7.85	96.13
5415	Computer Systems Design and Related Services	4737	0.95	97.09
5418	Advertising, Public Relations, and Related Services	665	0.59	97.68
2362	Nonresidential Building Construction	54	0.42	98.10
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	922	0.34	98.45
5411	Legal Services	1078	0.23	98.67
5614	Business Support Services	1989	0.21	98.89
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	2	0.17	99.06
5419	Other Professional, Scientific, and Technical Services	398	0.10	99.16
8134	Civic and Social Organizations	26	0.09	99.25
2382	Building Equipment Contractors	870	0.08	99.34
5629	Remediation and Other Waste Management Services	50	0.07	99.41
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	169	0.07	99.47
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.07	99.54
2389	Other Specialty Trade Contractors	525	0.07	99.61
2371	Utility System Construction	46	0.06	99.67
2381	Foundation, Structure, and Building Exterior Contractors	144	0.04	99.71
2373	Highway, Street, and Bridge Construction	135	0.03	99.74
4532	Office Supplies, Stationery, and Gift Stores	93	0.03	99.78
5613	Employment Services	286	0.03	99.80
4821	Rail Transportation	1	0.02	99.83
5417	Scientific Research and Development Services	347	0.02	99.84
5611	Office Administrative Services	180	0.02	99.86
5622	Waste Treatment and Disposal	41	0.02	99.88
4812	Nonscheduled Air Transportation	7	0.01	99.89
4246	Chemical and Allied Products Merchant Wholesalers	36	0.01	99.91
4841	General Freight Trucking	357	0.01	99.92
5182	Data Processing, Hosting, and Related Services	379	0.01	99.93
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.01	99.94
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	17	0.01	99.95
5322	Consumer Goods Rental	46	0.01	99.96
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.01	99.96
6117	Educational Support Services	291	0.01	99.97
2123	Nonmetallic Mineral Mining and Quarrying	1	0.00	99.97
4543	Direct Selling Establishments	19	0.00	99.98
3271	Clay Product and Refractory Manufacturing	3	0.00	99.98
2383	Building Finishing Contractors	354	0.00	99.98
8111	Automotive Repair and Maintenance	70	0.00	99.99
3329	Other Fabricated Metal Product Manufacturing	0	0.00	99.99

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	39	0.00	99.99
3273	Cement and Concrete Product Manufacturing	18	0.00	99.99
6215	Medical and Diagnostic Laboratories	59	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	66	0.00	100.00
5619	Other Support Services	269	0.00	100.00
1151	Support Activities for Crop Production	13	0.00	100.00
4244	Grocery and Related Product Merchant Wholesalers	92	0.00	100.00
2131	Support Activities for Mining	2	0.00	100.00
4854	School and Employee Bus Transportation	42	0.00	100.00
5612	Facilities Support Services	118	0.00	100.00
5617	Services to Buildings and Dwellings	307	0.00	100.00
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.00	100.00
4239	Miscellaneous Durable Goods Merchant Wholesalers	120	0.00	100.00
3399	Other Miscellaneous Manufacturing	4	0.00	100.00

Source: See Table 2.1.

Table 2.8.B. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	1683	68.84	68.84
5416	Management, Scientific, and Technical Consulting Services	8798	19.21	88.05
5415	Computer Systems Design and Related Services	4683	5.06	93.11
2382	Building Equipment Contractors	451	3.40	96.51
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	17	1.52	98.03
5418	Advertising, Public Relations, and Related Services	551	1.08	99.11
5419	Other Professional, Scientific, and Technical Services	201	0.28	99.39
4885	Freight Transportation Arrangement	106	0.21	99.60
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	279	0.08	99.68
3341	Computer and Peripheral Equipment Manufacturing	29	0.07	99.75
5417	Scientific Research and Development Services	322	0.06	99.81
5182	Data Processing, Hosting, and Related Services	379	0.05	99.86
2371	Utility System Construction	46	0.05	99.92
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	216	0.03	99.95
5612	Facilities Support Services	118	0.02	99.96
4236	Electrical and Electronic Goods Merchant Wholesalers	153	0.01	99.97
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.01	99.98
6211	Offices of Physicians	1232	0.01	99.99
3342	Communications Equipment Manufacturing	7	0.00	99.99
2389	Other Specialty Trade Contractors	130	0.00	100.00
5616	Investigation and Security Services	194	0.00	100.00
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	26	0.00	100.00
4441	Building Material and Supplies Dealers	33	0.00	100.00
5322	Consumer Goods Rental	46	0.00	100.00
1151	Support Activities for Crop Production	13	0.00	100.00
3329	Other Fabricated Metal Product Manufacturing	0	0.00	100.00
4233	Lumber and Other Construction Materials Merchant Wholesalers	66	0.00	100.00
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	90	0.00	100.00

Source: See Table 2.1.

Table 2.8.C. AE-CRS—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	1461	67.56	67.56
5416	Management, Scientific, and Technical Consulting Services	8936	22.98	90.55
5415	Computer Systems Design and Related Services	3329	4.50	95.05
5614	Business Support Services	1989	2.22	97.26
2371	Utility System Construction	46	0.96	98.22
3231	Printing and Related Support Activities	171	0.45	98.67
5418	Advertising, Public Relations, and Related Services	551	0.34	99.01
8114	Personal and Household Goods Repair and Maintenance	181	0.19	99.20
2373	Highway, Street, and Bridge Construction	135	0.15	99.34
5419	Other Professional, Scientific, and Technical Services	629	0.12	99.47
4885	Freight Transportation Arrangement	106	0.09	99.56
5616	Investigation and Security Services	291	0.09	99.64
4431	Electronics and Appliance Stores	197	0.07	99.71
5313	Activities Related to Real Estate	102	0.05	99.76
2389	Other Specialty Trade Contractors	525	0.05	99.81
6215	Medical and Diagnostic Laboratories	59	0.05	99.86
5112	Software Publishers	166	0.04	99.90
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	13	0.04	99.94
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	279	0.02	99.96
5417	Scientific Research and Development Services	347	0.02	99.98
1151	Support Activities for Crop Production	13	0.01	99.99
5322	Consumer Goods Rental	46	0.00	100.00
3342	Communications Equipment Manufacturing	7	0.00	100.00
7115	Independent Artists, Writers, and Performers	518	0.00	100.00
6117	Educational Support Services	291	0.00	100.00

Source: See Table 2.1.

Table 2.9.A. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
2373	Highway, Street, and Bridge Construction	135	31.13	31.13
2382	Building Equipment Contractors	885	21.83	52.96
2381	Foundation, Structure, and Building Exterior Contractors	171	6.96	59.92
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	4.98	64.90
2362	Nonresidential Building Construction	618	4.74	69.64
2383	Building Finishing Contractors	354	4.50	74.14
5616	Investigation and Security Services	137	3.64	77.79
3399	Other Miscellaneous Manufacturing	134	3.35	81.13
2361	Residential Building Construction	993	3.05	84.18
5617	Services to Buildings and Dwellings	1949	2.39	86.57
5613	Employment Services	706	1.93	88.50
3351	Electric Lighting Equipment Manufacturing	11	1.89	90.39
5416	Management, Scientific, and Technical Consulting Services	8380	1.78	92.17
6212	Offices of Dentists	488	1.14	93.31
2389	Other Specialty Trade Contractors	525	0.78	94.09
3344	Semiconductor and Other Electronic Component Manufacturing	27	0.59	94.69
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	155	0.56	95.25
8129	Other Personal Services	48	0.51	95.76
5413	Architectural, Engineering, and Related Services	1336	0.39	96.15
4841	General Freight Trucking	494	0.38	96.53
3271	Clay Product and Refractory Manufacturing	3	0.37	96.90
4233	Lumber and Other Construction Materials Merchant Wholesalers	122	0.36	97.26
1151	Support Activities for Crop Production	13	0.32	97.58
3342	Communications Equipment Manufacturing	13	0.27	97.85
5619	Other Support Services	269	0.24	98.09
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	169	0.22	98.31
2371	Utility System Construction	68	0.21	98.52
2379	Other Heavy and Civil Engineering Construction	25	0.17	98.69
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.14	98.84
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	46	0.12	98.96
3273	Cement and Concrete Product Manufacturing	18	0.12	99.09
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	0	0.12	99.20
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	21	0.11	99.31
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.09	99.40
2123	Nonmetallic Mineral Mining and Quarrying	7	0.09	99.49
5622	Waste Treatment and Disposal	4	0.07	99.55

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4431	Electronics and Appliance Stores	97	0.05	99.61
5614	Business Support Services	1989	0.05	99.66
5418	Advertising, Public Relations, and Related Services	26	0.05	99.70
8112	Electronic and Precision Equipment Repair and Maintenance	2	0.04	99.74
8111	Automotive Repair and Maintenance	244	0.03	99.77
4921	Couriers and Express Delivery Services	51	0.02	99.79
5415	Computer Systems Design and Related Services	3210	0.02	99.81
4451	Grocery Stores	324	0.02	99.83
3339	Other General Purpose Machinery Manufacturing	8	0.02	99.85
4842	Specialized Freight Trucking	79	0.02	99.86
4543	Direct Selling Establishments	101	0.02	99.88
4884	Support Activities for Road Transportation	63	0.01	99.89
4853	Taxi and Limousine Service	69	0.01	99.91
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.01	99.92
5322	Consumer Goods Rental	46	0.01	99.93
3323	Architectural and Structural Metals Manufacturing	7	0.01	99.94
5242	Agencies, Brokerages, and Other Insurance Related Activities	466	0.01	99.95
5241	Insurance Carriers	18	0.01	99.96
6211	Offices of Physicians	1232	0.01	99.96
7211	Traveler Accommodation	159	0.01	99.97
5629	Remediation and Other Waste Management Services	35	0.00	99.97
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	17	0.00	99.98
3353	Electrical Equipment Manufacturing	6	0.00	99.98
4441	Building Material and Supplies Dealers	33	0.00	99.98
5179	Other Telecommunications	81	0.00	99.99
8114	Personal and Household Goods Repair and Maintenance	181	0.00	99.99
5321	Automotive Equipment Rental and Leasing	11	0.00	99.99
4539	Other Miscellaneous Store Retailers	393	0.00	99.99
5323	General Rental Centers	2	0.00	100.00
4532	Office Supplies, Stationery, and Gift Stores	93	0.00	100.00
3221	Pulp, Paper, and Paperboard Mills	1	0.00	100.00
3255	Paint, Coating, and Adhesive Manufacturing	2	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	35	0.00	100.00
5171	Wired Telecommunications Carriers	14	0.00	100.00
3279	Other Nonmetallic Mineral Product Manufacturing	2	0.00	100.00

Source: See Table 2.1.

Table 2.9.B. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4851	Urban Transit Systems	33	34.67	34.67
8114	Personal and Household Goods Repair and Maintenance	181	19.80	54.46
3365	Railroad Rolling Stock Manufacturing	3	19.63	74.10
6241	Individual and Family Services	13	9.81	83.90
2382	Building Equipment Contractors	885	6.04	89.94
3342	Communications Equipment Manufacturing	48	3.15	93.09
4841	General Freight Trucking	357	2.97	96.06
3339	Other General Purpose Machinery Manufacturing	8	1.20	97.26
4821	Rail Transportation	1	0.71	97.97
8111	Automotive Repair and Maintenance	191	0.70	98.67
2373	Highway, Street, and Bridge Construction	135	0.38	99.05
5616	Investigation and Security Services	137	0.31	99.36
5619	Other Support Services	269	0.15	99.51
4236	Electrical and Electronic Goods Merchant Wholesalers	70	0.15	99.66
5613	Employment Services	13	0.11	99.78
5617	Services to Buildings and Dwellings	307	0.07	99.85
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	11	0.06	99.91
5171	Wired Telecommunications Carriers	14	0.04	99.95
5417	Scientific Research and Development Services	322	0.04	99.99
2362	Nonresidential Building Construction	54	0.01	99.99
2123	Nonmetallic Mineral Mining and Quarrying	0	0.01	100.00

Source: See Table 2.1.

Table 2.9.C. Maintenance—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5617	Services to Buildings and Dwellings	1730	49.15	49.15
2211	Electric Power Generation, Transmission and Distribution	0	7.73	56.89
2362	Nonresidential Building Construction	564	5.37	62.26
5416	Management, Scientific, and Technical Consulting Services	4370	5.27	67.52
4881	Support Activities for Air Transportation	4	5.10	72.62
2373	Highway, Street, and Bridge Construction	135	5.05	77.67
5622	Waste Treatment and Disposal	4	4.17	81.84
2389	Other Specialty Trade Contractors	130	3.26	85.10
5616	Investigation and Security Services	328	2.70	87.80
5611	Office Administrative Services	180	2.55	90.35
2382	Building Equipment Contractors	870	2.23	92.58
4471	Gasoline Stations	138	1.75	94.33
4841	General Freight Trucking	494	1.69	96.02
5413	Architectural, Engineering, and Related Services	1309	1.28	97.30
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	143	0.64	97.94
5415	Computer Systems Design and Related Services	1354	0.53	98.47
2371	Utility System Construction	46	0.49	98.96
6243	Vocational Rehabilitation Services	77	0.32	99.27
8123	Drycleaning and Laundry Services	5	0.24	99.51
3259	Other Chemical Product and Preparation Manufacturing	14	0.22	99.73
5629	Remediation and Other Waste Management Services	26	0.15	99.89
2381	Foundation, Structure, and Building Exterior Contractors	144	0.06	99.94
8111	Automotive Repair and Maintenance	191	0.03	99.97
2383	Building Finishing Contractors	108	0.03	100.00

Source: See Table 2.1.

Table 2.10.A. IT—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5415	Computer Systems Design and Related Services	4618	79.59	79.59
5416	Management, Scientific, and Technical Consulting Services	3640	10.72	90.31
5112	Software Publishers	166	6.85	97.16
5413	Architectural, Engineering, and Related Services	1309	2.02	99.18
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	214	0.68	99.87
5614	Business Support Services	1989	0.11	99.98
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	279	0.02	100.00
2382	Building Equipment Contractors	451	0.00	100.00

Source: See Table 2.1.

Table 2.10.B. IT—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5413	Architectural, Engineering, and Related Services	1087	33.23	33.23
5416	Management, Scientific, and Technical Consulting Services	44	29.71	62.94
3342	Communications Equipment Manufacturing	48	15.58	78.52
5415	Computer Systems Design and Related Services	4564	7.56	86.08
4236	Electrical and Electronic Goods Merchant Wholesalers	83	4.68	90.75
4532	Office Supplies, Stationery, and Gift Stores	93	3.05	93.81
4431	Electronics and Appliance Stores	197	1.83	95.64
4232	Furniture and Home Furnishing Merchant Wholesalers	77	0.85	96.50
4821	Rail Transportation	1	0.74	97.23
3353	Electrical Equipment Manufacturing	6	0.71	97.94
5613	Employment Services	286	0.54	98.48
3341	Computer and Peripheral Equipment Manufacturing	13	0.52	99.00
5112	Software Publishers	166	0.32	99.33
3333	Commercial and Service Industry Machinery Manufacturing	7	0.32	99.65
3323	Architectural and Structural Metals Manufacturing	44	0.26	99.91
4543	Direct Selling Establishments	95	0.09	100.00

Source: See Table 2.1.

