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The State of Minority- and Women-Owned Business Enterprise: Evidence from Missouri

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About the Project Team—NERA Economic Consulting

NERA Economic Consulting is a global firm of experts dedicated to applying economic, finance, and quantitative principles to complex business and legal challenges. For half a century, NERA's economists have been creating strategies, studies, reports, expert testimony, and policy recommendations for government authorities and the world's leading law firms and corporations. We bring academic rigor, objectivity, and real world industry experience to bear on issues arising from competition, regulation, public policy, strategy, finance, and litigation.

NERA's clients value our ability to apply and communicate state-of-the-art approaches clearly and convincingly, our commitment to deliver unbiased findings, and our reputation for quality and independence. Our clients rely on the integrity and skills of our unparalleled team of economists and other experts backed by the resources and reliability of one of the world's largest economic consultancies. With its main office in New York City, NERA serves clients from over 20 offices across North America, Europe, and Asia Pacific.

NERA's employment and labor experts advise clients on a wide range of issues both inside and outside the courtroom. We have provided expert testimony on statistical issues both at the class certification phase (on issues of commonality and typicality) and at the liability phase (for class or pattern-and-practice cases). Our experts have extensive experience examining issues of statistical liability in discrimination and other wrongful termination claims. We also provide detailed statistical analyses of workforce composition to identify potential disparities in hiring, layoffs, promotions, pay, and performance assessments, and have conducted studies on labor union issues and on affirmative action programs for historically disadvantaged business enterprises.

NERA Senior Vice President Dr. Jon Wainwright led the NERA project team for this Study. Dr. Wainwright heads NERA's disparity study practice and is a nationally recognized expert on business discrimination and affirmative action. He has authored books, papers, and numerous research studies on the subject, and has been repeatedly qualified to testify on these and other issues as an expert in state and federal courts. At NERA, Dr. Wainwright directs and conducts economic and statistical studies of discrimination for attorneys, corporations, governments, and non-profit organizations. He also directs and conducts research and provides clients with advice on adverse impact and economic damage matters arising from their hiring, performance assessment, compensation, promotion, termination, or contracting activities.

About the Project Team—NERA Research Partners

Abt SRBI is a New York-based business with a national reputation for excellence in computer assisted telephone interviewing. Abt SRBI provides analysis in the rapidly evolving markets and public policy areas of communications, financial services, utilities, transportation, media, health and business services. The firm was founded in 1981 for the explicit purpose of combining high quality analytic capabilities with in-house control of the research implementation to ensure accurate, timely and actionable research used by decision makers working in rapidly changing environments. Abt SRBI clients include the Eagleton Institute at Rutgers, the Annenburg Institute at the University of Pennsylvania, and the major networks. Abt SRBI has conducted numerous surveys of DBEs and non-DBEs on behalf of the NERA team. On this Study, Abt SRBI conducted telephone surveys of race and gender misclassification and of mail survey non-response under the supervision of Abt SRBI Project Manager, Andrew Evans.

Armand Resource Group, Inc. (ARG) is a certified DBE. The firm specializes in the design and implementation of comprehensive diversity programs, as well as compliance monitoring and reporting services. ARG has extensive experience assisting transportation systems and state and local government agencies with compliance requirements and goals. On this assignment, ARG assisted with contract data collection and in publicizing and populating all of the focus group sessions.

Colette Holt & Associates is an Oakland, California-based law practice specializing in public sector affirmative action programs. The firm provides legal and consulting services to governments and businesses relating to procurement and contracting; employment discrimination; regulatory compliance; organizational change; program development, evaluation and implementation; and issues relating to inclusion, diversity and affirmative action. On this Study, Colette Holt provided a review of relevant case law, conducted interviews with Department procurement and contract compliance officials and with business owners, and drafted selected study findings and recommendations.

J&D Data Services is a small business enterprise owned by Mr. Joe Deegan and based in Plano, Texas. After a long career with ScanTron, Mr. Deegan started his own business to offer a solid and proven alternative to the time consuming and expensive job of key data entry long associated with mail surveys. The firm helps its clients conserve their surveying resources by designing and delivering survey instruments that can be electronically and automatically scanned upon return and sent directly to electronic format. J&D Data Services has conducted numerous surveys of DBEs and non-DBEs on behalf of the NERA team. On this assignment, they provided printing, postage, mail-out and mail-back service for the subcontract data collection, and the mail survey.

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Executive Summary

A. Introduction

The Missouri Department of Transportation ("MoDOT") commissioned this study to evaluate whether minority-owned and women-owned business enterprises in MoDOT's market area have full and fair opportunities to compete for its prime contracts and associated subcontracts, and those of its federal-aid subrecipients.

To meet its regulatory obligations, among other things MoDOT is required to: (1) compile statistical information concerning the past utilization of minority-owned and women-owned firms as prime contractors, prime consultants, subcontractors, subconsultants, suppliers, and truckers; and (2) estimate the percentage of minority- and women-owned business enterprises (which we will refer to as "DBEs" regardless of their certification status) in various industry categories that could potentially become certified as DBEs. The purpose of this Report is to assist MoDOT to fulfill these two regulatory requirements.

The results of the 2012 Study provide the evidentiary record necessary for MoDOT's consideration regarding the implementation of renewed DBE policies or the origination of M/WBE policies that are responsive to the evidence and that comply with the requirements of the courts. The Study also will help in assessing the extent to which prior efforts have assisted minority-owned and women-owned firms to participate on a fair basis in MoDOT's contracting activity.

The 2012 Study finds both statistical and anecdotal evidence of business discrimination against DBEs in MoDOT's relevant market area. The 2012 Study finds statistical evidence of business discrimination against DBEs in the private sector of MoDOT's market area. These findings are presented in Chapters V and VI. Statistical analyses of MoDOT's own contracting and that of its federal-aid subrecipients, which also document evidence consistent with business discrimination, are contained in Chapters III, IV and VII. As a check on our statistical findings, we surveyed the contracting experiences of DBEs and non-DBEs in the market area and also conducted a series of in-depth personal interviews with business enterprises throughout the market area (both DBE and non-DBE) both of which document significant amounts of business discrimination affecting DBEs.

B. Legal Standards for Government Affirmative Action Contracting Programs

To be effective, enforceable, and legally defensible, a race- and gender-based program must meet the judicial test of constitutional "strict scrutiny." Strict scrutiny requires a "strong basis in evidence" of the persistence of discrimination, and any remedies adopted must be "narrowly tailored" to address that discrimination. Applying these terms to government affirmative action contracting programs is complex, and cases are quite fact specific. Since 1989, federal appellate and district courts have developed parameters for establishing a state government's compelling interest in remedying discrimination and evaluating whether the remedies adopted to address that

discrimination are narrowly tailored. The 2012 Study follows the national state department of transportation guidelines recently published by the *National Academy of Sciences*.[1]

Chapter II of the 2012 Study provides a detailed and up-to-date analysis of current constitutional standards and case law and outlines the legal and program development issues MoDOT must consider in evaluating its DBE Program and any future initiatives, with emphasis on critical issues and evidentiary concerns.

C. Defining the Relevant Markets

Chapter III describes how the relevant geographic and product markets were defined for this Study. These definitions were derived empirically, based on the Master Contract/Subcontract Database assembled for the Study. The relevant geographic and product markets were then used to focus and frame the quantitative and qualitative analyses in the remainder of the Study.

The Master Contract/Subcontract Database contains information on 1,654 prime construction contracts and 9,330 associated subcontracts, the bulk of which were federally-assisted. These contracts were awarded between Federal Fiscal Year ("FFY") 2005 and 2009 and had a total award dollar value of $4.126 billion and a total payment value of $3.981 billion (see Table 3.4A).

Contracts and subcontracts in the database were catalogued according whether they were federally-assisted or state-funded, whether they were let directly by MoDOT or by one of MoDOT's many local and state subrecipients throughout Missouri,[2] and whether they were for construction or for construction-related professional services ("Consulting"). The firms performing these contracts and subcontracts were catalogued according to geographic location, primary industry code, race, and gender.

The Master Contract/Subcontract Database was analyzed to determine the geographic radius around MoDOT that accounts for at least 75 percent of aggregate contract and subcontract spending. MoDOT's relevant geographic market area was determined to include the State of Missouri plus the Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area, and the Illinois portion of the St. Louis, MO-IL Metropolitan Statistical Area.[3] This is the same geographic market area that NERA identified in our previous availability study for MoDOT.[4]

The Master Contract/Subcontract Database was also analyzed to determine those detailed industry categories that collectively account for 99 percent of contract and subcontract spending

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1 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.

2 See Appendix A for a listing of all MoDOT subrecipients included in the Master Contract/Subcontract Database.

3 The Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area includes the following counties: Franklin, Johnson, Leavenworth, Linn, Miami, and Wyandotte. The Illinois portion of the St. Louis, MO-IL Metropolitan Statistical Area includes the following counties: Bond, Calhoun, Clinton, Jersey, Macoupin, Madison, Monroe, and St. Clair.

4 NERA Economic Consulting and Colette Holt & Associates (2004).

in construction and consulting. We determined that MoDOT's product market includes firms in 100 different North American Industrial Classification System ("NAICS") industry groups. However, the distribution of spending among these industry codes varies greatly. In construction, three NAICS groups collectively account for more than three-fourths of contract and subcontract spending. Thirteen groups account for 95 percent of spending and 20 groups account for 99 percent. The remaining one percent is distributed among another 72 groups (see Tables 3.8 and 3.9). In consulting, one NAICS group accounts for almost 95 percent of contract and subcontract spending and 7 groups account for 99 percent. The remaining one percent is distributed among another 26 groups (see Tables 3.10 and 3.11).

D. DBE Availability in MoDOT's Market Area

Chapter IV estimates the percentage of firms in MoDOT's relevant market area that are owned by minorities or women. For each industry category, DBE availability is defined as the number of DBEs divided by the total number of businesses in MoDOT's contracting market area, weighted by the dollars attributable to each detailed industry. Determining the total number of businesses in the relevant market is more straightforward than determining the number of minority- 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.

Table A1 below provides an executive level summary of the current DBE availability estimates derived in the 2012 Study. Availability estimates for more detailed industries within the construction or consulting sectors appear in Tables 4.23 through 4.30. Availability estimates by highway district appear in Appendix E.

Table A2 provides a comparison of availability estimates from the current study to those derived in MoDOT's last availability study, completed in late 2004. Overall, DBE availability has increased between 2004 and 2012, especially in consulting. Availability for nonminority women-owned firms and African American-owned firms grew substantially in both construction and consulting during this time period.

Table A1. Overall Estimated DBE Availability in MoDOT's Construction and Consulting Market Area

	African American	Hispanic	Asian/ Pacific Islander	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.52	0.68	0.33	0.99	4.53	15.87	20.40	79.60
WEIGHTED BY PAID DOLLARS	2.57	0.69	0.33	0.98	4.56	15.80	20.36	79.64
CONSTRUCTION (FEDERALLY-ASSISTED CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.53	0.69	0.34	0.98	4.53	15.87	20.41	79.59
WEIGHTED BY PAID DOLLARS	2.58	0.69	0.33	0.97	4.56	15.80	20.37	79.63
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.38	1.05	2.65	0.39	6.46	15.07	21.53	78.47
WEIGHTED BY PAID DOLLARS	2.37	1.05	2.65	0.39	6.46	15.06	21.52	78.48
CONSULTING (FEDERALLY-ASSISTED CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.37	1.05	2.64	0.40	6.46	15.08	21.54	78.46
WEIGHTED BY PAID DOLLARS	2.37	1.05	2.64	0.39	6.46	15.06	21.52	78.48

Source: See Table 4.21.

Notes: (1) "Award" indicates that the availability measures are weighted according to dollars awarded; (2) "Paid" indicates that the availability measures are weighted according to dollars paid; (3) 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" or "Asian/Pacific Islander" refers to an individual having origins in the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands; "Native American" refers to an individual having origins in any of the original peoples of North America or of Hawai'i. Businesses owned by members of these groups are collectively referred to as DBEs.

Table A2. Comparison of DBE Availability 2004 and 2012 (Weighted by Award Dollars)

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (FEDERALLY-ASSISTED CONTRACTS)								
2004 STUDY	2.08	1.08	0.72	1.30	5.18	12.33	17.51	82.49
2012 STUDY	2.58	0.69	0.33	0.97	4.56	15.80	20.37	79.63
CONSULTING (FEDERALLY-ASSISTED CONTRACTS)								
2004 STUDY	1.65	0.63	2.32	1.17	5.77	8.72	14.48	85.52
2012 STUDY	2.37	1.05	2.64	0.39	6.46	15.06	21.52	78.48

Sources: See Table 4.22.

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

Chapter V demonstrates that current DBE availability levels in the MoDOT market area, as measured in Chapter IV, are substantially lower in most instances 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 in 2006–2010 in the construction sector were 34 percent lower in the MoDOT market area than for nonminority males who were otherwise similar in terms of geographic location, industry, age, and education. This difference is large and statistically significant. Large, adverse, and statistically significant wage disparities were also observed for Hispanics, Asians/Pacific Islanders, Native Americans, persons reporting two or more races, and nonminority women. These disparities are consistent with the presence of market-wide discrimination. Observed disparities for these groups ranged from a low of -20 percent for Hispanics to a high of -35 percent for nonminority women. Similar results were observed when the analysis was restricted to the goods and services sector or expanded to the economy as a whole. 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 MoDOT

[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.* 247.

market area were different enough from elsewhere in the country or the economy to alter any of the basic conclusions regarding wage and salary disparities. 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.

Next, we analyzed race and gender disparities in business owner earnings. We found, for example, that annual earnings for self-employed African Americans in 2006–2010 in the construction sector were 42 percent lower in the MoDOT market area than for nonminority males who were otherwise similar in terms of geographic location, industry, age, and education. This difference is large and statistically significant. Large, adverse, and statistically significant wage disparities were also observed for Hispanics, Asians/Pacific Islanders, persons reporting two or more races, and nonminority women. These disparities, as well, are consistent with the presence of market-wide discrimination. Observed disparities for these groups ranged from a low of -17 percent for Asians/Pacific Islanders to a high of -45 percent for nonminority women. Similar results were observed when the analysis was restricted to the goods and services sector or expanded to the economy as a whole. As with the wage and salary disparity analysis, we enhanced our basic statistical model to test whether minority and female business owners in the MoDOT 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 business formation rates may 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 most cases we observed large, adverse, and statistically significant disparities consistent with the presence of discrimination in these markets in the overall economy, in the construction sector, and in the goods and services sector. In the construction sector, for example, business formation rates for African Americans were 8.8 percentage points lower than for comparable nonminority males. For other groups, disparities ranged from a low of 3.5 percentage points lower for persons reporting two or more races to a high of 8.8 percentage points lower for African Americans. Overall, business formation rates for African Americans, Hispanics, persons reporting two or

more races, and nonminority women, were substantially and statistically significantly lower than the corresponding nonminority male business formation rate. Similar results were observed in the goods and services sector and in the economy as a whole.[6]

Finally, as a further 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).[7] 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 Missouri. The size of the disparities facing minority- and women-owned firms in Missouri is striking. For example, although 2.09 percent of all construction firms in Missouri are owned by African Americans, they earned only 0.85 percent of all sales and receipts. Hispanic-owned construction firms are 1.17 percent of all firms in Missouri, yet they earned only 0.67 percent of all sales and receipts. Asian/Pacific Islander-owned construction firms are 0.52 percent of all construction firms in Missouri, but earned only 0.21 percent of sales and receipts. Native Americans are 0.80 percent of all construction firms in Missouri, yet earned only 0.54 percent of all sales and receipts. More parity was observed for women-owned firms—7.38 percent of all construction firms in Missouri were women-owned and these firms earned 7.43 percent of sales and receipts.

F. Statistical Disparities in Credit/Capital Markets

In Chapter VI, 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 SSBF datasets are constructed for the nation as a whole and for nine Census divisions. The MoDOT Market Area is part of the West North Central Census division, which includes the states of Missouri, Iowa, Kansas, Minnesota, Nebraska, North Dakota, and South Dakota. To render the results as narrowly tailored as possible, we included indicator variables in our statistical analyses to determine whether the results for the West North Central division were different from those for the nation as a whole. We determined that the national results also apply in general to the West North Central division.

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[6] Results for Asian/Pacific Islanders and Native Americans were mixed. In construction, there was no evidence of lower business formation rates for these groups in the MoDOT market area. In the goods and services sector, there was no evidence of lower business formation rates for Asian/Pacific Islanders but there was evidence of lower rates for Native Americans.

[7] Formerly known as the *Survey of Minority- and Women-Owned Business Enterprises* (SMWOBE).

The main 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 (see Tables 6.15, 6.22, 6.29).

- When minority-owned firms did apply 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 (see Tables 6.8, 6.9, 6.18, 6.19, 6.25, 6.26).

- When minority-owned firms did receive a loan they were obligated to pay higher interest rates on the loans than comparable nonminority-owned firms (see Tables 6.13, 6.14, 6.21, 6.27).

- Far more minority-owned firms report that credit market conditions are a serious concern than is the case for nonminority-owned firms (see Tables 6.3, 6.4, 6.5, 6.6, 6.7, 6.17, 6.24).

- 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 (see Tables 6.5, 6.6).

- 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 West South North division, which includes the MoDOT 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 MoDOT market area in the small business credit market. This discrimination is particularly acute for African American-owned small businesses where, even after adjusting for differences in assets, liabilities, and creditworthiness, the loan denial rate ranges from 9 to 24 percentage points higher than for nonminority male-owned small businesses.

G. DBE Public Sector Utilization vs. Availability in MoDOT's Construction and Consulting Markets, FFY 2005–2009

Chapter VII analyzes the extent to which DBEs were utilized on contracts let by MoDOT or its subrecipients between FFY 2005-2009 and compares this utilization rate to the availability of DBEs in the relevant market area.