Table 2.11.A. Services—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5613	Employment Services	706	65.01	65.01
5413	Architectural, Engineering, and Related Services	1445	10.88	75.90
5415	Computer Systems Design and Related Services	4683	7.23	83.12
5416	Management, Scientific, and Technical Consulting Services	4740	4.96	88.08
5418	Advertising, Public Relations, and Related Services	582	3.73	91.82
6242	Community Food and Housing, and Emergency and Other Relief Services	2	3.32	95.14
5419	Other Professional, Scientific, and Technical Services	553	1.61	96.75
3231	Printing and Related Support Activities	304	0.68	97.43
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	27	0.42	97.85
4812	Nonscheduled Air Transportation	7	0.40	98.25
5121	Motion Picture and Video Industries	370	0.22	98.48
8129	Other Personal Services	48	0.16	98.64
6243	Vocational Rehabilitation Services	77	0.15	98.79
2371	Utility System Construction	46	0.13	98.92
5411	Legal Services	1078	0.12	99.04
8139	Business, Professional, Labor, Political, and Similar Organizations	12	0.10	99.14
5511	Management of Companies and Enterprises	31	0.10	99.24
3399	Other Miscellaneous Manufacturing	133	0.10	99.34
5622	Waste Treatment and Disposal	23	0.08	99.42
3351	Electric Lighting Equipment Manufacturing	6	0.08	99.50
5122	Sound Recording Industries	93	0.07	99.57
3372	Office Furniture (including Fixtures) Manufacturing	11	0.07	99.64
2213	Water, Sewage and Other Systems	1	0.07	99.71
4431	Electronics and Appliance Stores	97	0.06	99.77
5191	Other Information Services	12	0.05	99.82
7211	Traveler Accommodation	159	0.05	99.86
7223	Special Food Services	228	0.05	99.91
5171	Wired Telecommunications Carriers	14	0.04	99.95
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	60	0.01	99.97
2389	Other Specialty Trade Contractors	395	0.01	99.98
7111	Performing Arts Companies	101	0.01	99.98
5179	Other Telecommunications	154	0.00	99.99
5615	Travel Arrangement and Reservation Services	376	0.00	99.99
7115	Independent Artists, Writers, and Performers	518	0.00	100.00
4921	Couriers and Express Delivery Services	51	0.00	100.00
4232	Furniture and Home Furnishing Merchant Wholesalers	72	0.00	100.00
4532	Office Supplies, Stationery, and Gift Stores	93	0.00	100.00
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	35	0.00	100.00

Source: See Table 2.1.

Table 2.11.B. Services—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4821	Rail Transportation	1	31.06	31.06
4859	Other Transit and Ground Passenger Transportation	94	17.88	48.94
4851	Urban Transit Systems	33	13.44	62.38
4855	Charter Bus Industry	43	12.43	74.81
4854	School and Employee Bus Transportation	42	5.13	79.94
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	16	2.81	82.75
5413	Architectural, Engineering, and Related Services	1665	2.79	85.54
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	16	1.83	87.37
5221	Depository Credit Intermediation	25	1.52	88.89
5416	Management, Scientific, and Technical Consulting Services	9239	1.34	90.23
4247	Petroleum and Petroleum Products Merchant Wholesalers	16	0.99	91.22
4885	Freight Transportation Arrangement	106	0.82	92.04
4853	Taxi and Limousine Service	29	0.81	92.85
2381	Foundation, Structure, and Building Exterior Contractors	300	0.77	93.62
7211	Traveler Accommodation	159	0.76	94.38
5415	Computer Systems Design and Related Services	4564	0.75	95.13
4532	Office Supplies, Stationery, and Gift Stores	645	0.60	95.72
5242	Agencies, Brokerages, and Other Insurance Related Activities	466	0.55	96.28
8111	Automotive Repair and Maintenance	314	0.50	96.77
6213	Offices of Other Health Practitioners	280	0.30	97.08
5418	Advertising, Public Relations, and Related Services	455	0.30	97.38
5613	Employment Services	706	0.29	97.67
5617	Services to Buildings and Dwellings	1646	0.28	97.95
2212	Natural Gas Distribution	4	0.26	98.21
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	10	0.26	98.47
3365	Railroad Rolling Stock Manufacturing	3	0.21	98.68
4543	Direct Selling Establishments	19	0.15	98.83
5616	Investigation and Security Services	194	0.13	98.96
2373	Highway, Street, and Bridge Construction	135	0.10	99.06
4889	Other Support Activities for Transportation	118	0.09	99.15
3231	Printing and Related Support Activities	282	0.08	99.23
2382	Building Equipment Contractors	870	0.08	99.31
4921	Couriers and Express Delivery Services	51	0.07	99.37
3353	Electrical Equipment Manufacturing	13	0.06	99.44
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	279	0.06	99.49
5417	Scientific Research and Development Services	669	0.05	99.55
5622	Waste Treatment and Disposal	27	0.03	99.58
5311	Lessors of Real Estate	130	0.03	99.62
5322	Consumer Goods Rental	75	0.03	99.64
5419	Other Professional, Scientific, and Technical Services	322	0.03	99.67

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
5191	Other Information Services	29	0.03	99.70
2389	Other Specialty Trade Contractors	525	0.02	99.72
4236	Electrical and Electronic Goods Merchant Wholesalers	153	0.02	99.74
2362	Nonresidential Building Construction	564	0.02	99.77
3271	Clay Product and Refractory Manufacturing	0	0.02	99.79
5614	Business Support Services	2024	0.02	99.81
3133	Textile and Fabric Finishing and Fabric Coating Mills	94	0.02	99.82
3399	Other Miscellaneous Manufacturing	145	0.02	99.84
8112	Electronic and Precision Equipment Repair and Maintenance	67	0.02	99.86
5111	Newspaper, Periodical, Book, and Directory Publishers	136	0.01	99.87
8114	Personal and Household Goods Repair and Maintenance	73	0.01	99.89
8129	Other Personal Services	48	0.01	99.90
5172	Wireless Telecommunications Carriers (except Satellite)	33	0.01	99.91
4842	Specialized Freight Trucking	72	0.01	99.92
4441	Building Material and Supplies Dealers	138	0.01	99.94
4812	Nonscheduled Air Transportation	7	0.01	99.94
8123	Drycleaning and Laundry Services	5	0.01	99.95
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	143	0.01	99.96
3351	Electric Lighting Equipment Manufacturing	11	0.01	99.96
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	25	0.01	99.97
5414	Specialized Design Services	844	0.00	99.97
5121	Motion Picture and Video Industries	370	0.00	99.98
3359	Other Electrical Equipment and Component Manufacturing	1	0.00	99.98
4241	Paper and Paper Product Merchant Wholesalers	13	0.00	99.99
4431	Electronics and Appliance Stores	53	0.00	99.99
3323	Architectural and Structural Metals Manufacturing	2	0.00	99.99
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	27	0.00	99.99
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	35	0.00	99.99
5239	Other Financial Investment Activities	116	0.00	100.00
5223	Activities Related to Credit Intermediation	11	0.00	100.00
3259	Other Chemical Product and Preparation Manufacturing	14	0.00	100.00
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	20	0.00	100.00
3363	Motor Vehicle Parts Manufacturing	0	0.00	100.00
3341	Computer and Peripheral Equipment Manufacturing	13	0.00	100.00
3219	Other Wood Product Manufacturing	20	0.00	100.00
2383	Building Finishing Contractors	108	0.00	100.00
8139	Business, Professional, Labor, Political, and Similar Organizations	14	0.00	100.00
3315	Foundries	0	0.00	100.00

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4233	Lumber and Other Construction Materials Merchant Wholesalers	66	0.00	100.00
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	17	0.00	100.00
3339	Other General Purpose Machinery Manufacturing	8	0.00	100.00
3369	Other Transportation Equipment Manufacturing	2	0.00	100.00
5171	Wired Telecommunications Carriers	14	0.00	100.00
3326	Spring and Wire Product Manufacturing	0	0.00	100.00
3329	Other Fabricated Metal Product Manufacturing	0	0.00	100.00
4246	Chemical and Allied Products Merchant Wholesalers	36	0.00	100.00
3372	Office Furniture (including Fixtures) Manufacturing	0	0.00	100.00

Source: See Table 2.1.

Table 2.11.C. Services—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4851	Urban Transit Systems	13	82.35	82.35
5418	Advertising, Public Relations, and Related Services	551	7.85	90.21
4853	Taxi and Limousine Service	29	2.94	93.15
5416	Management, Scientific, and Technical Consulting Services	8424	2.27	95.41
5415	Computer Systems Design and Related Services	4564	1.75	97.16
2362	Nonresidential Building Construction	54	0.59	97.75
5413	Architectural, Engineering, and Related Services	1416	0.50	98.25
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	14	0.41	98.66
4471	Gasoline Stations	138	0.37	99.03
6213	Offices of Other Health Practitioners	263	0.31	99.35
5614	Business Support Services	1989	0.19	99.54
5417	Scientific Research and Development Services	347	0.13	99.67
8111	Automotive Repair and Maintenance	191	0.07	99.74
5121	Motion Picture and Video Industries	370	0.06	99.80
8139	Business, Professional, Labor, Political, and Similar Organizations	14	0.05	99.85
5171	Wired Telecommunications Carriers	14	0.04	99.89
6113	Colleges, Universities, and Professional Schools	4	0.04	99.93
4539	Other Miscellaneous Store Retailers	393	0.03	99.96
5414	Specialized Design Services	852	0.02	99.99
5179	Other Telecommunications	154	0.01	100.00
7111	Performing Arts Companies	92	0.00	100.00
3231	Printing and Related Support Activities	22	0.00	100.00
3399	Other Miscellaneous Manufacturing	133	0.00	100.00
5419	Other Professional, Scientific, and Technical Services	121	0.00	100.00

Source: See Table 2.1.

Table 2.12.A. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code (SHA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
4241	Paper and Paper Product Merchant Wholesalers	114	43.48	43.48
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	214	32.61	76.09
3231	Printing and Related Support Activities	171	23.91	100.00

Source: See Table 2.1.

Table 2.12.B. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code (MTA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3362	Motor Vehicle Body and Trailer Manufacturing	2	46.58	46.58
3365	Railroad Rolling Stock Manufacturing	3	33.80	80.38
4411	Automobile Dealers	51	5.72	86.10
8111	Automotive Repair and Maintenance	191	2.05	88.15
4481	Clothing Stores	186	1.91	90.06
5413	Architectural, Engineering, and Related Services	1087	1.63	91.70
3311	Iron and Steel Mills and Ferroalloy Manufacturing	4	1.43	93.12
3369	Other Transportation Equipment Manufacturing	2	1.16	94.29
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	90	1.08	95.37
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	56	0.93	96.30
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	8	0.75	97.05
3363	Motor Vehicle Parts Manufacturing	4	0.75	97.80
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	14	0.66	98.46
5416	Management, Scientific, and Technical Consulting Services	44	0.47	98.93
5179	Other Telecommunications	154	0.32	99.26
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	20	0.28	99.54
3231	Printing and Related Support Activities	171	0.26	99.81
3342	Communications Equipment Manufacturing	13	0.19	100.00

Source: See Table 2.1.

Table 2.12.C. CSE—Number of Listed DBEs and Industry Weight, by NAICS Code (MAA)

NAICS Code	NAICS Description	Number of Establishments	Industry Weight	Cumulative Industry Weight
3342	Communications Equipment Manufacturing	48	31.12	31.12
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	217	22.77	53.89
4413	Automotive Parts, Accessories, and Tire Stores	60	11.54	65.44
3259	Other Chemical Product and Preparation Manufacturing	14	9.42	74.86
3331	Agriculture, Construction, and Mining Machinery Manufacturing	4	5.98	80.84
3329	Other Fabricated Metal Product Manufacturing	2	5.38	86.23
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	16	5.27	91.50
2362	Nonresidential Building Construction	564	3.29	94.78
4811	Scheduled Air Transportation	1	2.83	97.61
5321	Automotive Equipment Rental and Leasing	11	2.39	100.00

Source: See Table 2.1.

Table 2.17.A. Detailed DBE Availability—Construction (SHA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Greenhouse, Nursery, and Floriculture Production (NAICS 1114)	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Other Crop Farming (NAICS 1119)	2.63	2.58	0.02	0.00	14.08	19.32	80.68
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.42	0.22	0.00	0.00	17.31	17.95	82.05
Electric Power Generation, Transmission and Distribution (NAICS 2211)	2.56	2.56	0.00	0.00	12.82	17.95	82.05
Natural Gas Distribution (NAICS 2212)	4.71	2.53	0.00	0.00	13.54	20.77	79.23
Water, Sewage and Other Systems (NAICS 2213)	2.60	2.60	0.00	0.00	14.19	19.38	80.62
Residential Building Construction (NAICS 2361)	4.37	3.36	0.39	0.21	13.35	21.67	78.33
Nonresidential Building Construction (NAICS 2362)	10.22	4.86	3.04	0.83	13.27	32.21	67.79
Utility System Construction (NAICS 2371)	6.83	2.25	0.42	0.48	10.34	20.32	79.68
Land Subdivision (NAICS 2372)	7.17	1.35	0.00	0.02	7.41	15.94	84.06
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Other Heavy and Civil Engineering Construction (NAICS 2379)	14.21	3.30	0.85	0.08	11.70	30.13	69.87
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	8.38	3.43	2.68	0.34	12.81	27.65	72.35
Building Equipment Contractors (NAICS 2382)	7.60	2.81	2.77	0.19	10.87	24.24	75.76
Building Finishing Contractors (NAICS 2383)	5.75	3.46	2.60	0.04	11.19	23.04	76.96
Other Specialty Trade Contractors (NAICS 2389)	6.38	3.05	2.51	0.16	11.14	23.23	76.77
Other Textile Product Mills (NAICS 3149)	10.72	0.00	9.46	2.44	21.25	43.86	56.14
Other Wood Product Manufacturing (NAICS 3219)	3.42	0.00	7.20	0.68	23.17	34.47	65.53
Printing and Related Support Activities (NAICS 3231)	5.72	0.33	9.56	1.05	21.29	37.96	62.04
Petroleum and Coal Products Manufacturing (NAICS 3241)	5.91	0.56	7.60	1.11	16.65	31.83	68.17

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing (NAICS 3252)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Paint, Coating, and Adhesive Manufacturing (NAICS 3255)	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Plastics Product Manufacturing (NAICS 3261)	7.90	0.00	9.11	2.31	14.29	33.62	66.38
Clay Product and Refractory Manufacturing (NAICS 3271)	14.07	0.00	7.48	2.25	19.60	43.40	56.60
Cement and Concrete Product Manufacturing (NAICS 3273)	6.03	0.19	7.51	0.74	14.96	29.42	70.58
Other Nonmetallic Mineral Product Manufacturing (NAICS 3279)	6.19	1.32	11.02	2.47	15.81	36.81	63.19
Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 3311)	8.39	0.94	8.66	2.21	10.03	30.23	69.77
Foundries (NAICS 3315)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Architectural and Structural Metals Manufacturing (NAICS 3323)	5.78	0.94	8.01	0.85	17.12	32.70	67.30
Spring and Wire Product Manufacturing (NAICS 3326)	6.50	0.00	10.75	2.30	13.29	32.83	67.17
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing (NAICS 3327)	7.12	1.31	8.50	2.27	15.30	34.49	65.51
Other Fabricated Metal Product Manufacturing (NAICS 3329)	6.77	0.00	9.35	2.40	11.55	30.06	69.94
Agriculture, Construction, and Mining Machinery Manufacturing (NAICS 3331)	3.56	0.77	7.27	0.71	17.47	29.77	70.23
Industrial Machinery Manufacturing (NAICS 3332)	6.57	0.00	10.87	2.30	12.64	32.39	67.61
Metalworking Machinery Manufacturing (NAICS 3335)	12.53	0.00	12.54	1.95	9.99	37.01	62.99
Other General Purpose Machinery Manufacturing (NAICS 3339)	6.19	0.00	9.75	1.66	14.92	32.52	67.48
Semiconductor and Other Electronic Component Manufacturing (NAICS 3344)	7.39	0.38	9.08	1.73	15.60	34.18	65.82
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	5.56	0.00	11.39	2.38	19.43	38.75	61.25
Electric Lighting Equipment Manufacturing (NAICS 3351)	5.89	0.00	11.07	3.03	21.52	41.51	58.49
Electrical Equipment Manufacturing (NAICS 3353)	5.21	0.93	8.07	0.68	17.90	32.79	67.21

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Motor Vehicle Body and Trailer Manufacturing (NAICS 3362)	9.56	0.00	7.52	2.20	22.67	41.96	58.04
Household and Institutional Furniture and Kitchen Cabinet Manufacturing (NAICS 3371)	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Office Furniture (including Fixtures) Manufacturing (NAICS 3372)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Other Miscellaneous Manufacturing (NAICS 3399)	5.57	0.65	7.94	0.81	24.56	39.53	60.47
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (NAICS 4231)	5.93	0.16	7.34	0.73	16.42	30.57	69.43
Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232)	5.73	0.08	8.68	0.63	23.33	38.44	61.56
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	5.36	0.33	8.09	0.71	17.79	32.28	67.72
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	5.55	0.17	8.74	1.00	19.45	34.91	65.09
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	5.44	0.00	8.59	0.71	17.15	31.89	68.11
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	4.94	0.00	8.61	0.73	17.20	31.49	68.51
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.46	0.54	8.01	0.77	17.37	32.15	67.85
Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239)	5.30	0.10	7.66	0.79	20.56	34.41	65.59
Paper and Paper Product Merchant Wholesalers (NAICS 4241)	12.55	0.69	9.24	0.80	24.43	47.71	52.29
Chemical and Allied Products Merchant Wholesalers (NAICS 4246)	5.23	0.73	8.70	0.67	17.71	33.04	66.96
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Miscellaneous Nondurable Goods Merchant Wholesalers (NAICS 4249)	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Home Furnishings Stores (NAICS 4422)	7.89	2.86	13.56	0.97	30.97	56.24	43.76
Building Material and Supplies Dealers (NAICS 4441)	8.08	2.65	10.30	0.61	21.88	43.52	56.48
Lawn and Garden Equipment and Supplies Stores (NAICS 4442)	8.90	2.55	4.22	1.01	26.06	42.74	57.26
Gasoline Stations (NAICS 4471)	5.65	2.70	17.60	0.19	20.43	46.57	53.43
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Other Miscellaneous Store Retailers (NAICS 4539)	7.28	2.54	15.40	0.51	23.24	48.98	51.02
Direct Selling Establishments (NAICS 4543)	6.50	2.55	16.53	0.15	20.41	46.12	53.88
General Freight Trucking (NAICS 4841)	23.12	9.50	5.92	0.22	10.54	49.29	50.71
Specialized Freight Trucking (NAICS 4842)	29.94	8.64	5.07	0.40	11.07	55.12	44.88
Support Activities for Road Transportation (NAICS 4884)	12.04	3.58	8.10	0.00	12.75	36.46	63.54
Other Support Activities for Transportation (NAICS 4889)	24.09	7.98	6.08	0.13	9.84	48.12	51.88
Cable and Other Subscription Programming (NAICS 5152)	13.50	6.55	4.33	0.00	10.64	35.02	64.98
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Wireless Telecommunications Carriers (except Satellite) (NAICS 5172)	14.35	6.06	4.73	0.40	9.32	34.86	65.14
Other Telecommunications (NAICS 5179)	13.09	0.83	5.53	0.07	26.80	46.32	53.68
Depository Credit Intermediation (NAICS 5221)	10.81	0.00	5.41	0.00	24.32	40.54	59.46
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	11.27	0.64	5.24	0.00	28.09	45.24	54.76
Lessors of Real Estate (NAICS 5311)	14.58	4.84	4.28	0.12	16.00	39.82	60.18
Offices of Real Estate Agents and Brokers (NAICS 5312)	12.07	0.58	5.17	0.02	28.08	45.92	54.08
Automotive Equipment Rental and Leasing (NAICS 5321)	13.70	5.75	4.50	0.00	10.10	34.05	65.95
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.42	6.23	4.27	0.10	11.54	36.56	63.44
Architectural, Engineering, and Related Services (NAICS 5413)	8.58	4.28	11.99	0.40	12.90	38.16	61.84
Computer Systems Design and Related Services (NAICS 5415)	12.70	3.92	16.74	0.51	13.89	47.76	52.24
Management, Scientific, and Technical Consulting Services (NAICS 5416)	14.69	1.53	7.41	0.31	29.52	53.45	46.55
Advertising, Public Relations, and Related Services (NAICS 5418)	8.84	4.04	8.29	0.26	21.41	42.84	57.16
Other Professional, Scientific, and Technical Services (NAICS 5419)	12.63	0.59	5.21	0.00	28.20	46.63	53.37
Facilities Support Services (NAICS 5612)	25.91	7.12	10.78	0.96	12.26	57.03	42.97
Employment Services (NAICS 5613)	18.84	6.02	6.00	0.38	18.69	49.92	50.08
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	17.93	3.81	5.83	0.75	21.15	49.48	50.52
Services to Buildings and Dwellings (NAICS 5617)	15.06	6.48	4.45	0.18	11.89	38.06	61.94
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Waste Collection (NAICS 5621)	20.84	6.31	4.20	0.00	11.89	43.24	56.76
Waste Treatment and Disposal (NAICS 5622)	17.50	6.38	4.75	0.30	11.94	40.88	59.12
Remediation and Other Waste Management Services (NAICS 5629)	14.21	5.85	4.51	0.25	14.41	39.23	60.77
Offices of Physicians (NAICS 6211)	14.90	2.74	7.86	0.02	17.41	42.94	57.06
Automotive Repair and Maintenance (NAICS 8111)	7.08	0.81	7.45	1.39	11.00	27.72	72.28
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Personal and Household Goods Repair and Maintenance (NAICS 8114)	19.09	5.10	7.79	0.36	16.82	49.17	50.83
Other Personal Services (NAICS 8129)	25.88	5.89	7.19	0.12	17.93	57.00	43.00

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Business, Professional, Labor, Political, and Similar Organizations (NAICS 8139)	25.09	6.26	6.35	0.00	12.62	50.33	49.67

Source: See Table 2.17.

Table 2.17.B. Detailed DBE Availability—Construction (MTA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	1.22	1.22	0.00	0.00	15.52	17.95	82.05
Residential Building Construction (NAICS 2361)	4.35	3.36	0.38	0.21	13.35	21.65	78.35
Nonresidential Building Construction (NAICS 2362)	11.16	5.25	3.42	0.93	12.71	33.48	66.52
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	8.06	3.44	2.61	0.29	12.72	27.12	72.88
Building Equipment Contractors (NAICS 2382)	7.55	2.81	2.77	0.18	10.85	24.17	75.83
Building Finishing Contractors (NAICS 2383)	5.77	3.68	2.45	0.20	10.87	22.98	77.02
Other Specialty Trade Contractors (NAICS 2389)	6.26	3.03	2.68	0.14	10.76	22.87	77.13
Petroleum and Coal Products Manufacturing (NAICS 3241)	3.63	0.75	7.37	0.73	17.88	30.36	69.64
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Cement and Concrete Product Manufacturing (NAICS 3273)	5.83	1.01	7.59	0.69	17.88	33.00	67.00
Architectural and Structural Metals Manufacturing (NAICS 3323)	5.94	0.91	7.86	0.70	16.51	31.91	68.09
Hardware Manufacturing (NAICS 3325)	6.75	0.00	8.94	2.37	13.10	31.16	68.84
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing (NAICS 3327)	7.12	1.31	8.50	2.27	15.30	34.49	65.51
Semiconductor and Other Electronic Component Manufacturing (NAICS 3344)	7.39	0.38	9.08	1.73	15.60	34.18	65.82
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Household and Institutional Furniture and Kitchen Cabinet Manufacturing (NAICS 3371)	6.37	0.00	8.34	2.43	19.53	36.67	63.33
Office Furniture (including Fixtures) Manufacturing (NAICS 3372)	22.33	4.17	11.27	1.67	17.28	56.71	43.29
Other Miscellaneous Manufacturing (NAICS 3399)	5.51	0.67	7.93	0.77	24.69	39.56	60.44

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	5.33	0.39	8.21	0.70	17.35	31.99	68.01
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	11.02	0.36	8.44	0.61	18.35	38.78	61.22
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	5.44	0.00	8.59	0.71	17.15	31.89	68.11
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	7.70	0.00	9.41	2.79	15.41	35.32	64.68
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.74	0.38	8.10	0.69	18.20	33.11	66.89
Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239)	5.30	0.10	7.66	0.79	20.56	34.41	65.59
Drugs and Druggists' Sundries Merchant Wholesalers (NAICS 4242)	8.08	0.32	9.39	2.55	18.61	38.95	61.05
General Freight Trucking (NAICS 4841)	23.65	9.66	5.82	0.25	10.58	49.96	50.04
Lessors of Real Estate (NAICS 5311)	14.10	5.36	4.21	0.00	11.44	35.10	64.90
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.19	6.48	4.03	0.04	11.67	36.41	63.59
Architectural, Engineering, and Related Services (NAICS 5413)	8.69	4.25	12.13	0.41	12.94	38.42	61.58
Computer Systems Design and Related Services (NAICS 5415)	15.51	4.16	15.28	0.61	13.98	49.55	50.45
Management, Scientific, and Technical Consulting Services (NAICS 5416)	14.55	1.56	7.48	0.32	29.50	53.41	46.59
Other Professional, Scientific, and Technical Services (NAICS 5419)	8.55	3.82	7.95	0.26	17.49	38.07	61.93
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	17.54	3.16	6.01	0.86	22.97	50.55	49.45
Services to Buildings and Dwellings (NAICS 5617)	14.64	6.39	4.37	0.19	11.55	37.13	62.87

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Automotive Repair and Maintenance (NAICS 8111)	25.45	6.55	6.86	0.03	14.00	52.89	47.11
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Personal and Household Goods Repair and Maintenance (NAICS 8114)	15.23	3.49	7.60	0.68	17.12	44.11	55.89

Source: See Table 2.17.

Table 2.17.C. Detailed DBE Availability—Construction (MAA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	2.56	2.56	0.00	0.00	12.82	17.95	82.05
Residential Building Construction (NAICS 2361)	4.12	3.55	0.33	0.16	13.62	21.78	78.22
Nonresidential Building Construction (NAICS 2362)	12.09	5.63	3.80	1.03	12.16	34.72	65.28
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	6.56	5.19	2.65	0.06	10.39	24.85	75.15
Building Equipment Contractors (NAICS 2382)	7.70	2.84	2.77	0.18	11.07	24.56	75.44
Building Finishing Contractors (NAICS 2383)	5.71	3.62	2.47	0.16	10.93	22.89	77.11
Other Specialty Trade Contractors (NAICS 2389)	6.36	3.04	2.54	0.15	11.08	23.18	76.82
Cement and Concrete Product Manufacturing (NAICS 3273)	6.28	0.00	7.46	0.74	14.22	28.71	71.29
Architectural and Structural Metals Manufacturing (NAICS 3323)	8.00	0.02	6.98	0.68	16.91	32.60	67.40
Other General Purpose Machinery Manufacturing (NAICS 3339)	6.13	0.00	10.04	1.54	14.71	32.41	67.59
Electric Lighting Equipment Manufacturing (NAICS 3351)	5.89	0.00	11.07	3.03	21.52	41.51	58.49
Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232)	7.55	0.00	10.03	2.66	15.80	36.04	63.96
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	5.39	0.41	8.21	0.69	17.36	32.06	67.94
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	5.22	0.00	8.69	0.94	17.02	31.87	68.13
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.74	0.37	8.10	0.69	18.20	33.11	66.89
Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239)	5.30	0.10	7.66	0.79	20.56	34.41	65.59

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Chemical and Allied Products Merchant Wholesalers (NAICS 4246)	5.23	0.73	8.70	0.67	17.71	33.04	66.96
Home Furnishings Stores (NAICS 4422)	7.47	2.72	13.88	0.86	29.76	54.68	45.32
Building Material and Supplies Dealers (NAICS 4441)	9.32	2.64	4.92	0.94	20.60	38.42	61.58
General Freight Trucking (NAICS 4841)	23.65	9.66	5.82	0.25	10.58	49.96	50.04
Specialized Freight Trucking (NAICS 4842)	29.98	8.64	5.06	0.40	11.07	55.15	44.85
Other Support Activities for Transportation (NAICS 4889)	24.09	7.98	6.08	0.13	9.84	48.12	51.88
Data Processing, Hosting, and Related Services (NAICS 5182)	15.48	6.45	7.77	0.30	19.44	49.44	50.56
Architectural, Engineering, and Related Services (NAICS 5413)	8.65	4.29	12.17	0.42	12.80	38.32	61.68
Specialized Design Services (NAICS 5414)	11.07	2.61	3.20	0.00	46.97	63.85	36.15
Computer Systems Design and Related Services (NAICS 5415)	15.51	4.16	15.28	0.61	13.98	49.55	50.45
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.41	2.33	7.43	0.34	27.12	53.63	46.37
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	17.54	3.16	6.01	0.86	22.97	50.55	49.45
Services to Buildings and Dwellings (NAICS 5617)	14.65	6.39	4.37	0.19	11.55	37.15	62.85
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Remediation and Other Waste Management Services (NAICS 5629)	16.03	10.81	9.25	1.33	19.00	56.42	43.58
Electronic and Precision Equipment Repair and Maintenance (NAICS 8112)	13.83	3.03	7.20	0.81	13.82	38.68	61.32
Personal and Household Goods Repair and Maintenance (NAICS 8114)	14.90	3.32	7.01	0.82	12.80	38.85	61.15

Source: See Table 2.17.