Tables B1 and B2 provide an executive level summary of utilization findings for the 2012 Study by industry category and DBE type. Table B1 shows results for federally-assisted contracts while Table B2 shows results for state-funded contracts.

Table B1. DBE Utilization in Contracting at MoDOT (Federally-Assisted Contracts Only)

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction	Consulting	Overall	Construction	Consulting	Overall
	(%)	(%)	(%)	(%)	(%)	(%)
African American	1.02	5.03	1.22	1.03	4.77	1.20
Hispanic	0.12	0.00	0.11	0.09	0.00	0.09
Asian/Pacific Islander	0.13	3.41	0.28	0.13	2.98	0.25
Native American	1.38	0.31	1.33	1.39	0.27	1.34
Minority Total	2.65	8.75	2.94	2.63	8.01	2.87
Nonminority Females	10.52	6.41	10.32	10.99	5.69	10.75
DBE Total	13.17	15.16	13.26	13.62	13.71	13.62
Non-DBE Total	86.83	84.84	86.74	86.38	86.29	86.38
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00
Total ($)	3,688,269,300	186,315,918	3,874,585,218	3,573,639,924	168,698,577	3,742,338,502

Source and Notes: See Table 7.1.

Table B2. DBE Utilization in Contracting at MoDOT (State-Funded Contracts Only)

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction	Consulting	Overall	Construction	Consulting	Overall
	(%)	(%)	(%)	(%)	(%)	(%)
African American	0.00	2.04	0.67	0.00	2.07	0.58
Hispanic	0.00	0.03	0.01	0.00	0.01	0.00
Asian/Pacific Islander	0.00	0.79	0.26	0.00	0.94	0.26
Native American	0.56	0.00	0.37	0.56	0.00	0.40
Minority Total	0.56	2.86	1.31	0.56	3.01	1.25
Nonminority Females	6.22	8.45	6.95	5.93	9.22	6.86
DBE Total	6.78	11.30	8.25	6.49	12.24	8.11
Non-DBE Total	93.22	88.70	91.75	93.51	87.76	91.89
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00
Total ($)	169,142,576	81,817,722	250,960,298	171,282,053	67,131,127	238,413,179

Source and Notes: See Table 7.1.

A comparison of the results in Tables B1 and B2 shows that DBE utilization levels are substantially and significantly higher on federally-assisted contracts, where the DBE Program operates, than on state-funded contracts, where it does not.

Next, we compared the use of DBEs on the contracts of MoDOT and its subrecipients to our measure of DBE availability levels in MoDOT's market area. If DBE utilization is lower than measured availability in a given category, we report this result as a disparity. Tables C1 and C2 provide a top-level summary of our disparity findings for the 2012 Study for construction and consulting. We find substantial evidence of disparity in the contracting activity of MoDOT and its subrecipients, despite the operation of the DBE Program.

Table C1. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Awarded) (Federally-Assisted Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	1.02	2.53	40.44 ***
Hispanic	0.12	0.69	17.52 ***
Asian/Pacific Islander	0.13	0.34	37.46
Native American	1.38	0.98	
Minority-owned	2.65	4.53	58.45 ***
Nonminority female	10.52	15.87	66.26 ***
DBE total	13.17	20.41	64.52 ***
Consulting			
African American	5.03	2.37	
Hispanic	0.00	1.05	0.00 ***
Asian/Pacific Islander	3.41	2.64	
Native American	0.31	0.40	77.26
Minority-owned	8.75	6.46	
Nonminority female	6.41	15.08	42.46 ***
DBE total	15.16	21.54	70.37 ***
All Contracting			
African American	1.22	2.51	48.42 ***
Hispanic	0.11	0.73	15.79 ***
Asian/Pacific Islander	0.28	0.58	49.10
Native American	1.33	0.92	
Minority-owned	2.94	4.73	62.18 **
Nonminority female	10.32	15.77	65.42 ***
DBE total	13.26	20.51	64.67 ***

Source: Table 7.6.

Notes: (1) "*" indicates an adverse disparity that is statistically significant at the 10% level or better (90% confidence). "**" indicates the disparity is significant 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 MoDOT Contracting, Overall and by Contracting Category (Dollars Awarded) (State-Funded Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	0.00	2.31	0.12 ***
Hispanic	0.00	0.60	0.00 ***
Asian/Pacific Islander	0.00	0.26	0.00 ***
Native American	0.56	1.25	44.59
Minority-owned	0.56	4.41	12.64 ***
Nonminority female	6.22	15.79	39.39 ***
DBE total	6.78	20.20	33.55 ***
Consulting			
African American	2.04	2.38	85.64
Hispanic	0.03	1.05	2.52 ***
Asian/Pacific Islander	0.79	2.67	29.55 *
Native American	0.00	0.37	0.33 ***
Minority-owned	2.86	6.48	44.11 *
Nonminority female	8.45	15.00	56.31 **
DBE total	11.30	21.48	52.63 ***
All Contracting			
African American	0.67	2.35	28.36 *
Hispanic	0.01	0.85	1.01 ***
Asian/Pacific Islander	0.26	1.60	16.10 **
Native American	0.37	0.76	49.40
Minority-owned	1.31	5.56	23.51 ***
Nonminority female	6.95	15.35	45.24 ***
DBE total	8.25	20.91	39.46 ***

Source: Table 7.6.

Notes: (1) "*" indicates an adverse disparity that is statistically significant at the 10% level or better (90% confidence). "**" indicates the disparity is significant 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.

Finally, Chapter VII compares current levels of DBE availability in MoDOT'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 market area, however, as documented in Chapters V, VI, VII, and VIII of this Study, then expected availability will *exceed* actual current availability. Expected availability percentages for MoDOT's overall contracting and by major contracting category are presented below in Table D. Expected availability exceeds actual current availability in almost every case observed.

Table D. Current Availability and Expected Availability for MoDOT Construction and Consulting Contracting

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CONSTRUCTION				
African American	2.53	3.56	2.58	3.64
Hispanic	0.69	1.10	0.69	1.10
Asian/Pacific Islander	0.34	0.16	0.33	0.15
Native American	0.98	0.79	0.97	0.78
Minority	4.53	5.12	4.56	5.16
Nonminority female	15.87	23.35	15.80	23.25
DBE total	20.41	27.17	20.37	27.12
Consulting				
African American	2.37	3.34	2.37	3.34
Hispanic	1.05	1.67	1.05	1.67
Asian/Pacific Islander	2.64	1.20	2.64	1.20
Native American	0.40	0.32	0.39	0.31
Minority	6.46	7.31	6.46	7.31
Nonminority female	15.08	22.19	15.06	22.16
DBE total	21.54	28.67	21.52	28.65

Source: Table 7.16.

H. Anecdotal Evidence

Chapter VIII presents the results of a large scale mail survey we conducted of DBEs and non-DBEs about their experiences and difficulties in obtaining contracts. 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 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, moreover, the relative lack of solicitation of DBEs in the absence of affirmative efforts by MoDOT and other public entities in the market area shows that business discrimination continues to fetter DBE business opportunities in MoDOT's relevant markets.

We found that DBEs in MoDOT'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. Some of the largest disparities were observed in applying for commercial loans, applying for surety bonds, applying for commercial insurance, obtaining price quotes from suppliers or subcontractors, and in functioning without hindrance or harassment on the work site.

We also found 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 VIII also presents the results from a series of in-depth personal interviews conducted with DBE and non-DBE business owners in the MoDOT market area. Similar to the survey responses, the interviews strongly suggest that DBEs continue to suffer discriminatory barriers to full and fair access to MoDOT, other public sector, and private sector contracts. Participants reported perceptions of minority and women incompetence; exclusion from industry networks; barriers to obtaining work on an equal basis; jobsite harassment; and barriers to obtaining commercial loans, surety bonding and insurance.

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, MoDOT 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-funded contracts.

I. DBE Program Overview and Feedback Interviews

Chapter IX provides an overview of MoDOT's DBE Program for federal-aid contracts and a discussion of current efforts. We interviewed over 100 DBE and non-DBE business owners and their representatives, as well as MoDOT staff, to solicit their feedback regarding the DBE Program. Chapter IX describes the DBE Program elements of 49 C.F.R. Part 26, and MoDOT's Program administration, including outreach and communication, staffing, compliance procedures, forms and reviews, bidding assistance, DBE supportive services, the DBE Business Coaching Program, the Mentor-Protégé Program, and the Pilot DBE Supportive Services NAICS Expansion Initiative.

Chapter IX next provides a summary of our interviews, which covered the following subjects:

- **Perceptions of the Program's Overall Effectiveness**

Overall, DBEs reported that the Program remains critical to ensure their full and fair access to MoDOT's contracts. Being certified created opportunities that otherwise would not have been open to them. DBE requirements were seen as vital to the continuing viability of their companies. A few non-DBEs believed that the Program should be eliminated.

- **Access to Information about Upcoming Opportunities and Contract Specifications**

DBEs reported that they regularly received information from MoDOT about upcoming bids, although some firms stated they receive conflicting information depending upon who they talk to.

- **Contract Size and Specifications**

DBEs and non-DBEs agreed that "unbundling" contracts so that small firms can submit bids or proposals would increase opportunities. They further agreed that the Department prefers to work with large firms, regardless of qualifications.

- **Meeting DBE Goals at Contract Award**

DBEs reported many obstacles to receiving fair treatment in seeking subcontracting work even in the operation of the Program. Most prime contractors reported that while it was often difficult and burdensome, they were able to meet DBE contract goals, although it is more challenging to meet goals outside the Kansas City and St. Louis areas. Several general contractors stated that there is an increased cost to using DBEs. Other owners stated that whether the DBEs cost more varies with the project, and that they add additional costs to the general fee and conditions when using a DBE because they believe the DBE will require more supervision than white male-owned firms. A few participants suggested that the Department collect information on all quotes from subcontractors, to establish and evaluate whether the DBEs' prices are unreasonably high.

Some non-DBE participants believe that MoDOT does not adequately take into account the scopes of work of the project in setting the goal. Many non-DBE contractors, both prime contractors and subcontractors, believe that MoDOT's Program is a mandatory quota, not a goal, and that bidders who make good faith efforts but do not meet the goal will be denied the contract. Further, many non-DBEs that compete in the specialty trades where DBEs are clustered (e.g., landscaping, fencing, guardrails, stripping, flagging) felt that they are now the victims of discrimination because of the general contractors' use of DBEs to meet goals in those trades rather than giving up work the prime wants to perform. Some general contractors agreed that long standing non-DBE subcontractors should not be burdened by the need to provide opportunities to new entrants.

- **Contract Performance Monitoring and Enforcement**

By in large, DBEs reported that MoDOT adequately monitors participation during contract performance. Several participants complimented MoDOT's administration of the Program, especially when compared to other local agencies. Few DBEs reported being substituted without notice during performance. At the same time, replacing a non-performing DBE was difficult, according to some general contractors. Some general contractors reported that their attempts to assist DBEs during performance were seen to run afoul of the Program's regulations. Some participants reported that DBEs sometimes do not perform a commercially useful function, or act as passthroughs.

- **Payment**

Some prime contractors were satisfied with the speed with which MoDOT processes complete invoices. Others disagreed. Subcontractors mostly reported general contractors pay them more or less in a timely fashion. Those that are not paid know to alert MoDOT. One stated she uses joint checks.

- **Assistance Programs for DBEs and Small Firms**

DBEs have benefited from MoDOT's outreach efforts and would like more events and opportunities for training and access to MoDOT officials. DBEs generally supported the concept of mentor-protégé programs; however, the large firms were less sanguine about the utility of a mentor-protégé approach, expressing concerns about training competitors.

J. 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 MoDOT's 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 MoDOT's market area.

I. Introduction

The Missouri Department of Transportation ("MoDOT") commissioned this study to evaluate whether minority- and women-owned business enterprises ("DBEs") in MoDOT's market area have full and fair opportunities to compete for its prime contracts and associated subcontracts, and those of its federal-aid subrecipients.

To meet its regulatory obligations, among other things MoDOT is required to: (1) compile statistical information concerning the past utilization of minority-owned and women-owned firms as prime contractors, prime consultants, subcontractors, subconsultants, suppliers, and truckers; and (2) to estimate the percentage of minority- and women-owned business enterprises in various industry categories that could potentially become certified as Disadvantaged Business Enterprises ("DBEs"). The purpose of this Report is to assist MoDOT to fulfill these two regulatory requirements.

The results of the 2012 Study provide the evidentiary record necessary for MoDOT's consideration regarding the implementation of renewed DBE policies or the origination of M/WBE policies that are responsive to the evidence and that comply with the requirements of the courts. The Study also will help in assessing the extent to which prior efforts have assisted minority-owned and women-owned firms to participate on a fair basis in MoDOT's contracting activity.

The 2012 Study finds statistical evidence of business discrimination against DBEs in the private sector of MoDOT's market area. These findings are presented in Chapters V and VI. Statistical analyses of MoDOT's own contracting and that of its federal-aid subrecipients, which also document evidence consistent with business discrimination, are contained in Chapters III, IV and VII. As a check on our statistical findings, we surveyed the contracting experiences of DBEs and non-DBEs in the market area and also conducted a series of in-depth personal interviews with business enterprises throughout the market area, both DBE and non-DBE.

Like many state departments of transportation, MoDOT has a long record of commitment to including DBEs in its contracting activities. As will be documented in this Study, during Federal Fiscal Year ("FFY") 2005 through 2009, MoDOT has continued to be a source of demand in the regional economy for the products and services provided by DBEs—demand that, in general, is found to be lacking in the private sector of the Missouri economy and the surrounding region.

As documented below in Chapter VII, MoDOT's prior efforts have produced positive results—DBEs earned approximately 13 percent of MoDOT's construction contracting and subcontracting dollars on contracts active between FFY 2005 and FFY 2009 and 13 percent of its construction-related professional services ("Consulting") contracting and subcontracting dollars. Some federal courts outside the Eighth Circuit have indicated that in order to implement a race- and gender-based program that is effective, enforceable and legally defensible, a state department of transportation must meet the judicial test of constitutional "strict scrutiny" to determine the legality of such initiatives. Strict scrutiny requires current "strong evidence" of the persistence of discrimination, and "narrowly tailored" measures to remedy that discrimination. These legal principles guide and inform our work for MoDOT in this Study.

A. Study Outline

To ensure compliance with constitutional mandates and DBE best practices, MoDOT commissioned NERA to examine the past and current status of DBEs in its geographic and product markets for Construction and Consulting. The results of the 2012 Study provide the evidentiary record necessary for MoDOT's consideration of whether to implement renewed DBE policies that comply with the requirements of the courts and to assess the extent to which previous efforts have assisted DBEs to participate on a fair basis in MoDOT's contracting activity and that of its subrecipients.

The 2012 Study finds both statistical and anecdotal evidence of business discrimination against DBEs in the private sector of the MoDOT market area. As a check on our statistical findings, we surveyed the contracting experiences and credit access experiences of DBEs and non-DBEs in the market area and we also conducted a series of in-depth personal interviews with local business enterprises, both DBE and non-DBE. Statistical analyses of MoDOT's public sector contracting behavior appear below in Chapters III, IV and VII.

The Study is presented in nine chapters, and is designed to answer the following questions:

Chapter I: Introduction

Chapter II: What are the current constitutional standards and case law governing strict scrutiny review of race- and gender-conscious government efforts in public contracting such as the DBE Program?

Chapter III: What is the relevant geographic market for MoDOT and how is it defined? What are the relevant product markets for MoDOT and how are they defined?

Chapter IV: What percentage of all businesses in the MoDOT's market area are owned by minorities and/or women? How are these availability estimates constructed?

Chapter V: Do minority and/or female wage and salary earners earn less than similarly situated nonminority males? Do minority and/or female business owners earn less from their businesses than similarly situated nonminority males? Are minorities and/or women in the MoDOT market area less likely to be self-employed than similarly situated nonminority males? How do the findings in the MoDOT market area differ from the national findings on these questions? How have these findings changed over time?

Chapter VI: Do minorities and/or women face discrimination in the market for commercial capital and credit compared to similarly-situated nonminority males? How, if at all, do findings locally differ from findings nationally?

Chapter VII: To what extent have DBEs been utilized by MoDOT on contracts awarded between FFY 2005 and FFY 2009, and how does this utilization compare to the availability of DBEs in the relevant marketplace?

Chapter VIII: How many DBEs experienced disparate treatment in the study period? What types of discriminatory experiences are most frequently encountered by DBEs? How do the experiences of DBEs differ from those of similar non-DBEs regarding difficulties in obtaining prime contracts and subcontracts?

Chapter IX: What general policies and procedures govern MoDOT's DBE program? What were some of the most frequently encountered comments from DBEs and non-DBEs concerning MoDOT's contracting affirmative action programs?

In assessing these questions, we present in Chapters III through VIII a series of quantitative and qualitative analyses that compare minority and/or female outcomes to nonminority male outcomes in all of these business-related areas. The Executive Summary, above, provides a brief overview of our key findings and conclusions.

II. Legal Standards for Government Affirmative Action Contracting Programs

A. General Overview of Strict Scrutiny

1. Summary of Constitutional Standards

To be effective, enforceable, and legally defensible, a race-based program must meet the judicial test of constitutional "strict scrutiny." Strict scrutiny is the highest level of judicial review and consists of two elements:

- The government must establish its "compelling interest" in remedying race discrimination by current "strong evidence" of the persistence of discrimination. Such evidence may consist of the entity's "passive participation" in a system of racial exclusion.

- Any remedies adopted must be "narrowly tailored" to that discrimination, that is the program must be directed at the types and depth of discrimination identified.[8]

The compelling interest prong has been met through two types of proof:

- Statistical evidence of the underutilization of minority firms compared to their availability in the jurisdiction's market area, known as disparity indices, comparable to the type of "disparate impact" analysis used in employment discrimination cases.

- Anecdotal evidence of race-based barriers to the full and fair participation of minority firms in the market area and in seeking contracts with the agency, comparable to the "disparate treatment" analysis used in employment discrimination cases.[9]

The narrow tailoring prong has been met through the satisfaction of five factors to ensure that the remedy "fits" the evidence:

- The efficacy of race-neutral remedies at overcoming identified discrimination.

- The relationship of numerical benchmarks for government spending to the availability of minority- and women-owned firms and to subcontracting goal setting procedures.

- The congruence between the remedies adopted and the beneficiaries of those remedies.

- Any adverse impact of the relief on third parties.

- The duration of the program.[10]

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[8] *City of Richmond v. J.A. Croson Co*., 488 U.S. 469 (1989); *W.H. Scott Construction Co., Inc. v. City of Jackson*, 199 F.3d 206, 217 (5th Cir. 1999).

[9] *Croson*, 488 U.S. at 509; *Scott*, 199 F.3d at 218.

In *Adarand Constructors, Inc. v. Peña,*[11] the Court extended the analysis of strict scrutiny to race-based federal enactments such as the DBE program. Just as in the local government context, the national government must have a compelling interest for the use of race and the remedies adopted must be narrowly tailored to the evidence relied upon.

In general, courts have subjected preferences for Women-Owned Business Enterprises ("WBEs") to "intermediate scrutiny:" gender-based classifications must be supported by an "exceedingly persuasive justification" and "substantially related" to the objective.[12] However, appellate courts reviewing the constitutionality of the Disadvantaged Business Enterprise program for federally-assisted transportation contracts have applied strict scrutiny to the gender-based presumption of social disadvantage.[13] Therefore, MoDOT would be wise to meet the rigors of strict scrutiny for any gender preferences.

Below is a detailed discussion of the parameters for establishing MoDOT's compelling interest in remedying discrimination and evaluating whether the remedies adopted to address that discrimination are narrowly tailored. The following are the legal and program development issues the City should consider in evaluating its M/W/SBE Program for construction contracts and future race- and gender-conscious initiatives.

2. *City of Richmond v. J.A. Croson*

City of Richmond v. J.A. Croson Co.[14] established the constitutional contours of permissible race-based public contracting programs. Reversing long established law, the Supreme Court for the first time extended the highest level of judicial examination from measures designed to limit the rights and opportunities of minorities to legislation that benefits these historic victims of discrimination. Strict scrutiny requires that a government entity prove both its "compelling interest" in remedying identified discrimination based upon "strong evidence," and that the measures adopted to remedy that discrimination are "narrowly tailored" to that evidence. However benign the government's motive, race is always so suspect a classification that its use must pass the highest constitutional test of "strict scrutiny."

The Court struck down the City of Richmond's Minority Business Enterprise Plan that required prime contractors awarded City construction contracts to subcontract at least 30 percent of the project to MBEs. A business located anywhere in the country which was at least 51 percent owned and controlled by "Black, Spanish-speaking, Oriental, Indian, Eskimo, or Aleut" citizens was eligible to participate. The Plan was adopted after a public hearing at which no direct evidence was presented that the City had discriminated on the basis of race in awarding contracts

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[10] *United States v. Paradise*, 480 U.S. 149, 171 (1987); *see Scott*, 199 F.3d at 219 (the City should have adopted 'Particularized findings" of discrimination and set goals accordingly) .

[11] 515 U.S. 200 (1995) ("*Adarand III"*).

[12] *Cf. United States v. Virginia*, 518 U.S. 515 (1996).

[13] *Northern Contracting, Inc. v. Illinois Department of Transportation*, 473 F.3d 715, 720 (7th Cir. 2007) ("Northern Contracting III").

[14] 488 U.S. 469 (1989).

or that its prime contractors had discriminated against minority subcontractors. The only evidence before the City Council was: (a) Richmond's population was 50 percent Black, yet less than one percent of its prime construction contracts had been awarded to minority businesses; (b) local contractors' associations were virtually all White; (c) the City Attorney's opinion that the Plan was constitutional; and (d) general statements describing widespread racial discrimination in the local, Virginia, and national construction industries.

In affirming the Court of Appeals' determination that the Plan was unconstitutional, Justice Sandra Day O'Connor's plurality opinion rejected the extreme positions that local governments either have *carte blanche* to enact race-based legislation or must prove their own illegal conduct:

> [A] state or local subdivision…has the authority to eradicate the effects of private discrimination within its own legislative jurisdiction.… [Richmond] can use its spending powers to remedy private discrimination, if it identifies that discrimination with the particularity required by the Fourteenth Amendment.… [I]f the City could show that it had essentially become a "passive participant" in a system of racial exclusion…[it] could take affirmative steps to dismantle such a system.[15]

Strict scrutiny of race-based remedies is required to determine whether racial classifications are in fact motivated by either notions of racial inferiority or blatant racial politics. This highest level of judicial review "smokes out" illegitimate uses of race by assuring that the legislative body is pursuing a goal important enough to warrant use of a highly suspect tool.[16] It further ensures that the means chosen "fit" this compelling goal so closely that there is little or no possibility that the motive for the classification was illegitimate racial prejudice or stereotype. The Court made clear that strict scrutiny seeks to expose racial stigma; racial classifications are said to create racial hostility if they are based on notions of racial inferiority.[17]

Race is so suspect a basis for government action that more than "societal" discrimination is required to restrain racial stereotyping or pandering. The Court provided no definition of "societal" discrimination or any guidance about how to recognize the ongoing realities of history and culture in evaluating race-conscious programs. The Court simply asserted that:

> [w]hile there is no doubt that the sorry history of both private and public discrimination in this country has contributed to a lack of opportunities for black entrepreneurs, this observation, standing alone, cannot justify a rigid racial quota in the awarding of public contracts in Richmond, Virginia…. [A]n amorphous claim that there has been past discrimination in a particular industry cannot justify the use of an unyielding racial quota.

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[15] *Id*. at 491-92.

[16] *See also Grutter v. Bollinger*, 539 U.S. 306, 327 (2003) ("Not every decision influenced by race is equally objectionable, and strict scrutiny is designed to provide a framework for carefully examining the importance and the sincerity of the reasons advanced by the governmental decision maker for the use of race in that particular context.").

[17] *Croson*, 488 U.S. at 493.

> It is sheer speculation how many minority firms there would be in Richmond absent past societal discrimination.[18]

Richmond's evidence was found to be lacking in every respect. The City could not rely upon the disparity between its utilization of MBE prime contractors and Richmond's minority population because not all minority persons would be qualified to perform construction projects; general population representation is irrelevant. No data were presented about the availability of MBEs in either the relevant market area or their utilization as subcontractors on City projects. According to Justice O'Connor, the extremely low MBE membership in local contractors' associations could be explained by "societal" discrimination or perhaps Blacks' lack of interest in participating as business owners in the construction industry. To be relevant, the City would have to demonstrate statistical disparities between eligible MBEs and actual membership in trade or professional groups. Further, Richmond presented no evidence concerning enforcement of its own anti-discrimination ordinance. Finally, Richmond could not rely upon Congress' determination that there has been nationwide discrimination in the construction industry. Congress recognized that the scope of the problem varies from market to market, and in any event it was exercising its powers under Section Five of the Fourteenth Amendment, whereas a local government is further constrained by the Amendment's Equal Protection Clause.[19]

> In the case at hand, the City has not ascertained how many minority enterprises are present in the local construction market nor the level of their participation in City construction projects. The City points to no evidence that qualified minority contractors have been passed over for City contracts or subcontracts, either as a group or in any individual case. Under such circumstances, it is simply impossible to say that the City has demonstrated "a strong basis in evidence for its conclusion that remedial action was necessary."[20]

The foregoing analysis was applied only to Blacks. The Court then emphasized that there was "absolutely no evidence" against other minorities. "The random inclusion of racial groups that, as a practical matter, may have never suffered from discrimination in the construction industry in Richmond, suggests that perhaps the City's purpose was not in fact to remedy past discrimination."[21]

Having found that Richmond had not presented evidence in support of its compelling interest in remedying discrimination—the first prong of strict scrutiny—the Court went on to make two observations about the narrowness of the remedy—the second prong of strict scrutiny. First, Richmond had not considered race-neutral means to increase MBE participation. Second, the 30 percent quota had no basis in evidence, and was applied regardless of whether the individual

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[18] *Id*. at 499.

[19] *Id*. at 504; *but see Adarand III* (applying strict scrutiny to Congressional race-conscious contracting measures).

[20] *Croson*, 488 U.S. at 510.

[21] *Id*.

MBE had suffered discrimination.[22] Further, Justice O'Connor rejected the argument that individualized consideration of Plan eligibility is too administratively burdensome.

Apparently recognizing that the opinion might be misconstrued to categorically eliminate all race-conscious contracting efforts, Justice O'Connor closed with these admonitions:

> Nothing we say today precludes a state or local entity from taking action to rectify the effects of identified discrimination within its jurisdiction. If the City of Richmond had evidence before it that non-minority contractors were systematically excluding minority businesses from subcontracting opportunities, it could take action to end the discriminatory exclusion. Where there is a significant statistical disparity between the number of qualified minority contractors willing and able to perform a particular service and the number of such contractors actually engaged by the locality or the locality's prime contractors, an inference of discriminatory exclusion could arise. Under such circumstances, the City could act to dismantle the closed business system by taking appropriate measures against those who discriminate based on race or other illegitimate criteria. In the extreme case, some form of narrowly tailored racial preference might be necessary to break down patterns of deliberate exclusion.…Moreover, evidence of a pattern of individual discriminatory acts can, if supported by appropriate statistical proof, lend support to a local government's determination that broader remedial relief is justified.[23]

While much has been written about *Croson*, it is worth stressing what evidence was and was not before the Court. First, Richmond presented *no* evidence regarding the availability of MBEs to perform as prime contractors or subcontractors and *no* evidence of the utilization of minority-owned subcontractors on City contracts.[24] Nor did Richmond attempt to link the remedy it imposed to any evidence specific to the Program; it used the general population of the City rather than any measure of business availability. The "city has not ascertained how many minority enterprises are present in the local construction industry nor the level of their participation in city construction projects. The city points to no evidence that qualified minority contractors have been passed over for city contracts or subcontracts, either as a group or in any individual case."[25]

Some commentators have taken this dearth of any particularized proof and argued that only the most particularized proof can suffice in all cases. They leap from the Court's rejection of Richmond's reliance on only the percentage of Blacks in the City's population to a requirement that only firms that bid or have the "capacity" or "willingness" to bid on a particular contract at a

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[22] *See Grutter*, 539 U.S. at 336-337 (quotas are not permitted; race must be used in a flexible, non-mechanical way).

[23] *Croson*, 488 U.S. at 509 (citations omitted).

[24] *Id*. at 502.

[25] *Id*. at 510.

particular time can be considered in determining whether discrimination against Black businesses infects the local economy.[26]

This contention has been rejected explicitly by some courts. For example, in denying the plaintiff firm's summary judgment motion to enjoin the City of New York's M/WBE construction ordinance, the court stated that:

> [I]t is important to remember what the *Croson* plurality opinion did and did not decide. The Richmond program, which the *Croson* Court struck down, was insufficient because it was based on a comparison of the minority population in its entirety in Richmond, Virginia (50%) with the number of contracts awarded to minority businesses (.67%). There were no statistics presented regarding number of minority-owned contractors in the Richmond area, *Croson*, 488 U.S. at 499, and the Supreme Court was concerned with the gross generality of the statistics used in justifying the Richmond program. There is no indication that the statistical analysis performed by [the consultant] in the present case, which does contain statistics regarding minority contractors in New York City, is not sufficient as a matter of law under *Croson*.[27]

Further, Richmond made no attempt to narrowly tailor a goal for the procurement at issue that reflected the reality of the project. Arbitrary quotas, and the unyielding application of those quotas, did not support the stated objective of ensuring equal access to City contracting opportunities. The *Croson* Court said nothing about the constitutionality of flexible subcontracting goals based upon the availability of MBEs to perform the scopes of the contract in the government's local market area. The federal Disadvantaged Business Enterprise ("DBE") Program, as discussed below, avoids these pitfalls. Part 26 "provides for a flexible system of contracting goals that contrasts sharply with the rigid quotas invalidated in *Croson*."[28]

While strict scrutiny is designed to require clear articulation of the evidentiary basis for race-based decision-making and careful adoption of remedies to address discrimination, it does not, as Justice O'Connor stressed, have to be an impossible test that no proof can meet. Strict scrutiny need not be "fatal in fact."[29]

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[26] *See, e.g., Northern Contracting, Inc. v. Illinois Department of Transportation*, 473 F.3d 715, 723 (7th Cir. 2007) ("*Northern Contracting III"*).

[27] *North Shore Concrete and Associates, Inc. v. City of New York,* 1998 U.S. Dist. Lexis 6785, *28-29 (E.D. N.Y. 1998); *see also Harrison & Burrowes Bridge Constructors, Inc. v. Cuomo,* 981 F.2d 50, 61-62 (2nd Cir. 1992) ("*Croson* made only broad pronouncements concerning the findings necessary to support a state's affirmative action plan"); *cf. Concrete Works of Colorado, Inc. v. City and County of Denver* 36 F.3d 1513, 1528 (10th Cir. 1994), cert. denied, 514 U.S. 1004 (1995) ("*Concrete Works II")* (City may rely on "data reflecting the number of MBEs and WBEs in the marketplace to defeat the challenger's summary judgment motion").

[28] *Western States Paving Co., Inc. v. Washington Department of Transportation*, 407 F.3d 983, 994 (9th Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006).

[29] *See Adarand III*, 515 U.S. at 237.

B. Strict Scrutiny as Applied to Federal Enactments

In *Adarand v. Peña*,[30] the Court again overruled long settled law and extended the analysis of strict scrutiny under the Due Process Clause of the Fourteenth Amendment to federal enactments. Just as in the local government context, when evaluating federal legislation and regulations:

> [t]he strict scrutiny test involves two questions. The first is whether the interest cited by the government as its reason for injecting the consideration of race into the application of law is sufficiently compelling to overcome the suspicion that racial characteristics ought to be irrelevant so far as treatment by the government is concerned. The second is whether the government has narrowly tailored its use of race, so that race-based classifications are applied only to the extent absolutely required to reach the proffered interest. The strict scrutiny test is thus a recognition that while classifications based on race may be appropriate in certain limited legislative endeavors, such enactments must be carefully justified and meticulously applied so that race is determinative of the outcome in only the very narrow circumstances to which it is truly relevant.[31]

1. U.S. Department of Transportation's Disadvantaged Business Enterprise Program

To comply with *Adarand*, Congress reviewed and revised the Disadvantaged Business Enterprise (DBE) Program statute[32] and implementing regulations[33] for federal-aid contracts in the transportation industry. These are the laws and regulations governing MoDOT's DBE Program for its federal aid contracts. To date, every court that has considered the issue has found the regulations to be constitutional on their face.[34]

a. Challenges to the Facial Constitutionality of the Disadvantaged Business Enterprise Regulations

All courts have held that Congress had strong evidence of widespread race discrimination in the construction industry.[35] Relevant evidence before Congress included:

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[30] *Adarand III*, 515 U.S. 200.

[31] *Adarand Constructors, Inc. v. Peña*, 965 F. Supp. 1556, 1569-1570 (D. Colo. 1997), *rev'd*, 228 F.3d 1147 (2000) ("*Adarand IV"*); *see also Adarand III*, 515 U.S. at 227.

[32] Transportation Equity Act for the 21st Century ("TEA-21"), Pub. L. No. 105-178 (b)(1), 112 Stat. 107, 113.

[33] 49 C.F.R. Part 26.

[34] *See, e.g., Adarand Constructors, Inc. v. Slater*, 228 F.3d 1147 (10th Cir. 2000), cert. granted then dismissed as improvidently granted, 532 U.S. 941, 534 U.S. 103 (2001) ("*Adarand VII*"); *Northern Contracting, Inc. v. Illinois Department of Transportation*, 2004 U.S. Dist. LEXIS 3226 at *64 (N.D. Ill., Mar. 3, 2004) ("*Northern Contracting I"*).

[35] *See Western States*, 407 F.3d at 993 ("In light of the substantial body of statistical and anecdotal material considered at the time of TEA-21's enactment, Congress had a strong basis in evidence for concluding that-in at

- Disparities between the earnings of minority-owned firms and similarly situated non-minority-owned firms;

- Disparities in commercial loan denial rates between Black business owners compared to similarly situated non-minority business owners;

- The large and rapid decline in minorities' participation in the construction industry when affirmative action programs were struck down or abandoned; and

- Various types of overt and institutional discrimination by prime contractors, trade unions, business networks, suppliers and sureties against minority contractors.[36]

The Eighth Circuit Court of Appeals took a "hard look" at the evidence Congress considered, and concluded that the legislature had:

> [S]pent decades compiling evidence of race discrimination in government highway contracting, of barriers to the formation of minority-owned construction businesses, and of barriers to entry. In rebuttal, [the plaintiffs] presented evidence that the data were susceptible to multiple interpretations, but they failed to present affirmative evidence that no remedial action was necessary because minority-owned small businesses enjoy non-discriminatory access to and participation in highway contracts. Thus, they failed to meet their ultimate burden to prove that the DBE program is unconstitutional on this ground.[37]

Next, the regulations were facially narrowly tailored. Unlike the prior program, 49 C.F.R. Part 26 provides that:

- The overall goal must be based upon demonstrable evidence of the number of DBEs ready, willing, and able to participate on the recipient's federally assisted contracts.