Table 2.18.A. Detailed DBE Availability—AE-CRS (SHA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.26	0.26	0.00	0.00	17.43	17.96	82.04
Support Activities for Mining (NAICS 2131)	2.66	2.66	0.00	0.00	17.14	22.47	77.53
Nonresidential Building Construction (NAICS 2362)	7.36	3.68	1.88	0.52	14.94	28.38	71.62
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	6.63	5.56	2.59	0.05	10.24	25.06	74.94
Building Equipment Contractors (NAICS 2382)	6.59	2.78	2.78	0.14	10.38	22.67	77.33
Building Finishing Contractors (NAICS 2383)	5.82	3.51	2.57	0.03	11.31	23.24	76.76
Other Specialty Trade Contractors (NAICS 2389)	6.26	3.03	2.69	0.14	10.76	22.87	77.13
Clay Product and Refractory Manufacturing (NAICS 3271)	14.07	0.00	7.48	2.25	19.60	43.40	56.60
Cement and Concrete Product Manufacturing (NAICS 3273)	5.35	0.85	7.64	0.71	17.57	32.12	67.88
Other Fabricated Metal Product Manufacturing (NAICS 3329)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 3334)	6.60	0.00	8.70	2.39	15.63	33.33	66.67
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	7.18	0.00	12.10	0.57	17.66	37.52	62.48
Other Miscellaneous Manufacturing (NAICS 3399)	15.66	0.00	5.84	1.97	22.00	45.47	54.53
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	4.30	0.15	8.17	0.79	17.64	31.05	68.95
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	4.88	0.00	8.63	0.71	17.12	31.34	68.66
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.74	0.38	8.10	0.69	18.18	33.09	66.91

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Miscellaneous Durable Goods Merchant Wholesalers (NAICS 4239)	5.30	0.10	7.66	0.79	20.56	34.41	65.59
Grocery and Related Product Merchant Wholesalers (NAICS 4244)	8.97	0.16	9.41	2.38	15.29	36.21	63.79
Chemical and Allied Products Merchant Wholesalers (NAICS 4246)	5.23	0.73	8.70	0.67	17.71	33.04	66.96
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Direct Selling Establishments (NAICS 4543)	7.56	2.45	15.18	1.21	21.39	47.80	52.20
Nonscheduled Air Transportation (NAICS 4812)	10.40	5.12	8.77	0.04	12.94	37.27	62.73
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
General Freight Trucking (NAICS 4841)	23.65	9.66	5.82	0.25	10.58	49.96	50.04
School and Employee Bus Transportation (NAICS 4854)	11.29	2.48	7.07	0.00	21.93	42.77	57.23
Data Processing, Hosting, and Related Services (NAICS 5182)	15.48	6.45	7.77	0.30	19.44	49.44	50.56
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.15	6.53	3.99	0.03	11.69	36.39	63.61
Legal Services (NAICS 5411)	5.86	4.00	8.71	0.06	12.77	31.41	68.59
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.22	3.91	8.66	0.11	14.24	34.13	65.87
Architectural, Engineering, and Related Services (NAICS 5413)	8.70	4.28	12.23	0.42	12.85	38.48	61.52
Computer Systems Design and Related Services (NAICS 5415)	15.79	3.95	15.14	0.61	14.78	50.26	49.74
Management, Scientific, and Technical Consulting Services (NAICS 5416)	14.86	1.55	7.08	0.31	29.07	52.87	47.13
Scientific Research and Development Services (NAICS 5417)	10.19	1.72	8.96	0.25	26.97	48.08	51.92
Advertising, Public Relations, and Related Services (NAICS 5418)	12.92	1.56	4.82	0.03	32.80	52.14	47.86

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Other Professional, Scientific, and Technical Services (NAICS 5419)	12.63	0.59	5.21	0.00	28.20	46.63	53.37
Office Administrative Services (NAICS 5611)	17.66	5.97	5.56	0.19	13.57	42.95	57.05
Facilities Support Services (NAICS 5612)	25.91	7.12	10.78	0.96	12.26	57.03	42.97
Employment Services (NAICS 5613)	17.19	5.86	5.03	0.25	18.39	46.72	53.28
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Services to Buildings and Dwellings (NAICS 5617)	14.64	6.39	4.37	0.19	11.55	37.13	62.87
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Waste Treatment and Disposal (NAICS 5622)	17.82	6.46	4.91	0.19	13.13	42.50	57.50
Remediation and Other Waste Management Services (NAICS 5629)	16.02	10.80	9.24	1.33	18.99	56.38	43.62
Educational Support Services (NAICS 6117)	19.59	2.99	7.32	0.57	26.46	56.94	43.06
Medical and Diagnostic Laboratories (NAICS 6215)	8.45	0.51	5.26	0.23	31.84	46.28	53.72
Automotive Repair and Maintenance (NAICS 8111)	25.45	6.55	6.86	0.03	14.00	52.89	47.11
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Civic and Social Organizations (NAICS 8134)	22.13	5.15	6.37	0.23	12.08	45.96	54.04

Source and Notes: See Table 2.17.

Table 2.18.B. Detailed DBE Availability—AE-CRS (MTA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Building Equipment Contractors (NAICS 2382)	7.93	2.82	2.77	0.20	11.03	24.75	75.25
Other Specialty Trade Contractors (NAICS 2389)	6.48	3.06	2.37	0.17	11.43	23.51	76.49
Other Fabricated Metal Product Manufacturing (NAICS 3329)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Computer and Peripheral Equipment Manufacturing (NAICS 3341)	9.97	1.22	12.04	2.38	14.74	40.34	59.66
Communications Equipment Manufacturing (NAICS 3342)	7.62	0.00	10.70	2.26	12.85	33.44	66.56
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	10.43	1.43	9.34	2.01	16.66	39.86	60.14
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	4.30	0.15	8.17	0.79	17.64	31.05	68.95
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	9.99	0.38	11.41	1.89	10.80	34.47	65.53
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.57	0.46	7.88	0.85	18.58	33.33	66.67
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	4.91	0.00	8.60	0.71	17.22	31.44	68.56
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.74	0.37	8.10	0.69	18.20	33.11	66.89
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10
Building Material and Supplies Dealers (NAICS 4441)	9.32	2.64	4.92	0.94	20.60	38.42	61.58
Freight Transportation Arrangement (NAICS 4885)	13.71	3.81	8.94	0.00	15.00	41.47	58.53
Data Processing, Hosting, and Related Services (NAICS 5182)	15.48	6.45	7.77	0.30	19.44	49.44	50.56
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.12	3.92	8.67	0.11	14.10	33.91	66.09

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Architectural, Engineering, and Related Services (NAICS 5413)	8.65	4.25	11.98	0.40	13.18	38.46	61.54
Computer Systems Design and Related Services (NAICS 5415)	15.61	4.05	15.75	0.63	13.98	50.03	49.97
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.09	2.16	7.38	0.33	27.63	53.58	46.42
Scientific Research and Development Services (NAICS 5417)	8.64	3.35	10.10	0.26	18.95	41.29	58.71
Advertising, Public Relations, and Related Services (NAICS 5418)	10.04	3.31	7.26	0.19	24.77	45.58	54.42
Other Professional, Scientific, and Technical Services (NAICS 5419)	12.79	1.99	5.56	0.13	33.74	54.22	45.78
Facilities Support Services (NAICS 5612)	25.91	7.12	10.78	0.96	12.26	57.03	42.97
Investigation and Security Services (NAICS 5616)	17.54	3.16	6.01	0.86	22.97	50.55	49.45
Offices of Physicians (NAICS 6211)	14.90	2.74	7.86	0.02	17.41	42.94	57.06
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88

Source and Notes: See Table 2.17.

Table 2.18.C. Detailed DBE Availability—AE-CRS (MAA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Other Specialty Trade Contractors (NAICS 2389)	6.31	3.03	2.61	0.15	10.92	23.02	76.98
Printing and Related Support Activities (NAICS 3231)	5.17	0.27	9.65	0.82	22.02	37.93	62.07
Communications Equipment Manufacturing (NAICS 3342)	7.62	0.00	10.70	2.26	12.85	33.44	66.56
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	4.45	0.00	8.97	0.74	15.86	30.01	69.99
Electronics and Appliance Stores (NAICS 4431)	8.79	2.98	16.48	0.74	21.54	50.52	49.48
Freight Transportation Arrangement (NAICS 4885)	13.71	3.81	8.94	0.00	15.00	41.47	58.53
Software Publishers (NAICS 5112)	14.20	6.26	8.86	0.19	12.35	41.86	58.14
Activities Related to Real Estate (NAICS 5313)	11.03	0.74	4.84	0.00	30.26	46.87	53.13
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.12	3.92	8.67	0.11	14.10	33.91	66.09
Architectural, Engineering, and Related Services (NAICS 5413)	8.64	4.25	11.97	0.39	13.22	38.47	61.53
Computer Systems Design and Related Services (NAICS 5415)	15.51	4.16	15.28	0.61	13.98	49.55	50.45
Management, Scientific, and Technical Consulting Services (NAICS 5416)	15.05	1.50	6.76	0.29	28.12	51.71	48.29
Scientific Research and Development Services (NAICS 5417)	10.19	1.72	8.96	0.25	26.97	48.08	51.92
Advertising, Public Relations, and Related Services (NAICS 5418)	9.61	3.57	7.63	0.22	23.57	44.60	55.40
Other Professional, Scientific, and Technical Services (NAICS 5419)	12.39	0.63	5.15	0.00	28.60	46.78	53.22
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	17.56	3.27	5.97	0.84	22.75	50.39	49.61

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Educational Support Services (NAICS 6117)	19.59	2.99	7.32	0.57	26.46	56.94	43.06
Medical and Diagnostic Laboratories (NAICS 6215)	8.45	0.51	5.26	0.23	31.84	46.28	53.72
Independent Artists, Writers, and Performers (NAICS 7115)	16.29	2.88	7.51	0.18	31.83	58.69	41.31
Personal and Household Goods Repair and Maintenance (NAICS 8114)	15.23	3.49	7.60	0.68	17.12	44.11	55.89

Source and Notes: See Table 2.17.

Table 2.19.A. Detailed DBE Availability—Maintenance (SHA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Support Activities for Crop Production (NAICS 1151)	3.98	2.63	0.00	0.00	18.26	24.86	75.14
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	2.09	0.76	0.00	0.00	15.03	17.89	82.11
Residential Building Construction (NAICS 2361)	4.32	3.41	0.38	0.19	13.42	21.72	78.28
Nonresidential Building Construction (NAICS 2362)	10.40	4.93	3.11	0.85	13.16	32.45	67.55
Utility System Construction (NAICS 2371)	7.10	2.35	0.59	0.45	10.55	21.04	78.96
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Other Heavy and Civil Engineering Construction (NAICS 2379)	14.21	3.30	0.85	0.08	11.70	30.13	69.87
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	7.07	5.05	2.61	0.12	10.87	25.72	74.28
Building Equipment Contractors (NAICS 2382)	7.92	2.82	2.77	0.20	11.03	24.73	75.27
Building Finishing Contractors (NAICS 2383)	5.82	3.51	2.57	0.03	11.31	23.24	76.76
Other Specialty Trade Contractors (NAICS 2389)	6.42	3.05	2.45	0.16	11.26	23.34	76.66
Pulp, Paper, and Paperboard Mills (NAICS 3221)	12.79	0.00	8.72	2.18	8.72	32.41	67.59
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing (NAICS 3252)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Paint, Coating, and Adhesive Manufacturing (NAICS 3255)	6.66	0.00	8.80	2.38	14.62	32.46	67.54
Clay Product and Refractory Manufacturing (NAICS 3271)	14.07	0.00	7.48	2.25	19.60	43.40	56.60
Cement and Concrete Product Manufacturing (NAICS 3273)	5.15	1.04	7.68	0.70	18.31	32.87	67.13
Other Nonmetallic Mineral Product Manufacturing (NAICS 3279)	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Architectural and Structural Metals Manufacturing (NAICS 3323)	5.92	0.40	7.73	0.71	15.98	30.74	69.26
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing (NAICS 3327)	7.12	1.31	8.50	2.27	15.30	34.49	65.51
Other General Purpose Machinery Manufacturing (NAICS 3339)	6.13	0.00	10.04	1.54	14.71	32.41	67.59

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Communications Equipment Manufacturing (NAICS 3342)	7.90	0.37	8.33	0.67	16.86	34.13	65.87
Semiconductor and Other Electronic Component Manufacturing (NAICS 3344)	7.39	0.38	9.08	1.73	15.60	34.18	65.82
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	10.43	1.43	9.34	2.01	16.66	39.86	60.14
Electric Lighting Equipment Manufacturing (NAICS 3351)	8.65	0.00	8.48	2.41	18.32	37.86	62.14
Electrical Equipment Manufacturing (NAICS 3353)	5.21	0.93	8.07	0.68	17.90	32.79	67.21
Other Miscellaneous Manufacturing (NAICS 3399)	5.51	0.67	7.93	0.77	24.69	39.56	60.44
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	5.87	0.26	7.80	0.70	18.72	33.35	66.65
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	5.44	0.00	8.59	0.71	17.15	31.89	68.11
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	7.70	0.00	9.41	2.79	15.41	35.32	64.68
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.02	0.89	7.85	0.69	18.74	33.19	66.81
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10
Miscellaneous Nondurable Goods Merchant Wholesalers (NAICS 4249)	5.42	0.06	7.99	0.73	15.99	30.20	69.80
Electronics and Appliance Stores (NAICS 4431)	8.83	3.10	10.75	0.68	19.28	42.63	57.37
Building Material and Supplies Dealers (NAICS 4441)	9.32	2.64	4.92	0.94	20.60	38.42	61.58
Grocery Stores (NAICS 4451)	5.73	2.89	17.01	0.23	21.60	47.46	52.54
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Other Miscellaneous Store Retailers (NAICS 4539)	7.28	2.54	15.40	0.51	23.24	48.98	51.02
Direct Selling Establishments (NAICS 4543)	7.13	2.54	14.61	0.24	21.62	46.14	53.86
General Freight Trucking (NAICS 4841)	23.62	9.56	5.83	0.24	10.76	50.01	49.99