- The goal may be adjusted to reflect the availability of DBEs but for the effects of the DBE Program and of discrimination.

- The recipient must meet the maximum feasible portion of the goal through race-neutral measures as well as estimate that portion of the goal it predicts will be met through such measures.

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least some parts of the country-discrimination within the transportation contracting industry hinders minorities' ability to compete for federally funded contracts.").

[36] *Id.* at 992-93.

[37] *Sherbrooke Turf, Inc. v. Minnesota Department of Transportation* and *Gross Seed Company v. Nebraska Department of Roads*, 345 F.3d at 964, 970 (8th Cir. 2003), cert. denied, 541 U.S. 1041 (2004); *see also Adarand VII*, 228 F.3d at 1175 (Plaintiff has not met its burden "of introducing credible, particularized evidence to rebut the government's initial showing of the existence of a compelling interest in remedying the nationwide effects of past and present discrimination in the federal construction procurement subcontracting market.").

- The use of quotas and set-asides is limited to only those situations where there is no other remedy.

- The goals are to be adjusted during the year to remain narrowly tailored.

- Absent bad faith administration of the Program, a recipient cannot be penalized for not meeting its goal.

- The presumption of social disadvantage for racial and ethnic minorities and women is rebuttable, "wealthy minority owners and wealthy minority firms are excluded, and certification is available to persons who are not presumptively disadvantaged but can demonstrate actual social and economic disadvantage."

- Exemptions and waivers from any or all Program requirements are available.[38]

These elements have led the courts to conclude that the program is narrowly tailored on its face. First, the regulations place strong emphasis on the use of race-neutral means to achieve minority and women participation. Relying upon *Grutter v. Bollinger*, the Eighth Circuit held that while "[n]arrow tailoring does not require the exhaustion of every conceivable race-neutral alternative…it does require serious, good faith consideration of workable race-neutral alternatives."[39]

The DBE Program is also flexible. Eligibility is limited to small firms owned by persons whose net worth is less than $750,000. There are built-in Program time limits, and the recipient may terminate race-conscious contract goals if it meets its annual overall goal through race-neutral means for two consecutive years. Moreover, the authorizing legislation is subject to Congressional reauthorization that will ensure periodic public debate.

The court next held that the goals are tied to the relevant labor market. "Though the underlying estimates may be inexact, the exercise requires the States to focus on establishing realistic goals for DBE participation in the relevant contracting markets. This stands in stark contrast to the program struck down in *Croson*…."[40]

Finally, Congress has taken significant steps to minimize the race-conscious nature of the Program. "[W]ealthy minority owners and wealthy minority-owned firms are excluded, and certification is available to persons who are not presumptively [socially] disadvantaged but can demonstrate actual social and economic disadvantage. Thus, race is made relevant in the program, but it is not a determinative factor."[41]

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[38] *Sherbrooke*, 345 F.3d at 973.

[39] *Id*. at 972.

[40] *Id.*

[41] *Id*. at 973.

b. Challenges to the Application of the Disadvantaged Business Enterprise Regulations

DBE programs based upon a methodology similar to that for this Study for MoDOT, including the availability analysis and the examination of disparities in the business formation rates and business earnings of minorities and women compared to similarly situated non-minority males, have been held to be narrowly tailored in their application of Part 26.

i. Sherbrooke Turf, Inc. V. Minnesota Department of Transportation

In this case, the Eighth Circuit Court of Appeals, which governs Missouri, held that Congress had a compelling interest in enacting the DBE program legislation, the regulations implementing the statute were constitutional, and the Minnesota Department of Transportation's (MnDOT) DBE Program was sufficiently narrowly tailored.

After holding that Part 26 is facially narrowly tailored, the court turned to MnDOT's implementation of the regulations.

MnDOT had relied upon a Study conducted by NERA and Colette Holt & Associates to set its DBE goal that applied the approach used for this Report for MoDOT. The Study first determined that DBEs comprise 11.4% of highway construction prime contractors, of which .06% were minority-owned and 10.8% were women-owned. Based upon the analysis of business formation statistics, the Study next estimated that the number of participating minority-owned firms would be 34% higher in a race-neutral market. Therefore, DBE availability figure was adjusted from 11.4% to 11.6%, which MnDOT adopted as its overall goal for fiscal year 2001. MnDOT predicted that it would meet 9% of its goal through race-conscious measures, based upon the drop from 10.25% DBE participation in 1998 to 2.25% participation in 1999, when its previous program was enjoined in *Sherbrooke I*. USDOT approved this goal.

The Eighth Circuit opined that while plaintiff:

> [P]resented evidence attacking the reliability of NERA's data, it failed to establish that better data was [sic] available or that Mn/DOT was otherwise unreasonable in undertaking this thorough analysis and in relying on its results. The precipitous drop in DBE participation in 1999, when no race-conscious methods were employed, supports Mn/DOT's conclusion that a substantial portion of its 2001 overall goal could not be met with race-neutral measures, and there is no evidence that Mn/DOT failed to adjust its use of race-conscious and race-neutral methods as the year progressed, as the DOT regulations require.[42]

ii. Northern Contracting, Inc. v. Illinois Department of Transportation

Likewise, the Seventh Circuit Court of Appeals in a highly detailed opinion relying in part on the MnDOT case affirmed the district court's trial verdict that the Illinois Department of

[42] *Id*.

Transportation's application of Part 26 was narrowly tailored based in large part upon the report and expert trial testimony of NERA and Colette Holt & Associates.[43] IDOT had a compelling interest in remedying discrimination in the market area for federally-funded highway contracts, and its DBE Plan was narrowly tailored to that interest and in conformance with the regulations.

To determine whether IDOT met its constitutional and regulatory burdens, the court reviewed the evidence of discrimination against minority and women construction firms in the Illinois area. IDOT had commissioned a NERA Availability Study to meet Part 26's requirements. Similar to this Study for the District, the IDOT Study included a custom census of the availability of DBEs in IDOT's market area, weighted by the location of IDOT's contractors and the types of goods and services IDOT procures. NERA estimated that DBEs comprised 22.77 percent of IDOT's available firms.[44] The IDOT Study next examined whether and to what extent there are disparities between the rates at which DBEs form businesses relative to similarly situated non-minority men, and the relative earnings of those businesses. If disparities are large and statistically significant, then the inference of discrimination can be made. Controlling for numerous variables such as the owner's age, education, and the like, the Study found that in a race- and gender-neutral market area the availability of DBEs would be approximately 20.8 percent higher, for an estimate of DBE availability "but for" discrimination of 27.51 percent.

In addition to the IDOT Study, the court also relied upon:

- A NERA Availability Study conducted for Metra, the Chicago-area commuter rail agency;
- Expert reports relied upon by an earlier trial court in holding that the City of Chicago had a compelling interest in its minority and women business program for construction contracts;[45]
- Expert reports and anecdotal testimony presented to the Chicago City Council in support of the City's revised M/WBE Procurement Program ordinance;
- Anecdotal evidence gathered at IDOT's public hearings on the DBE program;
- Data on DBE involvement in construction projects in markets without DBE goals;[46] and

[43] *Northern Contracting, Inc. v. Illinois Department of Transportation*, 473 F.3d 715 (7th Cir. 2007) ("*Northern Contracting III")*. Ms. Holt authored IDOT's DBE goal submission. Dr. Wainwright testified as IDOT's expert witness at the trial.

[44] This baseline figure of DBE availability is the "step 1" estimate U.S. DOT grant recipients must make pursuant to 49 C.F.R. §26.45.

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

[46] *Northern Contracting III*, 473 F.3d at 719 ("Also of note, IDOT examined the system utilized by the Illinois State Toll Highway Authority, which does not receive federal funding; though the Tollway has a DBE goal of 15 percent, this goal is completely voluntary -- the average DBE usage rate in 2002 and 2003 was 1.6 percent. On the basis of all of this data, IDOT adopted 22.77 percent as its Fiscal Year 2005 DBE goal.").

- IDOT's "zero goal" experiment, where DBEs received approximately 1.5 percent of the total value of the contracts. This was designed to test the results of "race-neutral" contracting policies, that is, the utilization of DBEs on contracts without goals.

Based upon this record, the Court of Appeals agreed with the trial court's judgment that the Program was narrowly tailored. IDOT's plan was based upon sufficient proof of discrimination such that race-neutral measures alone would be inadequate to assure that DBEs operate on a "level playing field" for government contracts.

> The stark disparity in DBE participation rates on goals and non-goals contracts, when combined with the statistical and anecdotal evidence of discrimination in the relevant marketplaces, indicates that IDOT's 2005 DBE goal represents a "plausible lower-bound estimate" of DBE participation in the absence of discrimination.… Plaintiff presented no persuasive evidence contravening the conclusions of IDOT's studies, or explaining the disparate usage of DBEs on goals and non-goals contracts.… IDOT's proffered evidence of discrimination against DBEs was not limited to alleged discrimination by prime contractors in the award of subcontracts. IDOT also presented evidence that discrimination in the bonding, insurance, and financing markets erected barriers to DBE formation and prosperity. Such discrimination inhibits the ability of DBEs to bid on prime contracts, thus allowing the discrimination to indirectly seep into the award of prime contracts, which are otherwise awarded on a race- and gender-neutral basis. This indirect discrimination is sufficient to establish a compelling governmental interest in a DBE program…. Having established the existence of such discrimination, a governmental entity has a compelling interest in assuring that public dollars, drawn from the tax contributions of all citizens, do not serve to finance the evil of private prejudice.[47]

2. U.S. Department of Defense's Small Disadvantaged Business Program

In 2008, the Federal Circuit Court of Appeals struck down the Department of Defense (DOD) program for Small Disadvantaged Businesses (SDBs) in *Rothe Development Corporation v. U.S. Department of Defense*.[48] The program set an overall annual goal of five percent for DOD contracting with SDBs and authorized various race-conscious measures to meet the goal.

In *Rothe VII*[49], the appeals court held that the DOD program violated strict scrutiny because Congress did not have a "strong basis in evidence" upon which to conclude that DOD was a passive participant in racial discrimination in relevant markets across the country. The six local

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[47] *Northern Contracting, Inc. v. Illinois Department of Transportation,* 2005 U.S. Dist. LEXIS 19868 (Sept. 8, 2005) ("*Northern Contracting II")*, at *82 (internal citations omitted); *see Croson*, 488 U.S. at 492.

[48] *Rothe Development Corporation v. U.S. Department of Defense*, 545 F.3d 1023 (*Fed. Cir.* 2008) ("*Rothe VII*"). We note that the jurisdiction of the Court of Appeals for the Federal Circuit is limited to the jurisdiction described in 28 U.S.C. §§ 1292 (c) and (d) and 1295. Pursuant to 28 U.S.C. § 1295(a)(2), jurisdiction in *Rothe* was based upon the plaintiff's claim under the Tucker Act, 28 U.S.C. § 1346(a)(2), which governs contract claims against the United States.

[49] *Id*. This opinion was the latest iteration of an 11-year-old challenge by a firm owned by a White female to the DOD's award of a contract to an Asian American–owned business despite the fact that plaintiff was the lowest bidder.

disparity studies upon which the DOD primarily relied for evidence of discrimination did not meet the compelling interest requirement, and its other statistical and anecdotal evidence did not rise to meet the heavy constitutional burden.

Of particular relevance to this report for MoDOT, the primary focus of the court's analysis was the six disparity studies. The court reaffirmed that such studies are relevant to the compelling interest analysis.[50] It then rejected *Rothe's* argument that data more than five years old must be discarded, stating "We decline to adopt such a *per se* rule here.… [The government] should be able to rely on the most recently available data so long as that data is reasonably up-to-date."[51]

In the absence of expert testimony about accepted econometric models of discrimination, the court was troubled by the failure of five of the studies to account for size differences and "qualifications" of the minority firms in the denominator of the disparity analysis, or as the court labeled it, "relative capacity."[52] The court was concerned about the studies' inclusion of possibly "unqualified" minority firms and the failure to account for whether a firm can perform more than one project at a time in two of the studies.[53] In the court's view, the combination of these perceived deficits rendered the studies insufficiently probative to meet Congress' burden.

The appellate court ignored the analyses in the cases upholding the USDOT Disadvantaged Business Enterprise Program and the City of Denver's local affirmative action contracting program where the fallacy of "capacity" was debunked, all of which were cited extensively by the district court. It relied instead on a report from the USCCR, which adopts the views of anti-affirmative action writers, including those of Rothe's consultant.[54]

However, the court was careful to limit the reach of its review to the facts of the case:

> To be clear, we do *not* hold that the defects in the availability and capacity analyses in these six disparity studies render the studies wholly unreliable for any purpose. Where the calculated disparity ratios are low enough, we do not foreclose the possibility that an inference of discrimination might still be permissible for *some* of the minority groups in *some* of the studied industries in *some* of the jurisdictions. And we recognize that a minority owned firm's capacity and qualifications may themselves be affected by discrimination. But we hold that the defects we have noted detract dramatically from the probative value of these six studies, and, in conjunction with their limited geographic coverage, render the studies insufficient to form the statistical core of the "strong basis in evidence" required to uphold the statute.[55]

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[50] *Id.* at 1037-1038.

[51] *Id*. at 1038-1039.

[52] *Id*. at 1042.

[53] *Id.*

[54] U.S. Commission on Civil Rights, *Disparity Studies as Evidence of Discrimination in Federal Contracting* (May 2006): 79.

[55] *Rothe*, 545 F.3d at 1045.

The Federal Circuit concluded its analysis of compelling interest by "stress[ing] that [its] holding is grounded in the particular terms of evidence offered by DOD and relied on by the district court in this case, and should not be construed as stating blanket rules, for example, about the reliability of disparity studies."[56]

Given the holding that Congress lacked a strong basis in evidence for the DOD program, the court did not rule on whether its provisions were narrowly tailored. The court did note, however, in its prior rulings that the program is flexible, limited in duration, and not unduly burdensome to third parties, and that the program has tended to narrow the reach of its remedies over time.[57]

C. Gender-Conscious Programs

Whether affirmative action procurement programs that benefit women are subject to the lesser constitutional standard of "intermediate scrutiny" has yet to be settled by the Supreme Court.[58] Most courts, including the Fifth Circuit,[59] have applied intermediate scrutiny to preferences for women and then upheld or struck down the female preference under that standard.[60] However, the Sixth Circuit has applied strict scrutiny to gender preferences.[61]

D. Burdens of Production and Proof

Unlike most legal challenges, the defendant has the initial burden of producing "strong evidence" in support of the program.[62] As noted by the Fifth Circuit, the plaintiff must then proffer evidence to rebut the government's case, and bears the ultimate burden of production and persuasion that the affirmative action program is unconstitutional.[63] "[W]hen the proponent of an affirmative action plan produces sufficient evidence to support an inference of discrimination, the plaintiff must rebut that inference in order to prevail."[64] A plaintiff "cannot meet its burden

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[56] *Id.* at 1049.

[57] *Id*. at 1049.

[58] *Cf. United States v. Virginia*, 518 U.S. 515 (1996) (applying standard of "exceedingly persuasive justification" in striking down Virginia Military Institute's males only admissions policy).

[59] *Scott*, 199 F.3d at 215 n.9.

[60] *See, e.g., Northern Contracting I*, at *44 (women's status as presumptively socially disadvantaged passes intermediate scrutiny); *Engineering Contractors Association of South Florida, Inc. v. Metropolitan Dade County*, 122 F.3rd 895, 907-910 (11th Cir. 1997) ("*Engineering Contractors II")*; *Concrete Works II*, 36 F.3d at 1519; *Contractors Association of Eastern Pennsylvania v. City of Philadelphia*, 6 F.3d 990, 1009 (3rd Cir. 1993) ("Philadelphia II"); *Coral Construction Co. v. King County*, 941 F.2d 910, 930-931 (9th Cir. 1991); *Associated Utility Contractors of Maryland v. Mayor and City Council of Baltimore, et al.*, 83 F.Supp 2d 613 (D. Md. 2000) ("*Baltimore I"*).

[61] *Brunet v. City of Columbus*, 1 F.3d 390, 404 (6th Cir. 1993).

[62] *Aiken v. City of Memphis*, 37 F.3d 1155, 1162 (6th Cir. 1994).

[63] *Adarand VII*, 228 F.3d at 1166; *Scott*, 199 F.3d at 219.

[64] *Engineering Contractors II*, 122 F3d at 916; *see also West Tennessee Chapter of Associated Builders and Contractors, Inc. v. City of Memphis*, 302 F.Supp.2d 860, 864 (W.D. Tenn. 2004).

of proof through conjecture and unsupported criticism of [the government's] evidence."[65]For example, in the challenge to the Minnesota and Nebraska DBE programs, "plaintiffs[66] presented evidence that the data was susceptible to multiple interpretations, but they failed to present affirmative evidence that no remedial action was necessary because minority-owned small businesses enjoy non-discriminatory access to and participation in highway contracts. Thus, they failed to meet their ultimate burden to prove that the DBE program is unconstitutional on this ground."[67]

There is no need of formal legislative findings,[68] nor "an ultimate judicial finding of discrimination before [a local government] can take affirmative steps to eradicate discrimination."[69] When the statistical information is sufficient to support the inference of discrimination, the plaintiff must prove that the statistics are flawed.[70] A plaintiff cannot rest upon general criticisms of studies or other evidence; it must carry the case that the government's proof is inadequate to meet strict scrutiny, rendering the legislation or governmental program illegal.[71]

E. Establishing a "Strong Basis in Evidence" for a Race-Conscious Contracting Program for State-Funded Contracts

The cases construing the DBE program are highly relevant to the question whether MoDOT should consider adopting a DBE program for its state-funded contracts. While binding strictly only upon the DBE Program, these cases provide important guidance to MoDOT about the types of evidence necessary to establish its compelling interest in adopting such a program and how to narrowly tailor a program. For example, the Fourth Circuit noted with approval that North Carolina's M/WBE program for state-funded contracts largely mirrored Part 26.[72]

Likewise, cases scrutinizing state and local program are relevant to MoDOT's evaluation of whether it needs to apply race- conscious remedies to its USDOT-assisted contracts to ensure that Congress' remedial purposes are accomplished. We therefore discuss cases involving local program and the standards and methodologies that have met strict scrutiny.

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65 *Concrete Works IV*, 321 F.3d at 989; *see also H.B. Rowe v. Tippett*, 615 F.3d 233 (4th Cir. 2010).

66 The plaintiffs in both the *Sherbrooke Turf* and *Gross Seed* cases were represented by the same counsel and attempted to rely upon the same consultant.

67 *Sherbrooke*, 345 F.3d at 970.

68 *Webster v. Fulton County, Georgia*, 51 F.Supp.2d 1354, 1364 (N.D. Ga. 1999).

69 *Concrete Works II*, 36 F.3d at 1522.

70 *Engineering Contractors II*, 122 F.3d at 916; *Coral Construction*, 941 F.2d at 921.

71 *Adarand VII*, 228 F.3d at 1166; *Engineering Contractors II*, 122 F.3d at 916; Contractors Association of Eastern Pennsylvania v. City of Philadelphia, 91 F.3d 586, 597 (3rd Cir. 1996) (*"Philadelphia III")*; *Concrete Works II*, 36 F.3d at 1522-1523; *Webster*, 51 F. Supp. 2d at 1364; *see also Wygant v. Jackson Board of Education*, 476 U.S. 267, 277-278 (1986).

72 *H.B. Rowe Co. v. Tippett*, 615 F.3d 233, 236 (4th Cir. 2010).

The *Denver* and *Chicago* decisions provide the most detailed analysis of the evidence necessary to establish that MoDOT would be a passive participant in a discriminatory marketplace in the absence of race-based remedies for its state-funded contracts. These cases upheld program based upon the types and quality of evidence, and the methodologies, applied in this Report for MoDOT.

1. *Concrete Works, Inc. v. City and County of Denver*

In 2003, the City and County of Denver's M/WBE Program was upheld using the "law and economics approach" to disparity studies (in addition to trial testimony of discrimination), the approach applied in this Report.[73] The defense relied primarily on expert reports and testimony derived from an economic model of business discrimination. The court of appeals recognized that the proper inquiry is not only whether disparities remain despite the operation of its affirmative action program (a statistical question to which many disparity studies, then and now, continue to limit themselves) but also whether disparities remain when remedial intervention is not present in the marketplace, as reflected by M/WBE participation on contracts without affirmative action goals, in the public sector, the private sector, or both.

The law and economics model applies accepted social science principles of data collection, statistical analyses and anecdotal inquiries within rigorous frameworks to the questions relevant to whether the agency has a strong basis in evidence of the continuing effects of discrimination, and if so, what responses are supportable, even where remedial efforts have been undertaken: Are there disparities in the overall market outside the agency's projects that support the inference of the market failure of discrimination, such that the agency needs to continue to take action to ensure that it does not passively participate in such discrimination? What additional market factors outside the agency's direct control affect the entrepreneurial opportunities of M/WBEs that perpetuate discrimination and disparate impacts?

The law and economics model's analysis of disparities in the rates at which M/WBEs in the government's markets form businesses compared to similar non-M/WBEs, their earnings from such businesses, and their access to capital markets has been held to be highly relevant to the determination whether the market functions properly for all firms regardless of the race or gender of their ownership. These analyses contributed to the successful defense of local race- and gender-conscious construction programs,[74] as well as the DBE program for federally-assisted transportation contracts.[75] As explained by the Tenth Circuit, the evidence

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

[74] *Builders Association of Greater Chicago v. City of Chicago*, 298 F.Supp.2d 725 (N.D. Ill. 2003) (holding that City of Chicago's M/WBE program for local construction contracts met compelling interest using this framework).

[75] *Western States*, 407 F.3d at 992-93; *Sherbrooke Turf*, 345 F.3d at 970 (in the face of evidence of "barriers to the formation of minority-owned construction businesses, and of barriers to entry… [plaintiffs] failed to present affirmative evidence that no remedial action was necessary because minority-owned small businesses enjoy non-discriminatory access to and participation in highway contracts"); *Northern Contracting I* at *113, 122.

> demonstrates the existence of two kinds of discriminatory barriers to minority subcontracting enterprises, both of which show a strong link between racial disparities in the federal government's disbursements of public funds for construction contracts and the channeling of those funds due to private discrimination. The first discriminatory barriers are to the formation of qualified minority subcontracting enterprises due to private discrimination, precluding from the outset competition for public construction contracts by minority enterprises. The second discriminatory barriers are to fair competition between minority and non-minority subcontracting enterprises, again due to private discrimination, precluding existing minority firms from effectively competing for public construction contracts. The government also presents further evidence in the form of local disparity studies of minority subcontracting and studies of local subcontracting markets after the removal of affirmative action programs.… The government's evidence is particularly striking in the area of the race-based denial of access to capital, without which the formation of minority subcontracting enterprises is stymied.[76]

Denver adopted an ordinance in 1990 that provided for annual goals of 16 percent for MBEs and 12 percent for WBEs in construction contracts, and 10 percent for both MBEs and WBEs in professional design and construction services contracts. Bidders were to meet contract specific goals or make good faith efforts to do so. To comply with *Croson*, the City commissioned a study to assess the propriety of the Program. The 1990 Study found large disparities between the availability and utilization of M/WBEs on City projects without goals. It likewise found large disparities on private sector projects without goals. Interviews and testimony revealed continuing efforts by white male contractors to circumvent the goals. A 1991 study of goods, services and remodeling industries also found large disparities for City contracts not subject to goals.

When the Tenth Circuit reversed and remanded for trial in *Concrete Works II*[77], the City commissioned another study. The 1995 Study used U.S. Census Bureau data to determine MBE and WBE availability and utilization in the construction and design industries in the Denver Metropolitan Statistical Area (MSA). It calculated separate disparity indices for firms with and without employees. Census data were also used to examine average revenues per employee and rates of self-employment. Disparities in self-employment rates persisted even after holding education and length of work experience constant. A telephone survey to determine the availability and utilization of M/WBEs in the Denver MSA showed large disparities in the construction and professional design industries. The 1995 Study included discussion of a 1993 Study for the Denver Housing Authority which found disparities for M/WBEs in some areas in

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[76] *Adarand Constructors, Inc. v. Slater*, 228 F.3d 1147, 1168-69 (10th Cir. 2000) ("*Adarand VII*"), *cert. granted then dismissed as improvidently granted*, 532 U.S. 941, 534 U.S. 103 (2001).

[77] Concrete Works of Colorado, Inc., a construction firm owned by a white male, sued the City in 1992, alleging that it had been denied three contracts for failure to meet the goals or to make good faith efforts and seeking injunctive relief and money damages. The district court granted the City's motion for summary judgment. *Concrete Works of Colorado, Inc. v. City & County of Denver*, 823 F.Supp. 821 (D. Colo. 1993) ("*Concrete Works I"*). The Tenth Circuit reversed, holding that genuine issues of material fact precluded summary judgment. *Concrete Works of Colorado, Inc.* v. *City & County of Denver*, 36 F.3d 1513 (10th Cir. 1994) ("*Concrete Works II).* The district court, after a bench trial, held the ordinance to be unconstitutional. *Concrete Works of Colorado, Inc. v. City & County of Denver*, 86 F.Supp. 2d 1042 (D. Colo. 2000) ("*Concrete Works III*"). Denver appealed.

some years, including those when it implemented an affirmative action program, and a 1992 Study for the Regional Transportation District that found large disparities for both prime and subcontracting in the Denver market area. Based upon this evidence, the City enacted the 1996 Ordinance.

In 1997, Denver commissioned another study of discrimination in construction projects of the type undertaken by the City. The court found this Study used a "more sophisticated" method[78] to calculate availability by: (1) specifically determining the City's geographic and procurement market area; (2) using Dun & Bradstreet data to obtain the total number of available firms and numerous directories to determine the number of M/WBEs; (3) conducting surveys to adjust for possible misclassification of the race and gender of firms; and (4) presenting a final result of weighted averages of availability for each racial group and women for both prime and subcontracts.

The 1997 Study then compared M/WBE availability and utilization in the Colorado construction industry. It also examined 1987 Census data from the Survey of Minority-Owned Business and the Survey of Women-Owned Businesses, the most current then available. All comparisons yielded large and statistically significant disparities. The 1997 Study also found that the potential availability of M/WBEs, as measured by the rates at which similarly situated white males form businesses, was significantly greater than their actual availability. The Study next examined whether minorities and women in the construction industry earned less than white males with similar characteristics. Large and statistically significant disparities were found for all groups except Asian-Americans. A mail survey was conducted to obtain anecdotal evidence of the experiences of MBEs and WBEs and non-M/WBEs in the construction industry. Again, with the exception of Asian-Americans, minorities and women with similar characteristics experienced much greater difficulties than did their white male counterparts. A follow up telephone survey indicated that the disparities were even greater than first indicated.

Based upon the 1997 Study, and additional surveys and hearings, the City enacted the 1998 Ordinance. It reduced the annual goals for both MBEs and WBEs in construction contracts to 10 percent and prohibited M/WBE prime contractors from counting self-performed work towards the goals.

Concrete Works' challenge finally came to trial in 1999. In addition to the statistical evidence in prior studies and expert reports prepared for the litigation, Denver introduced evidence of its contracting activities dating back to the early 1970s. This consisted of reports of federal investigations into the utilization and experiences of local MBEs and of the City's early affirmative action efforts. M/WBE participation dramatically increased when the City adopted its first MBE ordinance in 1984. The City also introduced additional, comprehensive anecdotal evidence. M/WBEs testified that they experienced difficulties in prequalifying for private sector jobs; their low bids were rejected; they were paid more slowly than non-M/WBEs; they were charged more for materials than non-M/WBEs; they were often required to do additional work not required of white males; and there were barriers to joining trade unions and associations. There was extensive testimony detailing the difficulties M/WBEs suffered in obtaining lines of

[78] *Concrete Works IV*, 321 F.3d at 966.

credit. The "most poignant" testimony involved blatant harassment suffered at work sites, including physical assaults.

The trial court found for the plaintiff.

The Tenth Circuit reversed and directed the entry of judgment for Denver. The district court's legal framework "misstate[d] controlling precedent and Denver's burden at trial."[79]

First, the government need not prove that the statistical inferences of discrimination are "correct." Strong evidence supporting the government's determination that remedial action is necessary need not be "irrefutable or definitive" proof of discrimination. Statistical evidence creating inferences of discriminatory motivations is sufficient and therefore evidence of market area discrimination can be used to meet strict scrutiny.[80] It is the plaintiff who must prove by a preponderance of the evidence that such proof does not support those inferences.

Croson does not require that each group included in the ordinance suffer equally from discrimination. In contrast to Richmond, Denver introduced evidence of bias against each group; that is sufficient.[81]

Nor must Denver demonstrate that the "ordinances will *change* discriminatory practices and policies" in the local market area; such a test would be "illogical" because firms could defeat the remedial efforts simply by refusing to cease discriminating.[82]

Next, a municipality need not prove that:

> [P]rivate firms directly engaged in any discrimination in which Denver passively participates do so intentionally, with the purpose of disadvantaging minorities and women.… Denver's only burden was to introduce evidence which raised the inference of discriminatory exclusion in the local construction industry and link its spending to that discrimination.… Denver was under no burden to identify any specific practice or policy that resulted in discrimination. Neither was Denver required to demonstrate that the purpose of any such practice or policy was to disadvantage women or minorities. To impose such a burden on a municipality would be tantamount to requiring proof of discrimination and would eviscerate any reliance the municipality could place on statistical studies and anecdotal evidence.[83]

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[79] *Id.* at 970.

[80] *Id*. at 975.

[81] *Id*. at 976.

[82] *Id*. at 973 (emphasis in the original).

[83] *Id*. at 971.

Similarly, the trial court was wrong to reject the statistical evidence because such evidence cannot identify the individuals responsible for the discrimination.[84]

Contrary to the district court's conclusion, the burden of compliance need not be placed only upon those firms directly responsible for the discrimination. The proper focus is whether the burden on third parties is "too intrusive" or "unacceptable."[85]

Croson's admonition that "mere societal" discrimination is not enough to meet strict scrutiny[86] does not apply where the government presents evidence of discrimination in the industry targeted by the program. "If such evidence is presented, it is immaterial for constitutional purposes whether the industry discrimination springs from widespread discriminatory attitudes shared by society or is the product of policies, practices, and attitudes unique to the industry.… The genesis of the identified discrimination is irrelevant." The trial court was wrong to require Denver to "show the existence of specific discriminatory policies and that those policies were more than a reflection of societal discrimination."[87]

The Tenth Circuit further rejected the notion that a municipality must prove that it is itself guilty of discrimination to meet its burden. Denver can show its compelling interest by "evidence of private discrimination in the local construction industry coupled with evidence that it has become a passive participant in that discrimination…[by] linking its spending practices to the private discrimination."[88] Denver further linked its award of public dollars to discriminatory conduct through the testimony of M/WBEs that identified general contractors who used them on City projects with M/WBE goals but refused to use them on private projects without goals.

The court then turned to the evidence of discrimination against M/WBEs in the market for commercial credit. The lending discrimination studies and business formation studies are relevant and probative because they show a strong link between the disbursement of public funds and the channeling of those funds due to private discrimination. "Evidence that private discrimination results in barriers to business formation is relevant because it demonstrates that M/WBEs are precluded *at the outset* from competing for public construction contracts. Evidence of barriers to fair competition is also relevant because it again demonstrates that *existing* M/WBEs are precluded from competing for public contracts."[89] Plaintiff failed to present evidence to rebut the lending discrimination data, instead resting on its belief that such evidence is irrelevant. Contrary to the trial court's ruling, the business formation studies were not flawed because they did not control for "quality of education," "culture" and "religion." Plaintiff failed

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[84] *Id*. at 973.

[85] *Id.*

[86] *See Croson*, 488 U.S. at 497.

[87] *Concrete Works IV*, 321 F.3d at 976.

[88] *Id*. at 977.

[89] *Id*.

not only to define such vague terms but also to conduct its own study controlling for these factors or to produce expert testimony that to do so would eliminate the disparities.[90]

The district court also erred in rejecting the disparity studies because they did not control for firm size, area of specialization, and whether the firm had bid on City projects. The circuit court agreed with Denver's experts that, while it may be true that M/WBEs are smaller in general than white male firms, most construction firms are small and can expand and contract to meet their bidding opportunities. Importantly, Denver established that size and experience are not race- and gender-neutral variables: "M/WBE construction firms are generally smaller and less experienced *because* of discrimination."[91] Further, plaintiff failed to conduct any study showing that the disparities disappear when such variables are held constant. Likewise, it presented no evidence that controlling for firm specialization explained the disparities. "Additionally, we do not read *Croson* to require disparity studies that measure whether construction firms are able to perform a *particular contract*."[92]

That M/WBEs were overutilized on City projects with goals goes only to the weight of the evidence because it reflects the effects of a remedial program. Denver presented evidence that goals and non-goals projects were similar in purpose and scope and that the same pool of contractors worked on both types. "Particularly persuasive" was evidence that M/WBE participation declined significantly when the program was amended in 1989. The "utilization of M/WBEs on City projects has been affected by the affirmative action programs that have been in place in one form or another since 1977. Thus, the non-goals data is the better indicator of discrimination in public contracting" and supports the position that discrimination existed before the enactment of the ordinances.[93]

There is no requirement that anecdotal testimony be verified. "Denver was not required to present corroborating evidence and CWC was free to present its own witnesses to either refute the incidents described by Denver's witnesses or to relate their own perceptions on discrimination in the Denver construction industry."[94] This "failure" of the legislative body to somehow verify testimony had been a favorite shibboleth of plaintiffs in other cases.[95]

Finally, as for the narrow tailoring requirement of strict scrutiny, the court held that because plaintiff had waived its claim that the ordinances were not narrowly tailored at an earlier stage in this litigation, the district court's holding in *Concrete Works I* that the ordinances satisfy the other prong of strict scrutiny was affirmed.

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90 *Id*. at 979.

91 *Id*. at 983 (emphasis in the original).

92 *Id*. at 987-88 (emphasis in the original).

93 *Id*.

94 *Id*. at 989.

95 *See, e.g., Builders Association of Greater Chicago v. County of Cook*, 123 F.Supp.2d 1087 (N.D. Ill. 2000). ("*BAGC v. Cook*").

2. *Builders Association of Greater Chicago v. City of Chicago*

The City of Chicago employed economic analyses similar to those upheld in *Concrete Works* in its successful defense of its compelling interest in remedying discrimination against Black-, Hispanic- and women-owned construction firms.[96] However, the program as implemented in 2003, which had not been reviewed since its inception in 1990, was not sufficiently narrowly tailored to meet strict constitutional scrutiny. The court stayed the final order against operation of the Program for construction contracts for six months, to permit the City to review the ruling and adopt a new program.[97]

The opinion first reviews the historical proof of discrimination against minorities, particularly Blacks, in the Chicago construction industry. While not legally mandated, Chicago was a segregated city and "City government was implicated in that history." After the election of Harold Washington as the first Black mayor, several reports focused on the exclusion of minorities and women from City procurement opportunities as well as pervasive employment discrimination by City departments. Mayor Washington imposed an executive order mandating that at least 25 percent of City contracts be awarded to minority-owned businesses and 5 percent to women-owned businesses.