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Specialized Freight Trucking (NAICS 4842)	29.98	8.64	5.06	0.40	11.07	55.15	44.85
Taxi and Limousine Service (NAICS 4853)	22.29	8.15	6.45	0.21	11.02	48.12	51.88
Support Activities for Road Transportation (NAICS 4884)	14.35	3.94	7.78	0.00	11.85	37.91	62.09
Couriers and Express Delivery Services (NAICS 4921)	15.57	3.94	8.93	0.00	13.73	42.17	57.83
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Other Telecommunications (NAICS 5179)	15.67	6.30	5.86	0.13	10.67	38.62	61.38
Insurance Carriers (NAICS 5241)	11.69	2.05	4.71	0.00	23.00	41.45	58.55
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	11.27	0.64	5.24	0.00	28.09	45.24	54.76
Automotive Equipment Rental and Leasing (NAICS 5321)	13.70	5.75	4.50	0.00	10.10	34.05	65.95
Consumer Goods Rental (NAICS 5322)	14.42	6.47	4.66	0.00	13.57	39.12	60.88
General Rental Centers (NAICS 5323)	12.78	5.40	3.95	0.00	18.03	40.16	59.84
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.33	6.33	4.17	0.08	11.59	36.50	63.50
Architectural, Engineering, and Related Services (NAICS 5413)	7.10	4.33	8.67	0.38	14.79	35.27	64.73
Computer Systems Design and Related Services (NAICS 5415)	15.51	4.16	15.28	0.61	13.98	49.55	50.45
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.52	2.38	7.42	0.34	26.98	53.64	46.36
Advertising, Public Relations, and Related Services (NAICS 5418)	12.87	1.27	6.46	0.00	28.96	49.56	50.44
Employment Services (NAICS 5613)	18.69	6.01	5.91	0.37	18.66	49.63	50.37
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Investigation and Security Services (NAICS 5616)	21.01	6.12	5.49	0.45	12.17	45.23	54.77
Services to Buildings and Dwellings (NAICS 5617)	15.33	6.14	4.55	0.17	13.05	39.24	60.76
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Waste Treatment and Disposal (NAICS 5622)	18.37	7.65	3.65	0.00	8.24	37.91	62.09

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Remediation and Other Waste Management Services (NAICS 5629)	14.70	6.29	4.56	0.00	12.26	37.82	62.18
Offices of Physicians (NAICS 6211)	14.90	2.74	7.86	0.02	17.41	42.94	57.06
Offices of Dentists (NAICS 6212)	15.05	2.63	7.56	0.02	18.06	43.32	56.68
Traveler Accommodation (NAICS 7211)	14.23	2.63	10.11	0.07	16.24	43.27	56.73
Automotive Repair and Maintenance (NAICS 8111)	17.56	3.60	6.95	0.67	12.16	40.94	59.06
Electronic and Precision Equipment Repair and Maintenance (NAICS 8112)	12.87	2.27	6.70	0.84	13.64	36.33	63.67
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Personal and Household Goods Repair and Maintenance (NAICS 8114)	15.23	3.49	7.60	0.68	17.12	44.11	55.89
Other Personal Services (NAICS 8129)	24.02	5.78	8.05	0.33	18.77	56.96	43.04

Source and Notes: See Table 2.17.

Table 2.19.B. Detailed DBE Availability—Maintenance (MTA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	2.56	2.56	0.00	0.00	12.82	17.95	82.05
Nonresidential Building Construction (NAICS 2362)	7.36	3.68	1.88	0.52	14.94	28.38	71.62
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Building Equipment Contractors (NAICS 2382)	7.88	3.21	2.81	0.04	13.62	27.56	72.44
Other General Purpose Machinery Manufacturing (NAICS 3339)	21.32	0.00	7.02	1.91	11.87	42.12	57.88
Communications Equipment Manufacturing (NAICS 3342)	7.42	1.69	9.29	0.98	17.60	36.98	63.02
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.63	0.41	7.79	0.85	18.44	33.12	66.88
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	7.29	0.00	8.70	3.04	13.40	32.43	67.57
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
General Freight Trucking (NAICS 4841)	23.65	9.66	5.82	0.25	10.58	49.96	50.04
Urban Transit Systems (NAICS 4851)	42.45	5.97	4.44	0.08	8.79	61.72	38.28
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Scientific Research and Development Services (NAICS 5417)	8.64	3.35	10.10	0.26	18.95	41.29	58.71
Employment Services (NAICS 5613)	20.69	4.06	4.39	3.70	28.67	61.51	38.49
Investigation and Security Services (NAICS 5616)	21.01	6.12	5.49	0.45	12.17	45.23	54.77
Services to Buildings and Dwellings (NAICS 5617)	14.64	6.39	4.37	0.19	11.55	37.13	62.87
Other Support Services (NAICS 5619)	12.16	1.34	5.01	0.17	33.75	52.43	47.57
Individual and Family Services (NAICS 6241)	7.97	0.05	3.88	0.04	30.27	42.21	57.79
Automotive Repair and Maintenance (NAICS 8111)	7.08	0.81	7.45	1.39	11.00	27.72	72.28
Personal and Household Goods Repair and Maintenance (NAICS 8114)	15.23	3.49	7.60	0.68	17.12	44.11	55.89

Source and Notes: See Table 2.17.

2.19.C. Detailed DBE Availability—Maintenance (MAA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Electric Power Generation, Transmission and Distribution (NAICS 2211)	2.56	2.56	0.00	0.00	12.82	17.95	82.05
Nonresidential Building Construction (NAICS 2362)	12.10	5.64	3.81	1.03	12.16	34.74	65.26
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	6.63	5.56	2.59	0.05	10.24	25.06	74.94
Building Equipment Contractors (NAICS 2382)	7.50	2.81	2.77	0.18	10.82	24.09	75.91
Building Finishing Contractors (NAICS 2383)	7.45	3.57	2.66	0.18	11.03	24.90	75.10
Other Specialty Trade Contractors (NAICS 2389)	6.48	3.06	2.37	0.17	11.43	23.51	76.49
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.74	0.39	8.10	0.69	18.19	33.11	66.89
Gasoline Stations (NAICS 4471)	5.65	2.70	17.60	0.19	20.43	46.57	53.43
General Freight Trucking (NAICS 4841)	23.54	9.19	5.86	0.23	11.39	50.21	49.79
Support Activities for Air Transportation (NAICS 4881)	8.17	2.81	8.30	0.00	14.57	33.85	66.15
Architectural, Engineering, and Related Services (NAICS 5413)	8.51	4.29	11.89	0.40	12.87	37.97	62.03
Computer Systems Design and Related Services (NAICS 5415)	11.00	3.77	17.61	0.45	13.84	46.68	53.32
Management, Scientific, and Technical Consulting Services (NAICS 5416)	18.39	2.04	5.82	0.25	31.44	57.95	42.05
Office Administrative Services (NAICS 5611)	17.66	5.97	5.56	0.19	13.57	42.95	57.05
Investigation and Security Services (NAICS 5616)	19.24	3.88	5.89	0.76	21.40	51.17	48.83
Services to Buildings and Dwellings (NAICS 5617)	19.87	7.06	5.54	0.19	17.46	50.12	49.88
Waste Treatment and Disposal (NAICS 5622)	18.37	7.65	3.65	0.00	8.24	37.91	62.09
Remediation and Other Waste Management Services (NAICS 5629)	14.70	6.29	4.56	0.00	12.26	37.82	62.18
Vocational Rehabilitation Services (NAICS 6243)	11.22	0.61	3.71	0.35	30.25	46.14	53.86

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Automotive Repair and Maintenance (NAICS 8111)	7.08	0.81	7.45	1.39	11.00	27.72	72.28
Drycleaning and Laundry Services (NAICS 8123)	28.05	5.24	8.45	0.00	15.20	56.95	43.05

Source and Notes: See Table 2.17.

Table 2.20.A. Detailed DBE Availability—IT (SHA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Building Equipment Contractors (NAICS 2382)	7.93	2.82	2.77	0.20	11.03	24.75	75.25
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	8.59	1.64	12.02	1.06	18.16	41.47	58.53
Software Publishers (NAICS 5112)	14.20	6.26	8.86	0.19	12.35	41.86	58.14
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.12	3.92	8.67	0.11	14.10	33.91	66.09
Architectural, Engineering, and Related Services (NAICS 5413)	8.67	4.29	12.21	0.42	12.79	38.36	61.64
Computer Systems Design and Related Services (NAICS 5415)	16.60	3.63	14.30	0.59	16.44	51.56	48.44
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.93	2.55	7.41	0.35	26.46	53.69	46.31
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24

Source and Notes: See Table 2.17.

Table 2.20.B. Detailed DBE Availability—IT (MTA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Architectural and Structural Metals Manufacturing (NAICS 3323)	5.58	1.15	8.28	1.08	18.14	34.23	65.77
Commercial and Service Industry Machinery Manufacturing (NAICS 3333)	7.90	0.00	8.30	2.30	15.58	34.08	65.92
Computer and Peripheral Equipment Manufacturing (NAICS 3341)	9.97	0.53	8.90	2.28	11.24	32.93	67.07
Communications Equipment Manufacturing (NAICS 3342)	7.42	1.69	9.29	0.98	17.60	36.98	63.02
Electrical Equipment Manufacturing (NAICS 3353)	5.21	0.93	8.07	0.68	17.90	32.79	67.21
Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232)	5.73	0.08	8.68	0.63	23.33	38.44	61.56
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	4.98	0.90	8.68	0.84	19.86	35.27	64.73
Electronics and Appliance Stores (NAICS 4431)	8.79	2.98	16.48	0.74	21.54	50.52	49.48
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Direct Selling Establishments (NAICS 4543)	10.51	2.52	4.50	0.72	27.99	46.24	53.76
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
Software Publishers (NAICS 5112)	14.20	6.26	8.86	0.19	12.35	41.86	58.14
Architectural, Engineering, and Related Services (NAICS 5413)	8.73	4.29	12.33	0.42	12.75	38.52	61.48
Computer Systems Design and Related Services (NAICS 5415)	12.15	3.87	17.02	0.49	13.88	47.41	52.59
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.49	1.31	7.06	0.00	26.53	51.39	48.61
Employment Services (NAICS 5613)	17.19	5.86	5.03	0.25	18.39	46.72	53.28

Source and Notes: See Table 2.17.

Table 2.21.A. Detailed DBE Availability—Services (SHA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Water, Sewage and Other Systems (NAICS 2213)	0.00	0.00	0.00	0.00	10.96	10.96	89.04
Utility System Construction (NAICS 2371)	6.54	2.14	0.24	0.52	10.13	19.55	80.45
Other Specialty Trade Contractors (NAICS 2389)	6.25	3.02	2.69	0.14	10.74	22.85	77.15
Printing and Related Support Activities (NAICS 3231)	5.99	0.24	9.31	1.08	22.32	38.94	61.06
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	6.22	0.91	7.98	1.47	15.02	31.60	68.40
Electric Lighting Equipment Manufacturing (NAICS 3351)	9.32	0.00	7.85	2.26	17.54	36.97	63.03
Office Furniture (including Fixtures) Manufacturing (NAICS 3372)	9.38	0.00	9.34	2.30	18.81	39.83	60.17
Other Miscellaneous Manufacturing (NAICS 3399)	5.51	0.67	7.93	0.77	24.69	39.56	60.44
Furniture and Home Furnishing Merchant Wholesalers (NAICS 4232)	7.55	0.00	10.03	2.66	15.80	36.04	63.96
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	7.70	0.00	9.41	2.79	15.41	35.32	64.68
Electronics and Appliance Stores (NAICS 4431)	8.83	3.10	10.75	0.68	19.28	42.63	57.37
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	13.43	2.50	4.99	1.64	24.95	47.51	52.49
Nonscheduled Air Transportation (NAICS 4812)	10.40	5.12	8.77	0.04	12.94	37.27	62.73
Couriers and Express Delivery Services (NAICS 4921)	15.57	3.94	8.93	0.00	13.73	42.17	57.83
Motion Picture and Video Industries (NAICS 5121)	13.87	1.78	5.53	0.24	30.78	52.19	47.81
Sound Recording Industries (NAICS 5122)	13.88	2.11	7.45	0.00	30.74	54.18	45.82
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Other Telecommunications (NAICS 5179)	13.09	0.83	5.53	0.07	26.80	46.32	53.68
Other Information Services (NAICS 5191)	11.16	0.08	5.30	0.00	24.99	41.53	58.47
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.43	6.22	4.28	0.11	11.53	36.57	63.43
Legal Services (NAICS 5411)	5.86	4.00	8.71	0.06	12.77	31.41	68.59

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Architectural, Engineering, and Related Services (NAICS 5413)	8.46	3.71	10.03	0.29	15.61	38.10	61.90
Computer Systems Design and Related Services (NAICS 5415)	14.92	3.77	17.02	0.64	13.96	50.32	49.68
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.05	1.54	6.93	0.22	29.06	53.79	46.21
Advertising, Public Relations, and Related Services (NAICS 5418)	11.88	1.48	6.34	0.03	28.28	48.01	51.99
Other Professional, Scientific, and Technical Services (NAICS 5419)	11.40	0.97	4.98	0.02	30.87	48.22	51.78
Management of Companies and Enterprises (NAICS 5511)	11.14	0.10	5.94	0.00	24.98	42.15	57.85
Employment Services (NAICS 5613)	19.85	6.12	6.59	0.45	18.86	51.87	48.13
Travel Arrangement and Reservation Services (NAICS 5615)	13.92	5.63	5.24	0.00	20.99	45.78	54.22
Waste Treatment and Disposal (NAICS 5622)	18.35	6.74	4.94	0.00	14.11	44.14	55.86
Community Food and Housing, and Emergency and Other Relief Services (NAICS 6242)	7.13	0.28	3.42	0.28	34.03	45.14	54.86
Vocational Rehabilitation Services (NAICS 6243)	11.22	0.61	3.71	0.35	30.25	46.14	53.86
Performing Arts Companies (NAICS 7111)	18.26	2.70	7.49	0.15	18.22	46.82	53.18
Independent Artists, Writers, and Performers (NAICS 7115)	16.29	2.88	7.51	0.18	31.83	58.69	41.31
Traveler Accommodation (NAICS 7211)	14.23	2.63	10.11	0.07	16.24	43.27	56.73
Special Food Services (NAICS 7223)	17.92	2.94	7.33	0.28	22.51	50.98	49.02
Other Personal Services (NAICS 8129)	24.02	5.78	8.05	0.33	18.77	56.96	43.04
Business, Professional, Labor, Political, and Similar Organizations (NAICS 8139)	25.09	6.26	6.35	0.00	12.62	50.33	49.67

Source and Notes: See Table 2.17.