In response to *Croson*, Chicago commissioned a Blue Ribbon Panel to recommend an effective program that would survive constitutional challenge. Based upon the Panel's Report, and 18 days of hearings with over 40 witnesses and 170 exhibits, Chicago adopted a new program in 1990 that retained the 25 percent MBE and 5 percent WBE goals; added a Target Market, wherein contracts were limited to bidding only by M/WBEs; and provided that larger construction contracts could have higher goals.

The court held that the playing field for minorities and women in the Chicago area construction industry in 2003 was still not level. The City presented a great amount of statistical evidence. Despite the plaintiff's attacks about over-aggregation and disaggregation of data and which firms were included in the analyses, "a reasonably clear picture of the Chicago construction industry emerged.… While the size of the disparities was disputed, it is evident that minority firms, even after adjustment for size, earn less and work less, and have less sales compared to other businesses."

That does not mean, however, that speculation about the greater number of M/WBEs that did exist in the absence of discrimination is sufficient to support a current race-based remedy. At the same time, that there was perhaps overutilization of M/WBEs on City projects was not sufficient to abandon remedial efforts, as that result is "skewed by the program itself."

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[96] *Builders Association of Greater Chicago v. City of Chicago*, 298 F. Supp.2d 725 (N.D. Ill. 2003), *aff'd*, 256 F.3d 642 (7th Cir. 2001) ("*BAGC v. Chicago*").

[97] A similar suit was filed against Cook County's Program, which was declared unconstitutional in 2000. *Builders Association of Greater Chicago v. County of Cook*, 123 F.Supp.2d 1087 (N.D. Ill. 2000); *aff'd*, 256 F.3d 642 (7th Cir. 2001) ("*BAGC v. Cook*"). In contrast to the City of Chicago, Cook County presented very little statistical evidence and none directed towards establishing M/WBE availability, utilization, economy-wide evidence of disparities, or other proof beyond anecdotal testimony. It also provided no evidence related to narrow tailoring.

Further, while it is somewhat unclear whether disparities for Asians and Hispanics result from discrimination or the language and cultural barriers common to immigrants, there were two areas "where societal explanations do not suffice." The first is the market failure of prime contractors to solicit M/WBEs for non-goals work. Chicago's evidence was consistent with that presented of the effects of the discontinuance or absence of race-conscious programs throughout the country. Not only did the plaintiff fail to present credible alternative explanations for this universal phenomenon but also this result "follows as a matter of economics.… [P]rime contractors, without any discriminatory intent or bias, are still likely to seek out the subcontractors with whom they have had a long and successful relationship.… [T]he vestiges of past discrimination linger on to skew the marketplace and adversely impact M/WBEs disproportionately as more recent entrants to the industry.… [T]he City has a compelling interest in preventing its tax dollars from perpetuating a market so flawed by past discrimination that it restricts existing M/WBEs from unfettered competition in that market."[98]

The judge also relied upon the City's evidence of discrimination against minorities in the market for commercial loans. Even the plaintiff's experts were forced to concede that, at least as to Blacks, credit availability appeared to be a problem. Plaintiff's expert also identified discrimination against white females in one data set.

After finding that Chicago met the compelling interest prong, the court held that the City's program was not narrowly tailored to address these market distortions and barriers because:

- There was no meaningful individualized review of M/WBEs' eligibility;
- There was no sunset date for the ordinance or any means to determine a date;
- The graduation threshold of $27.5M was very high and few firms have graduated;
- There was no personal net worth limit;
- The percentages operated as quotas unrelated to the number of available firms;
- Waivers were rarely granted;
- No efforts were made to impact private sector utilization of M/WBEs; and
- Race-neutral measures had not been promoted, such as linked deposit programs, quick pay, contract downsizing, restricting prime contractors' self-performance, reducing bonds and insurance requirements, local bid preferences for subcontractors and technical assistance.

Chicago is the only city ever to have received a stay to permit revision of its program to meet narrow tailoring. It amended its ordinance to meet the court's 2004 deadline and continues to implement M/WBE subcontracting goals without interruption.

[98] *BAGC v. Chicago*, 298 F. Supp.2d at 738.

3. MoDOT's Compelling Interest in Remedying Identified Discrimination in Its Contracting Market Area

As just described, much of the discussion in the case law has revolved around what type of evidence is sufficiently "strong" to establish the continuing existence and effects of economic discrimination against minorities resulting in diminished opportunities to do business with the government. Proof of the disparate impacts of economic factors on M/WBEs and the disparate treatment of such firms by actors critical to their success is necessary to meet strict scrutiny. Discrimination must be shown using statistics and economic models to examine the effects of systems or markets on different groups, as well as by evidence of personal experiences with discriminatory conduct, policies or systems.[99] Specific evidence of discrimination or its absence may be direct or circumstantial, and should include economic factors and opportunities in the private sector affecting the success of M/WBEs.[100]

The following are factor MoDOT must consider to determine whether it has a strong basis in evidence to adopt a DBE or M/WBE program for its state-funded contracts.

a. Definition of MoDOT's Construction Market Area

Croson counsels that a state or local government may only remedy discrimination within its own contracting market area. Richmond was specifically faulted for including minority contractors from across the country in its program.[101] This Study empirically establishes the geographic and product dimensions of MoDOT's construction contracting and procurement market area in order to ensure that the evidence is narrowly tailored.[102]

b. Examining Disparities between M/WBE Availability and Utilization

Next, statistical examination of the availability of minorities and women to participate in MoDOT's projects and the history of utilizing D/M/WBEs as prime contractors and as subcontractors by the Department and its prime contractors is required as part of this Study.[103] Simple disparities between an area's overall minority population and its prime contractors' utilization of minority- and women-owned firms are not enough.[104] The primary inquiry is whether there are statistically significant disparities between the availability of M/WBEs and the utilization of such firms.

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[99] *Adarand VII*, 228 F.3d at 1166 ("statistical and anecdotal evidence are appropriate").

[100] *Id*.

[101] *Croson*, 488 U.S. at 508.

[102] *Concrete Works II*, 36 F.3d at 1520 (to confine data to strict geographic boundaries would ignore "economic reality").

[103] An availability study is a subset of a disparity study, in that statistical evidence of disparities between the difference of availability of M/WBEs and their utilization as prime contractors and subcontractors is not included.

[104] *Croson*, 488 U.S. at 501-02; *Drabik II*, 214 F.3d at 736.

> Where there is a significant statistical disparity between the number of qualified minority contractors willing and able to perform a particular service and the number of such contractors actually engaged by the locality or the locality's prime contractors, an inference of discriminatory exclusion could arise.… In the extreme case, some form of narrowly tailored racial preference might be necessary to break down patterns of deliberate exclusion.[105]

This is known as the "disparity ratio" or "disparity index." A disparity ratio measures the participation of a group in the agency's contracting dollars by dividing that group's contract dollar percentage by the related bidder or awardee percentage, and multiplying that result by 100%. Courts have looked to disparity indices in determining whether *Croson's* evidentiary foundation is satisfied.[106] An index less than 100 percent indicates that a given group is being utilized less than would be expected based on its availability, and courts have adopted the Equal Employment Opportunity Commission's "80 percent" rule, that is, that a ratio less than 80 percent presents a *prima facie* case of discrimination.[107]

Calculations of the availability of minority- and women-owned firms are therefore the crucial foundation for examining the government's compelling interest in pursuing affirmative action in contracting.[108] In addition to creating the disparity ratio, correct measures of availability are necessary to determine whether discriminatory barriers depress the formation of firms by minorities and women, and the success of such firms in doing business in both the private and public sectors.[109]

MoDOT need not prove that the statistical inferences of discrimination are "correct." In upholding Denver's M/WBE Program, the Tenth Circuit noted that strong evidence supporting Denver's determination that remedial action was necessary need not have been based upon "irrefutable or definitive" proof of discrimination. Statistical evidence creating inferences of discriminatory motivations was sufficient and therefore evidence of market area discrimination was properly used to meet strict scrutiny. It is the plaintiff who must prove by a preponderance of the evidence that such proof does not support those inferences.[110]

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[105] *Croson*, 488 U.S. at 509*; see Webster*, 51 F.Supp.2d at 1363, 1375.

[106] *Scott*, 199 F.3d at 218; *see also Concrete Works II*, 36 F.3d at 1526-1527; *O'Donnell*, 963 F.2d at 426; *Cone Corp. v. Hillsborough County*, 908 F.2d 908, 916 (11th Cir. 1990), *cert. denied*, 498 U.S. 983 (1990).

[107] *Engineering Contractors II*, 122 F.3d at 914; *see* 29 C.F.R. § 1607.4(D) ("A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact.").

[108] *Philadelphia III*, 91 F.3d at 603; *Webster*, 51 F.Supp.2d at 1372 (no explanation for the source nor any indicia of the accuracy or reliability of availability figures).

[109] *Webster*, 51 F.Supp.2d at 1372; *see Northern Contracting II*, at *70 (IDOT's custom census approach was supportable because "discrimination in the credit and bonding markets may artificially reduce the number of M/WBEs").

[110] *Concrete Works IV*, 321 F.3d at 971.

It is also the case that if M/WBEs are "overutilized" because of the entity's program, that does not end the inquiry. Where the government has been implementing affirmative action remedies, M/WBE utilization reflects those efforts; it does not signal the end of discrimination. For example, the Tenth Circuit held that Denver's overutilization of M/WBEs on City projects with goals went only to the weight of the evidence because it reflected the effects of a remedial program. Denver presented evidence that goals and non-goals projects were similar in purpose and scope and that the same pool of contractors worked on both types. "Particularly persuasive" was evidence that M/WBE participation declined significantly when the program was amended in 1989. "The utilization of M/WBEs on City projects has been affected by the affirmative action programs that have been in place in one form or another since 1977. Thus, the non-goals data is [sic] the better indicator of discrimination in public contracting" and supports the position that discrimination was present before the enactment of the ordinances.[111]

c. Unremediated Markets Data

It is also useful to measure M/WBE participation in the absence of affirmative action goals, if such evidence is available. Evidence of race and gender discrimination in relevant "unremediated"[112] markets provides an important indicator of what level of actual M/WBE participation can be expected in the absence of government mandated affirmative efforts to contract with M/WBEs.[113] As the Eleventh Circuit has acknowledged, "the program at issue may itself be masking discrimination that might otherwise be occurring in the relevant market."[114] The courts are clear that the government has a compelling interest in not financing the evil of private prejudice with public dollars.[115] If M/WBE utilization is below availability in unremediated markets, an inference of discrimination may be supportable. The virtual disappearance of M/WBE participation after programs have been enjoined or abandoned strongly indicates substantial barriers to minority subcontractors, "raising the specter of racial discrimination."[116] Unremediated markets analysis addresses whether the government has been and continues to be a "passive participant" in such discrimination, in the absence of affirmative action remedies.[117] The results of non-goals contracts can help to demonstrate that, but for the interposition of remedial affirmative action measures, discrimination would lead to disparities in government contracting. The "dramatic decline in the use of M/WBEs when an affirmative action program is terminated, and the paucity of use of such firms when no affirmative action program was ever initiated," has been held to be proof of the government's compelling interest in

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[111] *Id*. at 987-988.

[112] "Unremediated market" means "markets that do not have race- or gender-conscious subcontracting goals in place to remedy discrimination." *Northern Contracting II*, at *36.

[113] *See, e.g., Western States*, 407 F.3d at 992 (Congress properly considered evidence of the "significant drop in racial minorities' participation in the construction industry" after state and local governments removed affirmative action provisions).

[114] *Engineering Contractors II*, 122 F.3d at 912.

[115] *See, e.g., Drabik II*, 214 F.3d at 734-735.

[116] *Adarand VII*, 228 F.3d at 1174.

[117] *See Philadelphia III*, 91 F.3d at 599-601.

employing race- and gender-conscious measures.[118] Evidence of unremediated markets "sharpens the picture of local market conditions for MBEs and WBEs."[119]

d. Anecdotal Evidence

Anecdotal evidence of experiences with discrimination in contracting opportunities is relevant because it goes to the question of whether observed statistical disparities are due to discrimination and not to some other non-discriminatory cause or causes.[120] As observed by the Supreme Court, anecdotal evidence presented in a pattern or practice discrimination case can be persuasive because it "brought the cold [statistics] convincingly to life."[121] Testimony about discrimination by prime contractors, unions, bonding companies, suppliers, and lenders has been found relevant regarding barriers both to minority firms' business formation and to their success on governmental projects.[122] While anecdotal evidence is insufficient standing alone, "[p]ersonal accounts of actual discrimination or the effects of discriminatory practices may, however, vividly complement empirical evidence. Moreover, anecdotal evidence of a [government's] institutional practices that exacerbate discriminatory market conditions are [sic] often particularly probative."[123] "[W]e do not set out a categorical rule that every case must rise or fall entirely on the sufficiency of the numbers. To the contrary, anecdotal evidence might make the pivotal difference in some cases; indeed, in an exceptional case, we do not rule out the possibility that evidence not reinforced by statistical evidence, as such, will be enough."[124]

Most recently, the Fourth Circuit found anecdotal evidence from a telephone survey, personal interviews and focus groups to be relevant and probative of whether North Carolina met its burden. A telephone survey conducted by the consultant resulted in strong evidence of discriminatory treatment of both African American and Native American firms including: discriminatory "good old boy networks;" double standards applied to both qualifications and performance; changes in bids when not required to use minority firms; and dropping minority subcontractors after winning contracts. Focus group and interview results confirmed these findings. As the court summarized:

> The surveys in the 2004 study exposed an informal, racially exclusive network that systemically disadvantaged minority subcontractors. The State could conclude with good reason that such networks exert a chronic and pernicious influence on the marketplace that calls for remedial action.… [P]rime contractors have higher standards for minority subcontractors, view minority subcontractors as being less competent than nonminority businesses, change their bidding practices when not required to hire minority

[118] *BAGC v. Chicago*, 298 F. Supp.2d at 737; *see also Concrete Works IV*, 321 F.3d at 987-988.

[119] *Concrete Works II*, 36 F.3d at 1529.

[120] *Webster*, 51 F.Supp.2d at 1363, 1379.

[121] *International Brotherhood of Teamsters v. United States*, 431 U.S. 324, 399 (1977).

[122] *Adarand VII*, 228 F.3d at 1168-1172.

[123] *Concrete Works II*, 36 F.3d at 1520, 1530.

[124] *Engineering Contractors II*, 122 F.3d at 926.

> subcontractors, and drop minority subcontractors after winning contracts. Together, these responses suggest strongly that the underutilization of African American and Native American subcontractors is more than a mere byproduct of misguided yet color-blind cronyism. [125]

The *Rowe* court specifically rejected the notion that anecdotal testimony must be "verified" or corroborated, as befits the role of evidence in legislative decision-making as opposed to judicial proceedings. "Plaintiff offers no rationale as to why a fact finder could not rely on the State's 'unverified' anecdotal data. Indeed, a fact finder could very well conclude that anecdotal evidence need not– indeed cannot– be verified because it 'is nothing more than a witness' narrative of an incident told from the witness' perspective and including the witness' perception.'[126] Likewise, the Tenth Circuit held that "Denver was not required to present corroborating evidence and [plaintiff] was free to present its own witnesses to either refute the incidents described by Denver's witnesses or to relate their own perceptions on discrimination in the Denver construction industry."[127]

F. Narrowly Tailoring a Race-Conscious State Program

Even if MoDOT has a strong basis in evidence to believe that race-based measures are needed to remedy identified discrimination, the program must be narrowly tailored to that evidence. The courts have repeatedly examined the following factors in determining whether race-based remedies are narrowly tailored to achieve their purpose:

- The efficacy of race-neutral remedies at overcoming identified discrimination;
- The relationship of numerical benchmarks for government spending to the availability of minority- and women-owned firms and to subcontracting goal setting procedures;
- The flexibility of the program requirements, including the provision for good faith efforts to meet goals and contract specific goal setting procedures;
- The congruence between the remedies adopted and the beneficiaries of those remedies;
- Any adverse impact of the relief on third parties; and
- The duration of the program.[128]

The Fourth Circuit Court of Appeals has described the narrow tailoring requirements as follows:

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[125] *Rowe*, 615 F.3d at 251.

[126] *Id.* at 249.

[127] *Concrete Works IV*, 321 F.3d at 989.

[128] *United States v. Paradise*, 480 U.S. 149, 171 (1987); *see also Sherbrooke*, 345 F.3d at 971-972; *Drabik II*, 214 F.3d at 737-738.

> The preferences may remain in effect only so long as necessary to remedy the discrimination at which they are aimed; they may not take on a life of their own. The numerical goals must be waivable if qualified minority applications are scarce, and such goals must bear a reasonable relation to minority percentages in the relevant qualified labor pool, not in the population as a whole. Finally, the preferences may not supplant race-neutral alternatives for remedying the same discrimination.[129]

It is imperative that remedies not operate as fixed quotas.[130] Firms that fail to meet the subcontracting goals but make good faith efforts to do so must be eligible for contract awards.[131] Further, firms that meet the goals cannot be favored over those who made good faith efforts. In *Croson*, the Court refers approvingly to the contract-by-contract waivers used in the USDOT's DBE program.[132] This feature has been central to the holding that the DBE program meets the narrow tailoring requirement.[133]

The over- or under-inclusiveness of those persons to be included in the program is an additional consideration, and goes to whether the remedies truly target the evil identified.[134] The "fit" between the problem and the remedy manifests in three ways: which groups to include, how to define those groups, and which persons will be eligible to be included within those groups.

First, the determination of presumptive social disadvantage of each racial and ethnic group must be based upon the evidence.[135] In striking down the District of Columbia's MBE program, the court noted that there were no "findings with respect to discrimination in the construction industry against Hispanic Americans, Asian Americans, Pacific Islander Americans, or Native Americans, all of whom are included in the Act's definition of 'minority.'"[136] The "random inclusion" of groups that may never have experienced discrimination in the entity's marketplace may indicate impermissible "racial politics."[137] Similarly, the Seventh Circuit, in striking down Cook County's program, remarked that a "state or local government that has discriminated just

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[129] *Maryland Troopers Association, Inc. v. Evans*, 993 F.2d 1072, 1076-77 (4th Cir. 1993) (citations omitted).

[130] *See* 49 C.F.R 26.43 (quotas are not permitted and set-aside contracts may be used only in limited and extreme circumstances "when no other method could be reasonably expected to redress egregious instances of discrimination").

[131] *See, e.g., BAGC v. Chicago*, 298 F. Supp.2d at 740 ("Waivers are rarely or never granted…The City program is a rigid numerical quota…formulistic percentages cannot survive strict scrutiny.").

[132] *Croson*, 488 U.S. at 508; *see also Adarand Constructors, Inc. v. Slater*, 228 F.3d 1147, 1181 (10th Cir. 2000), *cert. granted then dismissed as improvidently granted*, 532 U.S. 941, 534 U.S. 103 (2001) ("*Adarand VII"*).

[133] *See, e.g., Sherbrooke Turf, Inc. v. Minnesota Department of Transportation*, 345 F.3d 964, 972 (8th Cir. 2003), *cert. denied*, 541 U.S. 1041 (2004).

[134] *Association for Fairness in Business, Inc. v. New Jersey*, 82 F.Supp.2d 353, 360 (D.N.J. 2000).

[135] *Contractors Association of Eastern Pennsylvania v. City of Philadelphia*, 6 F.3d 990, 1007 (3rd Cir. 1993) ("*Philadelphia II"*) (strict scrutiny requires data for each minority group; data was insufficient to include Hispanics, Asians or Pacific Islanders or Native Americans); *cf. Northeastern Florida Chapter of the AGC v. Jacksonville*, 508 U.S. 656, 660-661 (1993) (new ordinance narrowed to Blacks and women).

[136] *O'Donnell, v. District of Columbia*, 963 F.2d at 427.

[137] *Webster*, 51 F.Supp.2d at 1380–1381.

against blacks may not by way of remedy discriminate in favor of blacks and Asian-Americans and women."[138]

However, at least one court has held that some quantum of evidence of discrimination for each group is sufficient. The Tenth Circuit held that *Croson* does not require that each group included in the ordinance suffer equally from discrimination.[139]

Next, the level of specificity at which to define beneficiaries must be addressed. Approaches range from a single goal like the DBE Program that includes all racial and ethnic minorities and White women,[140] to separate goals for each minority group and women.[141] The State of Ohio's Program was specifically faulted for lumping together all "minorities," with the court questioning the legitimacy of forcing Black contractors to share relief with recent Asian immigrants.[142]

Third, program remedies should be limited to those firms that have a nexus to the harms sought to be ameliorated. Some courts have held that state and local programs must provide proof that the individual owner of a firm seeking to benefit from the program has suffered discrimination.[143]

Failure to make "neutral" changes to contracting and procurement policies and procedures that disadvantage all small businesses may result in a finding that the program unduly burdens non-M/WBEs.[144] However, "innocent" parties can be made to share some of the burden of the remedy for eradicating racial discrimination.[145] To hold otherwise "would be to render strict

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[138] *BAGC v. Cook County*, 256 F.3d at 646 (no evidence of discrimination against any group other than Blacks).

[139] *Concrete Work IV*, 321 F.3d at 9761.

[140] *See* 49 C.F.R. §26.45(h) (overall goal must not be subdivided into group-specific goals).

[141] *See Engineering Contractors II*, 122 F.3d at 900 (separate goals for Blacks, Hispanics and women).

[142] *Drabik II*, 214 F.3d at 737; *see also Western States*, 407 F.3d at 998 ("We have previously expressed similar concerns about the haphazard inclusion of minority groups in affirmative action programs ostensibly designed to remedy the effects of discrimination.").

[143] *See, e.g., Associated General Contractors of Ohio, Inc. v. Drabik*, 50 F.Supp.2d 741, 766 (S.D. Ohio 1999) ("*Drabik I*") (no "consideration given to whether the particular MBE seeking a racial preference has suffered from the effects of past discrimination by the state or prime contractors."); *Main Line Paving Co., Inc. v. Board of Education*, 725 F.Supp. 1349, 1362 (E.D. Penn. 1989) ("program contains no provisions to identify those who were victims of past discrimination and to limit the program's benefits to them").

[144] *See Engineering Contractors Assoc. of South Florida, Inc. v. Metropolitan Dade County*, 943 F.Supp. 1546, 1581-1582 (S.D. Fla. 1996) ("*Engineering Contractors I*") (County chose not to change its procurement system).

[145] *Concrete Works IV*, 321 F.3d at 973; *Wygant v. Jackson Board of Education*, 476 U.S. 267, 280-281 (1986); *Adarand VII*, 228 F.3d at 1183 ("While there appears to be no serious burden on prime contractors, who are obviously compensated for any additional burden occasioned by the employment of DBE subcontractors, at the margin, some non-DBE subcontractors such as *Adarand* will be deprived of business opportunities"); *cf. Northern Contracting, Inc. v. Illinois Department of Transportation*, 2005 U.S. Dist. LEXIS 19868, *5 (Sept. 8, 2005) ("*Northern Contracting II*") ("Plaintiff has presented little evidence that it [sic] has suffered anything more than minimal revenue losses due to the program."); *Western States*, 407 F.3d at 995.

scrutiny effectively fatal, in contravention of Justice O'Connor's clear statements to the contrary."[146]

Race-based programs must have duration limits.[147] A race-based remedy must "not last longer than the discriminatory effects it is designed to eliminate."[148] As held by the Sixth Circuit, "[n]arrow tailoring also implies some sensitivity to the possibility that a program might someday have satisfied its purposes."[149] One of the factors leading to the court's holding that the City of Chicago's M/WBE Program was no longer narrowly tailored was the lack of a sunset provision.[150] In contrast, the USDOT DBE Program's periodic review by Congress has been repeatedly held to provide adequate durational limits.[151]

This means that affirmative action programs must be regularly reviewed to ensure that a strong basis in evidence remains to use the highly suspect tool of race in government decision making. Very old studies will not suffice to support current programs.[152] The City of Augusta, Georgia's program failed to meet strict scrutiny, because "the [M/WBE] Program is still in place 13 years after the [Disparity] Study was compiled without any further investigation into the underlying reasons for creating a program, and without any sunset or expiration provision."[153] Likewise, Chicago's program was based on 14-year-old information, which while it supported the program adopted in 1990, no longer was sufficient standing alone to justify the City's efforts in 1994.[154] How old is too old is not definitively answered,[155] but governments would be wise to analyze data at least once every five or six years.

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[146] *Adarand VII*, 228 F.3d at 1183 (citing *Adarand III*, 515 U.S. at 237).

[147] *Drabik I*, 50 F.Supp.2d at 766 ("The 1980 MBE Act is unlimited in duration.… There is no evidence that, at any time during the nearly two decades the Act has been in effect, the General Assembly has ever reconsidered whether a compelling state interest exists which would justify the continuation of a race-based remedy.").

[148] *Adarand III*, 515 U.S. at 238.

[149] *Drabik II*, 214 F.3d at 737.

[150] *BAGC v. Chicago*, 298 F.Supp.2d at 739; *see also O'Donnell*, 963 F.2d at 428 (the District "reenacted the law in 1980 and deleted the sunset provision. Fifteen years have now passed since the District put its minority contracting program into effect. The District has not suggested that an end is in sight."). *Webster*, 51 F. Supp. 2d at 1382 (telling disqualifier was that the County had been implementing a "quota" program since 1979 with no contemplation of program expiration).

[151] *See Western States*, 407 F.3d at 995.

[152] *See, e.g., Baltimore I*, 83 F.Supp.2d at 620 (10-year-old evidence to justify 1999 goals is equivalent to no evidence).

[153] *Thompson Building Wrecking Co., Inc.. v. City of Augusta, Georgia*, 2007 U.S. Dist. LEXIS 27127 (S.D. Ga. 2007) at *9.

[154] *BAGC v. Chicago*, 298 F.Supp.2d at 739.

[155] *See, e.g., Drabik I*, 50 F.Supp.2d at 745, 750 ("A program of race-based benefits cannot be supported by evidence of discrimination which is now over twenty years old.… The state conceded that it had no additional evidence of discrimination against minority contractors, and admitted that during the nearly two decades the Act has been in effect, it has made no effort to determine whether there is a continuing need for a race-based remedy."); *Brunet City of Columbus*, 1 F.3d 390, 409 (6th Cir. 1993) (fourteen-year-old evidence of discrimination "too remote to support a compelling governmental interest.").

1. Race- and Gender-Neutral Remedies

Race- and gender-neutral approaches have become a necessary component of a defensible and effective M/WBE program.[156] The failure to seriously consider race- and gender-neutral remedies has been fatal to M/WBE programs.[157] Such measures include unbundling of contracts into smaller units, providing technical support, and addressing issues of financing, bonding, and insurance important to all small and emerging businesses.[158] Difficulty in accessing procurement opportunities, restrictive bid specifications, excessive experience requirements, and overly burdensome insurance and/or bonding requirements, for example, might be addressed by MoDOT without resorting to the use of race or gender in its decision-making. Further, governments have a duty to ferret out and punish discrimination against minorities and women by their contractors, staff, lenders, bonding companies or others.[159] At a minimum, entities must track the utilization of M/WBE firms as a measure of their success in the bidding process, including as subcontractors.[160]

However, strict scrutiny does not require that every race-neutral approach must be implemented and then proven ineffective before race-conscious remedies may be utilized.[161] While an entity must give good faith consideration to race-neutral alternatives, "strict scrutiny does not require exhaustion of every possible such alternative…however irrational, costly, unreasonable, and unlikely to succeed such alternative might be…. [S]ome degree of practicality is subsumed in the exhaustion requirement."[162]

2. Targeted Goal Setting

Numerical goals or benchmarks for M/WBE participation must be substantially related to their availability in the relevant market.[163] Goals can be set at various levels of particularity and participation. The entity may set an overall, aspirational goal for its annual, aggregate spending.

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[156] *Croson*, 488 U.S. at 507 (Richmond considered no alternatives to race-based quota); *Drabik II*, 214 F.3d at 738; *Philadelphia III*, 91 F.3d at 609 (City's failure to consider race-neutral alternatives was particularly telling); *Webster*, 51 F.Supp.2d at 1380 (for over 20 years County never seriously considered race-neutral remedies); *cf. Aiken*, 37 F.3d at 1164 (failure to consider race-neutral method of promotions suggested a political rather than a remedial purpose).

[157] *See, e.g., Florida A.G.C. Council, Inc. v. State of Florida*, Case No.: 4:03-CV-59-SPM at 10 (N. Dist. Fla. 2004) ("There is absolutely no evidence in the record to suggest that the Defendants contemplated race-neutral means to accomplish the objectives" of the statute.); *Engineering Contractors II*, 122 F.3d at 928.

[158] *See* 49 C.F.R. § 26.51.0.

[159] *Croson*, 488 U.S. at 503 n.3; *Webster*, 51 F.Supp.2d at 1380.

[160] *See, e.g., Virdi v. DeKalb County School District, 2005 U.S. App. LEXIS 11203 (11th Cir. 2005)*, at n.8.

[161] *Grutter*, 539 U.S. at 339.

[162] *Coral Construction*, 941 F.2d at 923.

[163] *Webster*, 51 F.Supp.2d at 1379, 1381 (statistically insignificant disparities are insufficient to support an unexplained goal of 35 percent M/WBE participation in County contracts); *see also Baltimore I*, 83 F.Supp.2d at 621.

One unanswered question is whether goals or benchmarks for overall agency contracting may be set higher than estimates of actual current availability. To freeze the goals at current head counts would set the results of discrimination—depressed M/WBE availability—as the marker of the elimination of discrimination. It therefore should be reasonable for the government to seek to attempt to level the racial and gender playing field by setting targets somewhat higher than current headcount. In upholding the DBE regulations, the Tenth Circuit stated that:

> [B]ecause Congress has evidence that the effects of past discrimination have excluded minorities from the construction industry and that the number of available minority subcontractors reflects that discrimination, the *existing* percentage of minority-owned businesses is not necessarily an absolute cap on the percentage that a remedial program might legitimately seek to achieve. Absolute proportionality to overall demographics is an unreasonable goal. However, *Croson* does not prohibit setting an aspirational goal above the current percentage of minority-owned businesses that is substantially below the percentage of minority persons in the population as a whole. This aspirational goal is reasonably construed as narrowly tailored to remedy past discrimination that has resulted in homogenous ownership within the industry. It is reasonable to conclude that allocating more than 95% of all federal contracts to enterprises owned by non-minority persons, or more than 90% of federal transportation contracts to enterprises owned by non-minority males, is in and of itself a form of passive participation in discrimination that Congress is entitled to seek to avoid. *See Croson*, 488 U.S. at 492 (Op. of O'Connor, J.).[164]

At least one court has recognized that goal setting is not an absolute science. In holding the DBE regulations to be narrowly tailored, the Eighth Circuit noted that "[t]hough the underlying estimates may be inexact, the exercise requires the States to focus on establishing realistic goals for DBE participation in the relevant contracting markets. This stands in stark contrast to the program struck down in *Croson.*"[165] "On the other hand, sheer speculation cannot form the basis for an enforceable measure."[166]

It is settled case law that goals for a particular solicitation should reflect the particulars of the contract, not reiterate annual aggregate targets; goals must be contract specific. Contract goals must be based upon availability of M/WBEs to perform the anticipated scopes of subcontracting. Not only is this legally mandated,[167] but this approach also reduces the need to conduct good faith efforts reviews as well as the temptation to create "front" companies and sham participation to meet unreasonable contract goals. While this is more labor intensive than defaulting to the annual, overall goals, there is no option to avoid meeting narrow tailoring because to do so would be more burdensome. The detailed availability estimates in Chapter IV can form the starting point for MoDOT's development of contract goals.

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[164] *Adarand VII*, 228 F.3d at 1181 (emphasis in the original).

[165] *Sherbrooke*, 345 F.3d at 972.

[166] *Id*. (complete absence of evidence for 12-15 percent DBE goal); *see also BAGC v. Chicago*, 298 F.Supp.2d at 740 (City's MBE and WBE goals were "formulistic" percentages not related to the availability of firms).

[167] *See Sherbrooke*, 345 F.3d at 972; *Coral Construction*, 941 F.2d at 924.

3. Flexibility of Goals and Requirements

It is imperative that remedies not operate as fixed quotas. An M/WBE program must provide for contract awards to firms who fail to meet the subcontracting goals but make good faith efforts to do so. Further, firms who meet the goals cannot be favored over those who made good faith efforts. In *Croson*, the Court refers approvingly to the contract-by-contract waivers used in the USDOT's DBE program.[168] This feature has been central to the holding that the DBE program is narrowly tailored.[169]

4. Program Over-inclusiveness and Under-inclusiveness

The over- or under-inclusiveness of those persons to be included in a program is an additional consideration, and goes to whether the remedies truly target the evil identified.[170] The "fit" between the problem and the remedy manifests in three ways: which groups to include, how to define those groups, and which persons will be eligible to be included within those groups.

The groups to include must be based upon the evidence.[171] The "random inclusion" of ethnic or racial groups that may never have experienced discrimination in the entity's market area may indicate impermissible "racial politics."[172] Similarly, the Seventh Circuit, in striking down Cook County's program, remarked that a "state or local government that has discriminated just against blacks may not by way of remedy discriminate in favor of blacks and Asian-Americans and women."[173] However, at least one court has held some quantum of evidence of discrimination for each group is sufficient; *Croson* does not require that each group included in the ordinance suffer equally from discrimination.[174]

Therefore, remedies should be limited to those firms that have suffered actual harm. Goals should be set only for those groups shown to have suffered discrimination in the market area; a program that limits relief to the racial or ethnic groups that have suffered discrimination in the agency's market area and have been adversely affected in their ability to obtain agency contracts will meet this element of narrow tailoring.[175] Similarly, the DBE Program's rebuttable

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[168] *Croson*, 488 U.S. at 508; *see also Adarand VII*, 228 F.3d at 1181.

[169] *See*, *e.g.*, *Sherbrooke*, 345 F.3d at 972.

[170] *See Association for Fairness in Business, Inc. v. New Jersey*, 82 F.Supp.2d 353, 360 (D.N.J. 2000).

[171] *Philadelphia II*, 6 F.3d at 1007-1008 (strict scrutiny requires data for each minority group; data was insufficient to include Hispanics, Asians or Pacific Islanders or Native Americans).

[172] *Webster*, 51 F.Supp.2d at 1380–1381.

[173] *BAGC v. Cook*, 256 F.3d at 646.

[174] *Concrete Work IV*, 321 F.3d at 971.