Table 2.21.B. Detailed DBE Availability—Services (MTA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Natural Gas Distribution (NAICS 2212)	4.71	2.53	0.00	0.00	13.54	20.77	79.23
Nonresidential Building Construction (NAICS 2362)	12.10	5.64	3.81	1.03	12.16	34.74	65.26
Highway, Street, and Bridge Construction (NAICS 2373)	8.85	3.72	1.06	0.39	9.88	23.91	76.09
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	6.44	5.02	2.77	0.07	10.46	24.75	75.25
Building Equipment Contractors (NAICS 2382)	6.74	2.79	2.77	0.15	10.45	22.91	77.09
Building Finishing Contractors (NAICS 2383)	7.45	3.57	2.66	0.18	11.03	24.90	75.10
Other Specialty Trade Contractors (NAICS 2389)	6.37	3.05	2.53	0.16	11.10	23.20	76.80
Textile and Fabric Finishing and Fabric Coating Mills (NAICS 3133)	7.91	0.43	7.89	2.52	32.46	51.20	48.80
Other Wood Product Manufacturing (NAICS 3219)	7.49	0.31	8.83	2.41	15.62	34.66	65.34
Printing and Related Support Activities (NAICS 3231)	5.39	0.27	9.58	0.90	21.91	38.06	61.94
Soap, Cleaning Compound, and Toilet Preparation Manufacturing (NAICS 3256)	15.63	0.00	8.10	2.18	19.78	45.69	54.31
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Clay Product and Refractory Manufacturing (NAICS 3271)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Foundries (NAICS 3315)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Architectural and Structural Metals Manufacturing (NAICS 3323)	3.67	0.00	7.51	0.73	18.48	30.40	69.60
Spring and Wire Product Manufacturing (NAICS 3326)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Other Fabricated Metal Product Manufacturing (NAICS 3329)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Other General Purpose Machinery Manufacturing (NAICS 3339)	6.13	0.00	10.04	1.54	14.71	32.41	67.59
Computer and Peripheral Equipment Manufacturing (NAICS 3341)	9.97	0.53	8.90	2.28	11.24	32.93	67.07
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (NAICS 3345)	10.43	1.43	9.34	2.01	16.66	39.86	60.14

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Electric Lighting Equipment Manufacturing (NAICS 3351)	9.30	0.00	7.86	2.27	17.56	37.00	63.00
Electrical Equipment Manufacturing (NAICS 3353)	5.24	0.92	8.10	0.69	17.89	32.83	67.17
Other Electrical Equipment and Component Manufacturing (NAICS 3359)	6.48	0.00	13.74	3.18	8.64	32.04	67.96
Motor Vehicle Parts Manufacturing (NAICS 3363)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Other Transportation Equipment Manufacturing (NAICS 3369)	6.25	0.00	8.26	2.22	19.78	36.51	63.49
Household and Institutional Furniture and Kitchen Cabinet Manufacturing (NAICS 3371)	9.34	0.00	8.10	2.34	18.30	38.08	61.92
Office Furniture (including Fixtures) Manufacturing (NAICS 3372)	6.98	0.00	9.30	2.33	9.30	27.91	72.09
Other Miscellaneous Manufacturing (NAICS 3399)	5.55	0.68	7.92	0.78	24.70	39.62	60.38
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (NAICS 4231)	5.93	0.16	7.34	0.73	16.42	30.57	69.43
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	4.30	0.15	8.17	0.79	17.64	31.05	68.95
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	5.22	0.72	8.35	0.84	19.34	34.47	65.53
Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers (NAICS 4237)	7.70	0.00	9.41	2.79	15.41	35.32	64.68
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.60	0.83	8.02	0.68	17.97	33.10	66.90
Paper and Paper Product Merchant Wholesalers (NAICS 4241)	5.77	0.38	7.04	0.68	19.41	33.29	66.71
Apparel, Piece Goods, and Notions Merchant Wholesalers (NAICS 4243)	5.97	1.23	10.19	2.51	17.95	37.85	62.15
Chemical and Allied Products Merchant Wholesalers (NAICS 4246)	5.23	0.73	8.70	0.67	17.71	33.04	66.96
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	5.89	0.15	8.05	0.73	15.07	29.90	70.10

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Electronics and Appliance Stores (NAICS 4431)	6.28	2.68	16.08	0.29	22.52	47.85	52.15
Building Material and Supplies Dealers (NAICS 4441)	8.23	2.70	9.95	0.63	21.99	43.50	56.50
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	9.32	2.30	3.81	0.80	32.40	48.63	51.37
Direct Selling Establishments (NAICS 4543)	7.56	2.45	15.18	1.21	21.39	47.80	52.20
Nonscheduled Air Transportation (NAICS 4812)	10.40	5.12	8.77	0.04	12.94	37.27	62.73
Rail Transportation (NAICS 4821)	8.30	2.79	8.34	0.00	12.12	31.55	68.45
Specialized Freight Trucking (NAICS 4842)	24.60	8.06	6.39	0.12	12.38	51.55	48.45
Urban Transit Systems (NAICS 4851)	42.76	5.94	4.39	0.08	8.79	61.96	38.04
Taxi and Limousine Service (NAICS 4853)	19.86	8.92	6.31	0.06	10.85	46.00	54.00
School and Employee Bus Transportation (NAICS 4854)	11.29	2.48	7.07	0.00	21.93	42.77	57.23
Charter Bus Industry (NAICS 4855)	27.19	7.25	7.69	0.05	11.71	53.89	46.11
Other Transit and Ground Passenger Transportation (NAICS 4859)	31.83	7.15	5.69	0.12	11.21	56.00	44.00
Freight Transportation Arrangement (NAICS 4885)	13.71	3.81	8.94	0.00	15.00	41.47	58.53
Other Support Activities for Transportation (NAICS 4889)	24.09	7.98	6.08	0.13	9.84	48.12	51.88
Couriers and Express Delivery Services (NAICS 4921)	15.57	3.94	8.93	0.00	13.73	42.17	57.83
Newspaper, Periodical, Book, and Directory Publishers (NAICS 5111)	11.10	0.85	6.86	0.03	28.62	47.46	52.54
Motion Picture and Video Industries (NAICS 5121)	13.87	1.78	5.53	0.24	30.78	52.19	47.81
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Wireless Telecommunications Carriers (except Satellite) (NAICS 5172)	14.35	6.06	4.73	0.40	9.32	34.86	65.14
Other Information Services (NAICS 5191)	11.33	1.12	6.68	0.00	29.25	48.38	51.62
Depository Credit Intermediation (NAICS 5221)	11.20	0.02	5.35	0.00	24.39	40.96	59.04
Activities Related to Credit Intermediation (NAICS 5223)	12.15	0.30	5.62	0.00	25.85	43.94	56.06
Other Financial Investment Activities (NAICS 5239)	13.18	0.28	5.44	0.00	24.49	43.39	56.61

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	11.27	0.64	5.24	0.00	28.09	45.24	54.76
Lessors of Real Estate (NAICS 5311)	14.10	5.36	4.21	0.00	11.44	35.10	64.90
Consumer Goods Rental (NAICS 5322)	11.62	2.07	5.43	0.00	23.25	42.36	57.64
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.00	6.66	3.85	0.00	11.79	36.31	63.69
Accounting, Tax Preparation, Bookkeeping, and Payroll Services (NAICS 5412)	7.12	3.92	8.67	0.11	14.10	33.91	66.09
Architectural, Engineering, and Related Services (NAICS 5413)	8.62	4.27	11.92	0.41	13.32	38.53	61.47
Specialized Design Services (NAICS 5414)	13.25	2.28	5.24	0.14	39.07	59.97	40.03
Computer Systems Design and Related Services (NAICS 5415)	11.56	3.82	17.33	0.47	13.86	47.03	52.97
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.72	2.39	7.32	0.33	26.98	53.73	46.27
Scientific Research and Development Services (NAICS 5417)	9.95	1.96	9.13	0.25	25.75	47.05	52.95
Advertising, Public Relations, and Related Services (NAICS 5418)	11.57	2.17	7.01	0.08	26.71	47.54	52.46
Other Professional, Scientific, and Technical Services (NAICS 5419)	12.59	2.08	5.67	0.14	32.97	53.44	46.56
Employment Services (NAICS 5613)	19.49	6.09	6.38	0.43	18.80	51.19	48.81
Business Support Services (NAICS 5614)	13.44	0.73	5.83	0.06	26.76	46.82	53.18
Investigation and Security Services (NAICS 5616)	17.54	3.16	6.01	0.86	22.97	50.55	49.45
Services to Buildings and Dwellings (NAICS 5617)	15.73	6.63	4.60	0.18	12.43	39.58	60.42
Waste Treatment and Disposal (NAICS 5622)	18.37	7.52	3.84	0.00	9.09	38.82	61.18
Offices of Other Health Practitioners (NAICS 6213)	9.68	0.48	4.01	0.50	37.97	52.64	47.36
Traveler Accommodation (NAICS 7211)	14.23	2.63	10.11	0.07	16.24	43.27	56.73
Automotive Repair and Maintenance (NAICS 8111)	25.34	5.67	6.58	0.13	13.03	50.75	49.25
Electronic and Precision Equipment Repair and Maintenance (NAICS 8112)	13.83	3.03	7.20	0.81	13.82	38.68	61.32

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 8113)	7.84	1.39	7.18	1.22	11.50	29.12	70.88
Personal and Household Goods Repair and Maintenance (NAICS 8114)	14.90	3.32	7.01	0.82	12.80	38.85	61.15
Drycleaning and Laundry Services (NAICS 8123)	28.05	5.24	8.45	0.00	15.20	56.95	43.05
Other Personal Services (NAICS 8129)	24.02	5.78	8.05	0.33	18.77	56.96	43.04
Business, Professional, Labor, Political, and Similar Organizations (NAICS 8139)	25.17	6.20	6.29	0.00	12.68	50.35	49.65

Source and Notes: See Table 2.17.

Table 2.21.C. Detailed DBE Availability—Services (MAA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Nonresidential Building Construction (NAICS 2362)	7.36	3.68	1.88	0.52	14.94	28.38	71.62
Printing and Related Support Activities (NAICS 3231)	10.57	0.00	7.06	2.38	26.60	46.61	53.39
Other Miscellaneous Manufacturing (NAICS 3399)	5.51	0.67	7.93	0.77	24.69	39.56	60.44
Gasoline Stations (NAICS 4471)	5.65	2.70	17.60	0.19	20.43	46.57	53.43
Other Miscellaneous Store Retailers (NAICS 4539)	7.28	2.54	15.40	0.51	23.24	48.98	51.02
Urban Transit Systems (NAICS 4851)	42.77	5.94	4.39	0.08	8.79	61.96	38.04
Taxi and Limousine Service (NAICS 4853)	19.86	8.92	6.31	0.06	10.85	46.00	54.00
Motion Picture and Video Industries (NAICS 5121)	13.87	1.78	5.53	0.24	30.78	52.19	47.81
Wired Telecommunications Carriers (NAICS 5171)	13.44	5.46	5.65	0.00	16.93	41.48	58.52
Other Telecommunications (NAICS 5179)	13.09	0.83	5.53	0.07	26.80	46.32	53.68
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.01	6.68	3.85	0.00	11.77	36.30	63.70
Architectural, Engineering, and Related Services (NAICS 5413)	8.63	4.26	12.01	0.39	13.16	38.46	61.54
Specialized Design Services (NAICS 5414)	13.07	2.18	5.38	0.13	38.51	59.27	40.73
Computer Systems Design and Related Services (NAICS 5415)	11.53	3.82	17.34	0.47	13.86	47.02	52.98
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.49	1.50	7.12	0.06	26.65	51.82	48.18
Scientific Research and Development Services (NAICS 5417)	10.19	1.72	8.96	0.25	26.97	48.08	51.92
Advertising, Public Relations, and Related Services (NAICS 5418)	8.85	4.04	8.28	0.26	21.43	42.86	57.14
Other Professional, Scientific, and Technical Services (NAICS 5419)	8.55	3.82	7.95	0.26	17.49	38.07	61.93
Business Support Services (NAICS 5614)	13.36	0.74	5.84	0.06	26.77	46.76	53.24
Colleges, Universities, and Professional Schools (NAICS 6113)	14.80	2.44	7.30	0.00	14.70	39.23	60.77
Offices of Other Health Practitioners (NAICS 6213)	8.21	0.54	3.67	0.47	38.56	51.45	48.55

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Performing Arts Companies (NAICS 7111)	18.12	3.45	7.48	0.25	21.50	50.80	49.20
Automotive Repair and Maintenance (NAICS 8111)	7.08	0.81	7.45	1.39	11.00	27.72	72.28
Business, Professional, Labor, Political, and Similar Organizations (NAICS 8139)	25.17	6.20	6.29	0.00	12.68	50.35	49.65

Source and Notes: See Table 2.17.

Table 2.22.A. Detailed DBE Availability—CSE (SHA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Printing and Related Support Activities (NAICS 3231)	5.17	0.27	9.65	0.82	22.02	37.93	62.07
Professional and Commercial Equipment and Supplies Merchant Wholesalers (NAICS 4234)	8.59	1.64	12.02	1.06	18.16	41.47	58.53
Paper and Paper Product Merchant Wholesalers (NAICS 4241)	12.55	0.69	9.24	0.80	24.43	47.71	52.29

Source and Notes: See Table 2.17.

Table 2.22.B. Detailed DBE Availability—CSE (MTA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Printing and Related Support Activities (NAICS 3231)	5.17	0.27	9.65	0.82	22.02	37.93	62.07
Soap, Cleaning Compound, and Toilet Preparation Manufacturing (NAICS 3256)	15.63	0.00	8.10	2.18	19.78	45.69	54.31
Iron and Steel Mills and Ferroalloy Manufacturing (NAICS 3311)	8.39	0.94	8.66	2.21	10.03	30.23	69.77
Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing (NAICS 3334)	9.57	0.93	10.42	2.31	12.14	35.37	64.63
Communications Equipment Manufacturing (NAICS 3342)	7.90	0.37	8.33	0.67	16.86	34.13	65.87
Motor Vehicle Body and Trailer Manufacturing (NAICS 3362)	15.72	0.00	8.32	2.08	8.32	34.44	65.56
Motor Vehicle Parts Manufacturing (NAICS 3363)	6.75	0.59	8.97	2.32	11.55	30.18	69.82
Railroad Rolling Stock Manufacturing (NAICS 3365)	3.00	0.00	6.46	0.60	31.89	41.95	58.05
Other Transportation Equipment Manufacturing (NAICS 3369)	6.25	0.00	8.26	2.22	19.78	36.51	63.49
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (NAICS 4231)	6.84	0.16	8.59	1.83	13.53	30.95	69.05
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.74	0.37	8.10	0.69	18.20	33.11	66.89
Automobile Dealers (NAICS 4411)	9.16	2.90	4.55	0.91	19.59	37.11	62.89
Clothing Stores (NAICS 4481)	10.56	2.65	6.53	0.90	27.06	47.70	52.30
Other Telecommunications (NAICS 5179)	13.09	0.83	5.53	0.07	26.80	46.32	53.68
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	14.01	6.68	3.85	0.00	11.77	36.30	63.70
Architectural, Engineering, and Related Services (NAICS 5413)	8.73	4.29	12.33	0.42	12.75	38.52	61.48
Management, Scientific, and Technical Consulting Services (NAICS 5416)	16.49	1.31	7.06	0.00	26.53	51.39	48.61
Automotive Repair and Maintenance (NAICS 8111)	7.08	0.81	7.45	1.39	11.00	27.72	72.28

Source and Notes: See Table 2.17.

Table 2.22.C. Detailed DBE Availability—CSE (MAA)

Industry Group	African American	Hispanic	Asian	Native American	WBE	DBE	Non-DBE
Nonresidential Building Construction (NAICS 2362)	12.10	5.64	3.81	1.03	12.16	34.74	65.26
Other Chemical Product and Preparation Manufacturing (NAICS 3259)	6.31	1.12	8.29	0.68	20.53	36.93	63.07
Other Fabricated Metal Product Manufacturing (NAICS 3329)	5.40	0.00	6.79	2.61	35.88	50.68	49.32
Agriculture, Construction, and Mining Machinery Manufacturing (NAICS 3331)	3.56	0.77	7.27	0.71	17.47	29.77	70.23
Communications Equipment Manufacturing (NAICS 3342)	7.42	1.69	9.29	0.98	17.60	36.98	63.02
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers (NAICS 4231)	5.93	0.16	7.34	0.73	16.42	30.57	69.43
Machinery, Equipment, and Supplies Merchant Wholesalers (NAICS 4238)	5.88	0.77	8.21	1.15	17.99	34.01	65.99
Automotive Parts, Accessories, and Tire Stores (NAICS 4413)	6.38	2.63	15.74	0.27	20.56	45.58	54.42
Scheduled Air Transportation (NAICS 4811)	9.65	2.82	8.47	0.00	11.29	32.24	67.76
Automotive Equipment Rental and Leasing (NAICS 5321)	11.07	0.33	5.49	0.00	24.95	41.84	58.16

Source and Notes: See Table 2.17.

Table 2.23.A. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category (SHA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	10.06	3.16	5.09	0.36	18.68	15.63	34.30	65.70
AE-CRS	9.49	4.02	11.76	0.40	25.68	14.36	40.04	59.96
MAINTENANCE	9.15	3.40	3.13	0.27	15.95	13.28	29.24	70.76
IT	15.32	3.79	13.61	0.53	33.25	16.69	49.94	50.06
SERVICES	16.24	4.14	8.51	0.37	29.26	20.56	49.82	50.18
CSE	8.32	0.95	10.57	0.92	20.76	20.91	41.67	58.33
TOTAL	10.11	3.52	7.75	0.38	21.76	15.16	36.92	63.08

Source and Notes: See Table 2.17.

Table 2.23.B. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category (MTA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	8.14	3.23	3.30	0.28	14.96	11.62	26.58	73.42
AE-CRS	11.64	3.62	10.64	0.39	26.30	17.45	43.75	56.25
MAINTENANCE	15.19	3.92	6.29	0.51	25.90	16.47	42.37	57.63
IT	9.63	4.04	12.80	0.45	26.92	13.66	40.58	59.42
SERVICES	15.22	3.56	8.35	0.27	27.40	18.72	46.11	53.89
CSE	8.60	2.45	8.20	0.92	20.17	15.40	35.57	64.43
TOTAL	11.42	3.50	8.65	0.38	23.96	16.28	40.24	59.76

Source and Notes: See Table 2.17.

Table 2.23.C. Estimated Availability (Award Dollar Weights)—Overall and By Major Procurement Category (MAA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.28	3.84	3.46	0.37	16.95	12.47	29.42	70.58
AE-CRS	11.33	3.49	10.78	0.37	25.98	17.45	43.43	56.57
MAINTENANCE	18.36	6.61	5.77	0.25	30.98	16.69	47.67	52.33
SERVICES	15.34	3.66	10.00	0.30	29.30	18.66	47.96	52.04
CSE	7.89	2.37	9.64	0.85	20.75	17.43	38.18	61.82
TOTAL	13.10	4.49	7.70	0.34	25.63	16.21	41.83	58.17

Source and Notes: See Table 2.17.

Table 2.24.A. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category (SHA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	10.08	3.24	5.40	0.37	19.09	15.51	34.60	65.40
AE-CRS	9.61	4.01	11.74	0.40	25.76	14.46	40.22	59.78
MAINTENANCE	9.14	3.57	3.07	0.30	16.09	13.24	29.33	70.67
IT	14.69	3.57	13.30	0.48	32.04	17.78	49.82	50.18
SERVICES	14.83	2.56	9.13	0.29	26.80	23.36	50.16	49.84
CSE	8.32	0.95	10.57	0.92	20.76	20.91	41.67	58.33
TOTAL	10.07	3.46	7.23	0.38	21.14	15.25	36.40	63.60

Source and Notes: See Table 2.17.

Table 2.24.B. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category (MTA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	8.56	3.34	3.50	0.31	15.71	12.03	27.74	72.26
AE-CRS	12.99	3.43	10.31	0.40	27.13	18.95	46.08	53.92
MAINTENANCE	13.79	3.00	6.29	0.55	23.63	17.13	40.76	59.24
IT	9.56	4.07	12.86	0.45	26.94	13.53	40.47	59.53
SERVICES	15.84	3.64	8.31	0.28	28.07	19.08	47.15	52.85
CSE	8.60	2.45	8.20	0.92	20.17	15.40	35.57	64.43
TOTAL	12.10	3.40	8.22	0.40	24.11	16.86	40.97	59.03

Source and Notes: See Table 2.17.

Table 2.24.C. Estimated Availability (Paid Dollar Weights)—Overall and By Major Procurement Category (MAA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	9.58	3.88	3.60	0.40	17.46	12.41	29.87	70.13
AE-CRS	10.81	3.62	11.06	0.38	25.88	16.59	42.47	57.53
MAINTENANCE	19.18	6.87	5.97	0.21	32.22	17.15	49.38	50.62
SERVICES	17.96	3.51	9.20	0.30	30.98	18.67	49.65	50.35
CSE	7.89	2.37	9.64	0.85	20.75	17.43	38.18	61.82
TOTAL	13.24	4.71	7.14	0.34	25.43	15.57	41.00	59.00

Source and Notes: See Table 2.17.

Table 2.25.A. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category (SHA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	10.17	3.08	5.29	0.36	18.90	16.02	34.92	65.08
AE-CRS	9.40	4.05	11.80	0.40	25.65	14.22	39.87	60.13
MAINTENANCE	7.28	3.10	2.39	0.24	13.00	11.66	24.66	75.34
IT	14.15	4.04	15.40	0.56	34.14	14.11	48.25	51.75
SERVICES	16.26	4.16	8.68	0.38	29.49	20.41	49.90	50.10
CSE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TOTAL	9.89	3.48	7.88	0.38	21.63	15.19	36.82	63.18

Source and Notes: See Table 2.17.

Table 2.25.B. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MTA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	8.14	3.23	3.30	0.28	14.96	11.62	26.58	73.42
AE-CRS	11.63	3.63	10.64	0.40	26.29	17.42	43.71	56.29
MAINTENANCE	15.19	3.92	6.28	0.51	25.90	16.47	42.37	57.63
IT	9.18	4.03	12.62	0.44	26.28	13.64	39.91	60.09
SERVICES	15.21	3.57	8.34	0.27	27.39	18.65	46.04	53.96
CSE	8.51	2.07	7.49	1.03	19.09	15.80	34.89	65.11
TOTAL	11.42	3.50	8.59	0.38	23.88	16.26	40.13	59.87

Source and Notes: See Table 2.17.

Table 2.25.C. Estimated Availability (Award Dollar Weights)—Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MAA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	8.16	3.75	2.00	0.34	14.25	11.33	25.58	74.42
AE-CRS	11.02	3.46	10.44	0.36	25.28	17.59	42.87	57.13
CSE	9.56	3.47	6.50	0.98	20.51	14.89	35.40	64.60
TOTAL	10.52	3.51	8.95	0.36	23.33	16.48	39.82	60.18

Source and Notes: See Table 2.17.

Table 2.26.A. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category (SHA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	10.19	3.13	5.67	0.37	19.36	16.01	35.38	64.62
AE-CRS	9.50	4.03	11.76	0.41	25.69	14.32	40.02	59.98
MAINTENANCE	7.08	3.26	2.31	0.26	12.91	11.87	24.78	75.22
IT	14.62	4.00	15.13	0.57	34.32	14.40	48.72	51.28
SERVICES	15.06	2.55	9.38	0.30	27.29	23.39	50.68	49.32
CSE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TOTAL	9.96	3.41	7.49	0.38	21.24	15.44	36.68	63.32

Source and Notes: See Table 2.17.

Table 2.26.B. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MTA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	8.56	3.34	3.50	0.31	15.71	12.03	27.74	72.26
AE-CRS	12.96	3.44	10.34	0.40	27.14	18.85	46.00	54.00
MAINTENANCE	13.80	3.00	6.28	0.55	23.63	17.13	40.76	59.24
IT	9.10	4.06	12.68	0.44	26.29	13.50	39.79	60.21
SERVICES	15.84	3.65	8.30	0.28	28.06	19.04	47.11	52.89
CSE	8.51	2.07	7.49	1.03	19.09	15.80	34.89	65.11
TOTAL	12.09	3.40	8.13	0.40	24.01	16.81	40.82	59.18

Source and Notes: See Table 2.17.

Table 2.26.C. Estimated Availability (Paid Dollar Weights)— Federally-Assisted Contracts Only, Overall and By Major Procurement Category (MAA)

Major Procurement Category	African American	Hispanic	Asian	Native American	MBE	WBE	DBE	Non-DBE
CONSTRUCTION	8.54	3.62	2.16	0.34	14.66	10.85	25.51	74.49
AE-CRS	10.82	3.50	10.58	0.36	25.26	17.25	42.51	57.49
CSE	9.56	3.47	6.50	0.98	20.51	14.89	35.40	64.60
TOTAL	10.17	3.53	8.18	0.36	22.25	15.44	37.69	62.31

Source and Notes: See Table 2.17.

Table 5.1.A. DBE Utilization at SHA (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.06	3.21	2.63	4.97	58.81	0.00	3.98
Hispanic	2.67	0.27	3.47	0.00	0.21	0.00	2.26
Asian	0.44	13.32	0.19	7.86	3.47	0.00	2.61
Native American	2.50	0.00	0.00	0.00	0.00	0.00	1.88
Minority	8.68	16.80	6.29	12.83	62.49	0.00	10.73
Nonminority Female	19.45	10.15	22.80	3.15	18.52	0.00	17.90
DBE	28.13	26.95	29.10	15.98	81.01	0.00	28.63
Non-DBE	71.87	73.05	70.90	84.02	18.99	100.00	71.37
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	2,798,100,819	584,695,286	218,437,685	56,994,821	60,166,414	4,599,560	3,722,994,585

Source: See Table 5.1.

Table 5.1.B. DBE Utilization at MTA (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	5.55	3.27	4.83	0.00	2.24	0.00	2.37
Hispanic	2.42	3.91	0.59	0.00	0.74	0.00	1.22
Asian	3.23	7.43	0.00	33.23	0.56	0.77	2.49
Native American	0.09	0.00	0.00	0.00	0.01	0.00	0.01
Minority	11.29	14.61	5.42	33.23	3.55	0.77	6.09
Nonminority Female	3.73	6.88	0.16	0.00	2.41	0.00	2.51
DBE	15.02	21.48	5.58	33.23	5.95	0.77	8.60
Non-DBE	84.98	78.52	94.42	66.77	94.05	99.23	91.40
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	130,703,368	178,271,741	69,909,940	21,241,881	514,970,126	266,255,412	1,181,352,468

Source: See Table 5.1.

Table 5.1.C. DBE Utilization at MAA (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	8.47	3.83	3.97	n/a	15.86	0.00	7.94
Hispanic	2.89	3.40	0.00	n/a	3.63	0.00	2.31
Asian	0.24	2.36	0.00	n/a	1.51	0.00	0.91
Native American	0.00	0.00	0.00	n/a	0.00	0.00	0.00
Minority	11.60	9.58	3.97	n/a	21.00	0.00	11.15
Nonminority Female	4.73	5.35	2.39	n/a	0.17	0.00	2.90
DBE	16.33	14.93	6.36	n/a	21.17	0.00	14.05
Non-DBE	83.67	85.07	93.64	n/a	78.83	100.00	85.95
Total (%)	100.00	100.00	100.00	n/a	100.00	100.00	100.00
Total (\$)	146,627,925	116,216,425	155,678,879	n/a	150,481,244	22,281,691	591,286,164

Source: See Table 5.1.

Table 5.2.A. DBE Utilization at SHA (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	2.59	2.38	1.42	5.53	7.45	0.00	2.55
Hispanic	2.87	0.36	1.24	0.00	1.01	0.00	2.44
Asian	0.53	14.99	0.10	23.89	13.33	0.00	2.45
Native American	4.02	0.00	0.03	0.00	0.00	0.00	3.25
Minority	10.00	17.73	2.79	29.42	21.80	0.00	10.70
Nonminority Female	18.22	10.45	13.47	1.47	18.62	0.00	16.83
DBE	28.22	28.18	16.26	30.89	40.42	0.00	27.53
Non-DBE	71.78	71.82	83.74	69.11	59.58	100.00	72.47
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	2,019,677,364	273,273,883	153,065,926	32,529,365	12,259,463	4,599,560	2,495,405,561

Source: See Table 5.1.

Table 5.2.B. DBE Utilization at MTA (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	6.81	2.49	5.57	0.00	1.84	0.00	2.16
Hispanic	2.57	4.97	0.65	0.00	0.52	0.00	1.00
Asian	4.08	4.15	0.00	37.24	0.32	0.77	1.99
Native American	0.11	0.00	0.00	0.00	0.00	0.00	0.01
Minority	13.57	11.61	6.22	37.24	2.68	0.77	5.17
Nonminority Female	5.72	3.30	0.15	0.00	1.84	0.00	1.71
DBE	19.29	14.91	6.37	37.24	4.52	0.77	6.88
Non-DBE	80.71	85.09	93.63	62.76	95.48	99.23	93.12
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total (\$)	103,535,141	80,595,442	64,747,088	18,953,640	359,860,436	266,255,412	893,947,159

Source: See Table 5.1.

Table 5.2.C. DBE Utilization at MAA (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	7.78	3.59	3.13	n/a	15.33	0.00	7.18
Hispanic	3.46	2.64	0.00	n/a	4.07	0.00	2.44
Asian	0.23	1.95	0.00	n/a	0.45	0.00	0.48
Native American	0.00	0.00	0.00	n/a	0.00	0.00	0.00
Minority	11.47	8.17	3.13	n/a	19.84	0.00	10.10
Nonminority Female	4.59	5.45	2.60	n/a	0.16	0.00	3.06
DBE	16.06	13.63	5.73	n/a	20.00	0.00	13.16
Non-DBE	83.94	86.37	94.27	n/a	80.00	100.00	86.84
Total (%)	100.00	100.00	100.00	n/a	100.00	100.00	100.00
Total (\$)	137,940,405	64,617,918	98,807,029	n/a	87,313,888	22,281,691	410,960,931

Source: See Table 5.1.

Table 5.3.A. DBE Utilization at SHA on Federally-Assisted Contracts (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	3.10	3.24	0.91	11.94	69.57	n/a	4.14
Hispanic	1.96	0.28	1.09	0.00	0.00	n/a	1.59
Asian	0.42	13.43	0.16	4.97	4.11	n/a	2.78
Native American	2.77	0.00	0.00	0.00	0.00	n/a	2.12
Minority	8.26	16.96	2.15	16.91	73.68	n/a	10.62
Nonminority Female	20.71	9.94	28.10	7.96	9.91	n/a	18.85
DBE	28.97	26.89	30.26	24.87	83.59	n/a	29.48
Non-DBE	71.03	73.11	69.74	75.13	16.41	n/a	70.52
Total (%)	100.00	100.00	100.00	100.00	100.00	n/a	100.00
Total (\$)	2,496,792,072	573,453,575	126,834,343	22,420,445	50,862,705	0	3,270,363,140

Source: See Table 5.1.

Table 5.3.B. DBE Utilization at MTA on Federally-Assisted Contracts (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	5.55	3.35	4.83	0.00	2.24	0.00	2.40
Hispanic	2.42	4.04	0.59	0.00	0.74	0.00	1.23
Asian	3.23	7.40	0.00	33.95	0.52	0.79	2.47
Native American	0.09	0.00	0.00	0.00	0.01	0.00	0.01
Minority	11.29	14.79	5.43	33.95	3.51	0.79	6.11
Nonminority Female	3.73	7.08	0.16	0.00	2.41	0.00	2.54
DBE	15.02	21.87	5.58	33.95	5.92	0.79	8.65
Non-DBE	84.98	78.13	94.42	66.05	94.08	99.21	91.35
Total (%)	100.00	100.00	100.00	100.00	100.00	n/a	100.00
Total (\$)	130,703,368	172,719,483	69,855,878	20,788,208	514,486,907	257,616,760	1,166,170,604

Source: See Table 5.1.

Table 5.3.C. DBE Utilization at MAA on Federally-Assisted Contracts (Dollars Awarded)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	7.55	4.50	n/a	n/a	n/a	0.00	5.38
Hispanic	4.64	3.41	n/a	n/a	n/a	0.00	3.67
Asian	0.01	2.03	n/a	n/a	n/a	0.00	1.13
Native American	0.00	0.00	n/a	n/a	n/a	0.00	0.00
Minority	12.20	9.93	n/a	n/a	n/a	0.00	10.18
Nonminority Female	5.71	5.01	n/a	n/a	n/a	0.00	4.96
DBE	17.92	14.94	n/a	n/a	n/a	0.00	15.15
Non-DBE	82.08	85.06	n/a	n/a	n/a	100.00	84.85
Total (%)	100.00	100.00	n/a	n/a	n/a	n/a	100.00
Total (\$)	54,020,779	78,307,424	n/a	n/a	n/a	8,841,892	141,170,095

Source: See Table 5.1.

Table 5.4.A. DBE Utilization at SHA on Federally-Assisted Contracts (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	2.58	2.41	1.00	10.00	11.32	n/a	2.59
Hispanic	1.89	0.38	0.97	0.00	0.00	n/a	1.64
Asian	0.50	15.32	0.05	2.94	20.25	n/a	2.44
Native American	4.66	0.00	0.06	0.00	0.00	n/a	3.83
Minority	9.62	18.10	2.07	12.94	31.57	n/a	10.50
Nonminority Female	19.89	10.10	10.22	2.79	16.73	n/a	18.12
DBE	29.51	28.20	12.29	15.73	48.30	n/a	28.63
Non-DBE	70.49	71.80	87.71	84.27	51.70	n/a	71.37
Total (%)	100.00	100.00	100.00	100.00	100.00	n/a	100.00
Total (\$)	1,727,568,704	264,580,982	83,072,998	16,667,231	8,070,208	0	2,099,960,123

Source: See Table 5.1.

Table 5.4.B. DBE Utilization at MTA on Federally-Assisted Contracts (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	6.81	2.56	5.58	0.00	1.84	0.00	2.18
Hispanic	2.57	5.19	0.65	0.00	0.52	0.00	1.02
Asian	4.08	3.73	0.00	38.15	0.28	0.79	1.96
Native American	0.11	0.00	0.00	0.00	0.00	0.00	0.01
Minority	13.57	11.48	6.23	38.15	2.65	0.79	5.17
Nonminority Female	5.72	3.42	0.15	0.00	1.85	0.00	1.74
DBE	19.29	14.90	6.37	38.15	4.49	0.79	6.91
Non-DBE	80.71	85.10	93.63	61.85	95.51	99.21	93.09
Total (%)	100.00	100.00	100.00	100.00	100.00	n/a	100.00
Total (\$)	103,535,141	77,068,340	64,693,026	18,499,967	359,472,713	257,616,760	880,885,947

Source: See Table 5.1.

Table 5.4.C. DBE Utilization at MAA on Federally-Assisted Contracts (Dollars Paid)

DBE Type	Procurement Category						
	Construction	AE-CRS	Maintenance	IT	Services	CSE	Overall
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
African American	5.31	4.60	n/a	n/a	n/a	0.00	4.56
Hispanic	5.35	3.24	n/a	n/a	n/a	0.00	4.07
Asian	0.01	0.93	n/a	n/a	n/a	0.00	0.36
Native American	0.00	0.00	n/a	n/a	n/a	0.00	0.00
Minority	10.67	8.77	n/a	n/a	n/a	0.00	8.99
Nonminority Female	5.30	5.05	n/a	n/a	n/a	0.00	4.72
DBE	15.97	13.83	n/a	n/a	n/a	0.00	13.71
Non-DBE	84.03	86.17	n/a	n/a	n/a	100.00	86.29
Total (%)	100.00	100.00	n/a	n/a	n/a	100.00	100.00
Total (\$)	51,732,495	36,309,909	n/a	n/a	n/a	8,841,892	96,884,296

Source: See Table 5.1.

Table 5.21.A. Current Availability and Expected Availability for the SHA

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CONSTRUCTION				
African American	10.06	14.22	10.08	14.25
Hispanic	3.16	6.17	3.24	6.33
Asian/Pacific Islander	5.09	7.44	5.40	7.89
Native American	0.36	0.56	0.37	0.58
Minority	18.68	33.85	19.09	34.60
Nonminority female	15.63	24.03	15.51	23.85
DBE total	34.30	54.91	34.60	55.39
AE-CRS				
African American	9.49	13.42	9.61	13.59
Hispanic	4.02	7.85	4.01	7.83
Asian/Pacific Islander	11.76	17.19	11.74	17.16
Native American	0.40	0.62	0.40	0.62
Minority	25.68	46.54	25.76	46.68
Nonminority female	14.36	22.08	14.46	22.23
DBE total	40.04	64.09	40.22	64.38
MAINTENANCE				
African American	9.15	12.94	9.14	12.92
Hispanic	3.40	6.64	3.57	6.97
Asian/Pacific Islander	3.13	4.57	3.07	4.49
Native American	0.27	0.42	0.30	0.47
Minority	15.95	28.91	16.09	29.16
Nonminority female	13.28	20.42	13.24	20.36
DBE total	29.24	46.81	29.33	46.95
IT				
African American	15.32	34.51	14.69	33.09
Hispanic	3.79	6.08	3.57	5.73
Asian/Pacific Islander	13.61	17.23	13.30	16.84
Native American	0.53	0.68	0.48	0.61
Minority	33.25	50.76	32.04	48.91
Nonminority female	16.69	20.57	17.78	21.92
DBE total	49.94	66.97	49.82	66.81
SERVICES				
African American	16.24	36.58	14.83	33.41
Hispanic	4.14	6.65	2.56	4.11
Asian/Pacific Islander	8.51	10.78	9.13	11.56
Native American	0.37	0.47	0.29	0.37
Minority	29.26	44.66	26.80	40.91
Nonminority female	20.56	25.34	23.36	28.79
DBE total	49.82	66.81	50.16	67.27

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CSE				
African American	8.32	18.74	8.32	18.74
Hispanic	0.95	1.52	0.95	1.52
Asian/Pacific Islander	10.57	13.38	10.57	13.38
Native American	0.92	1.17	0.92	1.17
Minority	20.76	31.69	20.76	31.69
Nonminority female	20.91	25.77	20.91	25.77
DBE total	41.67	55.88	41.67	55.88
OVERALL				
African American	10.11	18.65	10.07	18.58
Hispanic	3.52	5.42	3.46	5.33
Asian/Pacific Islander	7.75	9.11	7.23	8.50
Native American	0.38	0.47	0.38	0.47
Minority	21.76	33.77	21.14	32.81
Nonminority female	15.16	19.52	15.25	19.64
DBE total	36.92	50.85	36.40	50.13

Source: See Tables 2.23, 2.24, 3.12.

Table 5.21.B. Current Availability and Expected Availability for the MTA

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CONSTRUCTION				
African American	8.14	11.51	8.56	12.10
Hispanic	3.23	6.31	3.34	6.52
Asian/Pacific Islander	3.30	4.82	3.50	5.12
Native American	0.28	0.44	0.31	0.48
Minority	14.96	27.11	15.71	28.47
Nonminority female	11.62	17.87	12.03	18.50
DBE total	26.58	42.55	27.74	44.41
AE-CRS				
African American	11.64	16.46	12.99	18.37
Hispanic	3.62	7.07	3.43	6.70
Asian/Pacific Islander	10.64	15.55	10.31	15.07
Native American	0.39	0.61	0.40	0.62
Minority	26.30	47.66	27.13	49.17
Nonminority female	17.45	26.83	18.95	29.14
DBE total	43.75	70.03	46.08	73.76
MAINTENANCE				
African American	15.19	21.48	13.79	19.50
Hispanic	3.92	7.66	3.00	5.86
Asian/Pacific Islander	6.29	9.19	6.29	9.19
Native American	0.51	0.79	0.55	0.86
Minority	25.90	46.94	23.63	42.82
Nonminority female	16.47	25.32	17.13	26.34
DBE total	42.37	67.82	40.76	65.25
IT				
African American	9.63	21.69	9.56	21.54
Hispanic	4.04	6.48	4.07	6.53
Asian/Pacific Islander	12.80	16.21	12.86	16.28
Native American	0.45	0.57	0.45	0.57
Minority	26.92	41.09	26.94	41.12
Nonminority female	13.66	16.84	13.53	16.68
DBE total	40.58	54.42	40.47	54.27
SERVICES				
African American	15.22	34.29	15.84	35.68
Hispanic	3.56	5.71	3.64	5.84
Asian/Pacific Islander	8.35	10.57	8.31	10.52
Native American	0.27	0.34	0.28	0.36
Minority	27.40	41.83	28.07	42.85
Nonminority female	18.72	23.07	19.08	23.52
DBE total	46.11	61.83	47.15	63.23

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CSE				
African American	8.60	19.37	8.60	19.37
Hispanic	2.45	3.93	2.45	3.93
Asian/Pacific Islander	8.20	10.38	8.20	10.38
Native American	0.92	1.17	0.92	1.17
Minority	20.17	30.79	20.17	30.79
Nonminority female	15.40	18.98	15.40	18.98
DBE total	35.57	47.70	35.57	47.70
OVERALL				
African American	11.42	21.07	12.10	22.32
Hispanic	3.50	5.39	3.40	5.24
Asian/Pacific Islander	8.65	10.16	8.22	9.66
Native American	0.38	0.47	0.40	0.50
Minority	23.96	37.19	24.11	37.42
Nonminority female	16.28	20.97	16.86	21.71
DBE total	40.24	55.42	40.97	56.42

Source: See Tables 2.23, 2.24, 3.12.

Table 5.21.C. Current Availability and Expected Availability for the MAA

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CONSTRUCTION				
African American	9.28	13.12	9.58	13.54
Hispanic	3.84	7.50	3.88	7.58
Asian/Pacific Islander	3.46	5.06	3.60	5.26
Native American	0.37	0.58	0.40	0.62
Minority	16.95	30.72	17.46	31.64
Nonminority female	12.47	19.17	12.41	19.08
DBE total	29.42	47.09	29.87	47.81
AE-CRS				
African American	11.33	16.02	10.81	15.28
Hispanic	3.49	6.82	3.62	7.07
Asian/Pacific Islander	10.78	15.76	11.06	16.16
Native American	0.37	0.58	0.38	0.59
Minority	25.98	47.08	25.88	46.90
Nonminority female	17.45	26.83	16.59	25.51
DBE total	43.43	69.52	42.47	67.98
MAINTENANCE				
African American	18.36	25.96	19.18	27.12
Hispanic	6.61	12.91	6.87	13.42
Asian/Pacific Islander	5.77	8.43	5.97	8.73
Native American	0.25	0.39	0.21	0.33
Minority	30.98	56.14	32.22	58.39
Nonminority female	16.69	25.66	17.15	26.37
DBE total	47.67	76.31	49.38	79.05
SERVICES				
African American	15.34	34.56	17.96	40.46
Hispanic	3.66	5.87	3.51	5.63
Asian/Pacific Islander	10.00	12.66	9.20	11.65
Native American	0.30	0.38	0.30	0.38
Minority	29.30	44.73	30.98	47.29
Nonminority female	18.66	23.00	18.67	23.01
DBE total	47.96	64.32	49.65	66.58

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CSE				
African American	7.89	17.77	7.89	17.77
Hispanic	2.37	3.80	2.37	3.80
Asian/Pacific Islander	9.64	12.21	9.64	12.21
Native American	0.85	1.08	0.85	1.08
Minority	20.75	31.67	20.75	31.67
Nonminority female	17.43	21.48	17.43	21.48
DBE total	38.18	51.20	38.18	51.20
OVERALL				
African American	13.10	24.17	13.24	24.43
Hispanic	4.49	6.92	4.71	7.26
Asian/Pacific Islander	7.70	9.05	7.14	8.39
Native American	0.34	0.42	0.34	0.42
Minority	25.63	39.78	25.43	39.47
Nonminority female	16.21	20.88	15.57	20.05
DBE total	41.83	57.61	41.00	56.47

Source: See Tables 2.23, 2.24, 3.12.

NERA

ECONOMIC CONSULTING

NERA Economic Consulting
Barton Creek Plaza Building II, Suite 330
3801 S. Capital of Texas Highway
Austin, Texas 78704
Tel: 1 (512) 371-8995 Fax: 1 (512) 371-9612
www.nera.com