[175] *Rowe*, 615 F.3d at 254 ("[T]he statute contemplates participation goals only for those groups shown to have suffered discrimination. As such, North Carolina's statute differs from measures that have failed narrow tailoring for overinclusiveness.").

presumptions of social and economic disadvantage have been central to the courts' holdings that it is narrowly tailored,[176] and anyone can challenge the disadvantaged status of any firm.[177]

The level of specificity at which to define beneficiaries is a policy question. Approaches range from a single M/WBE or DBE goal that includes all racial and ethnic minorities and nonminority women,[178] to separate goals for each minority group and women.[179] We note, however, that Ohio's Program was specifically faulted for lumping together all "minorities," with the court questioning the legitimacy of forcing African American contractors to share relief with recent Asian immigrants.[180]

5. Sharing of the Burden by Third Parties

Failure to make "neutral" changes to contracting and procurement policies and procedures that disadvantage M/WBEs and other small businesses may result in a finding that the program unduly burdens non-M/WBEs.[181] However, "innocent" parties can be made to share some of the burden of the remedy for eradicating racial discrimination.[182] Burdens must be proven, and cannot constitute mere speculation by a plaintiff.[183] "Implementation of the race-conscious contracting goals for which TEA-21 provides will inevitably result in bids submitted by non-DBE firms being rejected in favor of higher bids from DBEs. Although this places a very real burden on non-DBE firms, this fact alone does not invalidate TEA-21. If it did, all affirmative action programs would be unconstitutional because of the burden upon non-minorities."[184]

Narrow tailoring does permit certified firms acting as prime contractors to count their self-performance towards meeting contract goals. The DBE program regulations provide this remedy

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[176] *Sherbrooke*, 345 F.3d at 973; *see also Grutter*, 539 U.S. at 341; *Adarand VII*, 228 F.3d at 1183-1184 (personal net worth limit is element of narrow tailoring); *cf. Associated General Contractors v. City of New Haven*, 791 F.Supp. 941, 948 (D. Conn. 1992), *vacated on other grounds,* 41 F.3d 62 (2nd Cir. 1992) (definition of "disadvantage" was vague and unrelated to goal).

[177] 49 C.F.R. §26.87.

[178] *See* 49 C.F.R. §26.45(h) (overall goal must not be subdivided into group-specific goals).

[179] *See Engineering Contractors II*, 122 F.3d at 900 (separate goals for Blacks, Hispanics and women).

[180] *Drabik II*, 214 F.3d at 737; *see also Western States*, 407 F.3d at 998 ("We have previously expressed similar concerns about the haphazard inclusion of minority groups in affirmative action programs ostensibly designed to remedy the effects of discrimination.").

[181] *See Engineering Contractors Assoc. of South Florida, Inc. v. Metropolitan Dade County* ("*Engineering Contractors I*"), 943 F.Supp. 1546, 1581-1582 (S.D. Fla. 1996) (County chose not to change its procurement system).

[182] *Concrete Works IV*, 321 F.3d at 973; *Wygant*, 476 U.S. at 280-281; *Adarand VII*, 228 F.3 at 1183 ("While there appears to be no serious burden on prime contractors, who are obviously compensated for any additional burden occasioned by the employment of DBE subcontractors, at the margin, some non-DBE subcontractors such as *Adarand* will be deprived of business opportunities"); *cf. Northern Contracting II*, at *5 ("Plaintiff has presented little evidence that is [sic] has suffered anything more than minimal revenue losses due to the program.").

[183] *Rowe*, 615 F.3d at 254 (prime bidder had no need for additional employees to perform program compliance and need not subcontract work it can self-perform).

[184] *Western States*, 407 F.3d at 995.

for discrimination against DBEs seeking prime work,[185] and the regulations do not limit the application of the program to only subcontracts.[186] The trial court explicitly recognized that barriers to subcontracting opportunities affect the ability of DBEs to compete for prime work on a fair basis in finding that Illinois' DBE program was narrowly tailored.

> This requirement that goals be applied to the value of the entire contract, not merely the subcontracted portion(s), is not altered by the fact that prime contracts are, by law, awarded to the lowest bidder. While it is true that prime contracts are awarded in a race- and gender-neutral manner, the Regulations nevertheless mandate application of goals based on the value of the entire contract. Strong policy reasons support this approach. Although laws mandating award of prime contracts to the lowest bidder remove concerns regarding direct discrimination at the level of prime contracts, [n30] the indirect effects of discrimination may linger. The ability of DBEs to compete successfully for prime contracts may be indirectly affected by discrimination in the subcontracting market, or in the bonding and financing markets. Such discrimination is particularly burdensome in the construction industry, a highly competitive industry with tight profit margins, considerable hazards, and strict bonding and insurance requirements.[187]

6. Duration and Review of Programs

"Narrow tailoring also implies some sensitivity to the possibility that a program might someday have satisfied its purposes."[188] The USDOT DBE Program's periodic review by Congress has been repeatedly held to provide adequate durational limits.[189] "[T]wo facts [were] particularly compelling in establishing that [North Carolina's M/WBE program] was narrowly tailored: the statute's provisions (1) setting a specific expiration date and (2) requiring a new disparity study every 5 years."[190]

Conversely, it was the unlimited duration and lack of review that led to the City of Augusta, Georgia's DBE program being enjoined,[191] as well as one factor in the court's holding that the City of Chicago's M/WBE Program was no longer narrowly tailored.[192]

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[185] 49 C.F.R. § 26.53(g) ("In determining whether a DBE bidder/offeror for a prime contract has met the contractog goal, count the work the DBE has committed to perform with its own forces as well as the work that it has committed to be performed by DBE subcontractors and suppliers.").

[186] 49 C.F.R. § 26.45(a)(1).

[187] *Northern Contracting II*, 2005 U.S. Dist. LEXIS 19868 at 74.

[188] *Drabik II*, 214 F.3d at 737.

[189] *See Western States*, 407 F.3d at 995.

[190] *Rowe*, 615 F.3d at 253.

[191] *Thompson Building Wrecking Co., Inc. v. City of Augusta, Georgia*, 2007 U.S. Dist. Lexis 27127 (S.D. Ga. 2007) at *22-23.

[192] *BAGC v. Chicago*, 298 F.Supp.2d at 739; *see also Webster*, 51 F. Supp. 2d at 1382 (one of Fulton County's telling disqualifiers was that it had been implementing a "quota" program since 1979 with no contemplation of program expiration); *see also Virdi*, at *18 ("unlimited duration of the [District's] racial goals also demonstrates

G. Table of Authorities

1. Cases

Adarand Constructors, Inc. v. Peña, 515 U.S. 200 (1995) ("*Adarand III*").

Adarand Constructors, Inc. v. Peña, 965 F.Supp. 1556 (D. Colo. 1997), *rev'd*, 228 F.3d 1147 (2000) ("*Adarand IV*").

Adarand Constructors, Inc. v. Slater, 228 F.3d 1147 (10th Cir. 2000), *cert. granted then dismissed as improvidently granted*, 532 U.S. 941, 534 U.S. 103 (2001) ("*Adarand VII*").

Aiken v. City of Memphis, 37 F.3d 1155 (6th Cir. 1994).

Associated General Contractors of Connecticut, Inc. v. City of New Haven, 791 F.Supp. 941 (D. Conn. 1992), *vacated on other grounds*, 41 F.3rd 62 (2nd Cir. 1994).

Associated General Contractors of Ohio, Inc. v. Drabik, 50 F.Supp.2d 741 (S.D. Ohio 1999) ("*Drabik I*").

Associated General Contractors of Ohio v. Drabik, 214 F.3d 730 (6th Cir. 2000) ("*Drabik II*").

Associated Utility Contractors of Maryland, Inc. v. Mayor and City Council of Baltimore, et al., 83 F.Supp.2d 613 (D. Md. 2000) ("*Baltimore I*").

Association for Fairness in Business, Inc. v. New Jersey, 82 F.Supp.2d 353 (D. N.J. 2000).

Brunet v. City of Columbus, 1 F.3d 390 (6th Cir. 1993).

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

Builders Association of Greater Chicago v. County of Cook, 123 F.Supp.2d 1087 (N.D. Ill. 2000); *aff'd*, 256 F.3d 642 (7th Cir. 2001) ("*BAGC v. Cook*").

City of Richmond v. J.A. Croson Co., 488 U.S. 469 (1989).

Concrete Works of Colorado, Inc. v. *City & County of Denver*, 823 F.Supp. 821 (D. Colo. 1993) ("*Concrete Works I"*).

Concrete Works of Colorado, Inc. v. City and County of Denver, 36 F.3d 1513 (10th Cir. 1994), cert. denied, 514 U.S. 1004 (1995) ("*Concrete Works II*").

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a lack of narrow tailoring.… While the District's effort to avoid unintentional discrimination should certainly be ongoing, its reliance on racial classifications should not.").

Concrete Works of Colorado, Inc. v. City & County of Denver, 86 F.Supp. 2d 1042 (D. Colo. 2000) ("*Concrete Works III*").

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

Cone Corporation v. Hillsborough County, 908 F.2d 909 (11th Cir. 1990), *cert. denied*, 498 U.S. 983 (1990).

Contractors Association of Eastern Pennsylvania v. City of Philadelphia, 6 F.3d 990 (3rd Cir. 1993) ("*Philadelphia II*").

Contractors Association of Eastern Pennsylvania v. City of Philadelphia, 91 F.3d 586 (3rd Cir. 1996) ("*Philadelphia III*").

Coral Construction Co. v. King County, 941 F.2d. 910 (9th Cir. 1991).

Engineering Contractors Assoc. of South Florida, Inc. v. Metropolitan Dade County, 943 F.Supp. 1546 (S.D. Fla. 1996) ("*Engineering Contractors I*").

Engineering Contractors Association of South Florida, Inc. v. Metropolitan Dade County, 122 F.3d 895 (11th Cir. 1997) ("*Engineering Contractors II*").

Florida A.G.C. Council, Inc. v. State of Florida, Case No.: 4:03-CV-59-SPM (N. D. Fla. 2004).

Grutter v. Bollinger, 539 U.S. 306 (2003).

Harrison & Burrowes Bridge Constructors, Inc. v. Cuomo, 981 F.2d 50 (2nd Cir. 1992).

H. B. Rowe Co. v. Tippett, 615 F.3d 233 (4th Cir. 2010).

International Brotherhood of Teamsters v. United States, 431 U.S. 324, 399 (1977).

Main Line Paving Co., Inc. v. Board of Education, 725 F.Supp. 1349, 1362 (E.D. Penn. 1989).

Maryland Troopers Association, Inc. v. Evans, 993 F.2d 1072, 1076-77 (4th Cir. 1993).

North Shore Concrete and Associates, Inc. v. City of New York, 1998 U.S. Dist. LEXIS 6785 (E.D. N.Y. 1998).

Northeastern Florida Chapter of the AGC v. Jacksonville, 508 U.S. 656 (1993).

Northern Contracting, Inc. v. Illinois Department of Transportation, 2004 U.S. Dist. LEXIS, 3226 (N.D. Ill., Mar. 3, 2004) ("*Northern Contracting I")*.

Northern Contracting, Inc. v. Illinois Department of Transportation, 2005 U.S. Dist. LEXIS 19868 (Sept. 8, 2005) ("*Northern Contracting II*").

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

O'Donnell Construction Co., Inc., v. District of Columbia, 963 F.2d 420 (D.C. Cir. 1992).

Rothe Development Corporation v. U.S. Department of Defense, 545 F.3d 1023 (Fed. Cir. 2008) ("*Rothe VII*").

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

Thompson Building Wrecking Co., Inc. v. City of Augusta, Georgia, 2007 U.S. Dist. LEXIS 27127 (S.D. Ga. 2007).

United States v. Paradise, 480 U.S. 149 (1987).

United States v. Virginia, 518 U.S. 515 (1996).

Virdi v. DeKalb County School District, 2005 U.S. App. LEXIS 11203 (11th Cir. 2005).

W.H. Scott Construction Co., Inc. v. City of Jackson, 199 F.3d 206 (5th Cir. 1999).

Webster v. Fulton County, Georgia, 51 F.Supp.2d 1354 (N.D. Ga. 1999).

West Tennessee Chapter of Associated Builders and Contractors, Inc. v. City of Memphis, 302 F.Supp.2d 860, 864 (W.D. Tenn. 2004).

Western States Paving Co., Inc. v. Washington Department of Transportation, 407 F.3d 983 (9th Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006).

Wygant v. Jackson Board of Education, 476 U.S. 267 (1986).

2. Statutes

Transportation Equity Act for the 21st Century ("TEA-21"), Pub. L. No. 105-178 (b)(1), 112 Stat. 107, 113.

3. Regulations

49 C.F.R. § 26.

29 C.F.R. § 1607

4. Reports

Bourdon, C. C. and R. E. Levitt (1980), Union and open-shop construction, compensation, work practices, and labor markets, Lexington, MA: Lexington Books.

Eccles, R. G. (1981), "Bureaucratic versus craft administration: The relationship of market structure to the construction Firm," Administrative Science Quarterly, 26, 449-469.

Enchautegui, Maria E., M. Fix, P. Loprest, S. von der Lippe and D. Wissoker (1996), Do minority-owned businesses get a fair share of government contracts?, Washington, DC: The Urban Institute.

Gould, F. E. (1980), "Investigation in construction entrepreneurship," Masters Thesis, MIT, May.

U.S. Commission on Civil Rights (2006), Disparity Studies as Evidence of Discrimination in Federal Contracting, Washington, DC.

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.

III. Defining the Relevant Markets

A. Introduction

The U.S. Supreme Court in *Croson* indicated that the U.S. Congress' national findings of minority business discrimination in construction and related industries were not geographically specific enough, or "narrowly tailored" enough, standing alone, to support an MBE program in the City of Richmond. The first step in our evaluation of DBE availability and participation for the MoDOT must therefore be to define the relevant market area for its Construction and Construction-related Services ("Consulting") contracts. Markets have both a geographic dimension and a product, or industry, dimension, both of which are considered.[193] For this Study, we define MoDOT's market area based on its own historical contracting and subcontracting records. We define the geographic market dimension by calculating from zip code data where the majority of MoDOT's contractors and subcontractors are located.

Narrow tailoring also applies to product markets. The extent of disparity may differ from industry to industry just as it does among geographic locations.[194] Documenting the specific industries that comprise MoDOT's contracting activities and the relative importance of each to contract and subcontract spending is important because it allows for: (1) implementation of more narrowly tailored availability estimation methods, (2) contract-level goal-setting, and (3) overall DBE availability estimates and annual goals that are a weighted average of underlying industry-level availability estimates, rather than a simple average. The weights used are the proportion of dollars awarded or paid 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 fewer contracting dollars are spent.

We define the product market dimension by estimating which North American Industrial Classification System (NAICS) codes best describe each identifiable contractor, subcontractor, subconsultant, or supplier in those records.[195] In both cases, the definitions are weighted according to how many dollars were spent with firms from each zip code or NAICS code, respectively, so that locations and industries, respectively, receiving relatively more contracting dollars receive relatively more weight in the estimation of DBE availability. Once the geographic and industry parameters of MoDOT's 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 MoDOT's specific market area and contracting circumstances.

[193] *See*, for example, Areeda, P., L. Kaplow, and A. Edlin (2004).

[194] *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.

[195] Executive Office of the President, Office of Management and Budget (2007).

1. Preparing the Master Contract/Subcontract Database

With assistance from MoDOT's External Civil Rights Division, we obtained prime contract records for federally-assisted and state-funded construction contracts and construction-related professional services[196] ("consulting") contracts awarded from Federal Fiscal Year ("FFY") 2005 through FFY 2009.[197]

MoDOT's records for **prime construction contracts** included the following data items: prime contractor name and address, prime contractor ID code, contract ID code, contract description, award date, total contract award amount, total amount paid to date, a federal funding indicator, and an indicator denoting whether or not the prime contractor was a DBE. Overall, we obtained records on 1,053 federally-assisted and 375 state-funded prime construction contracts. These 1,428 prime contracts had a total dollar value of $4.656 billion, of which $4.242 billion was federally-assisted and $414 million was state-funded.

MoDOT's records for **prime consulting contracts** included the following data items: prime consultant name and address, contract job number(s), contract description, award date, total contract award amount, and an indicator denoting whether or not the prime consultant was a DBE. Overall, we obtained records on 731 prime consulting contracts, with a total dollar value of $309 million. MoDOT's electronic records did not identify which of these prime contracts were federally-assisted and which were not. However, based on an analysis of sample data we collected, we estimate that 157 prime consulting contracts were federally-assisted, with an award value of $111 million; and 574 prime consulting contracts were state-funded, with an award value of $198 million.[198]

In addition to these "direct" prime contracting records, we obtained records of federal transportation funds that MoDOT passed through to various local governments throughout Missouri ("subrecipients") during the same study time period, pursuant to various USDOT Federal Highway Administration ("FHWA") funding programs. Under the federal regulations governing the DBE Program, any subrecipient of such FHWA funding must abide by the DBE Program rules.[199] MoDOT refers to these as "Off-Systems" contracts.

MoDOT's records for **subrecipient, or off-systems, construction contracts** included the following data items: subrecipient name, prime contractor name, contract description (consisting of a project ID number and road location), award month and year, total contract amount, and an

[196] Construction-related professional services includes engineering services, architectural services, surveying services, construction management services, testing services, environmental consulting services, and other related consulting services.

[197] That is, October 1, 2004 through September 30, 2009.

[198] See below for additional information on our sampling procedures and outcomes.

[199] *See* 49 C.F.R. § 26.21. For recipients or subrecipients of Federal Transit Administration ("FTA") or Federal Aviation Administration ("FAA") funds, more than $250,000 must be received in any given FFY before the DBE Program rules must be followed. There is no such threshold, however, for FHWA recipients or subrecipients.

indicator denoting whether or not the prime contractor was a DBE. Overall, we obtained records on 775 off-systems construction contracts, with a total dollar value of $660 million.

MoDOT's records for **subrecipient, or off-systems, consulting contracts** included the following data items: subrecipient name, contract project number, contract description, award date, and total contract award amount. Overall, we obtained records on 665 off-systems consulting contracts, with a total dollar value of $42 million.

The overall universe of prime contract records employed for this study is summarized below in Table 3.1. This table also shows the distribution of MoDOT prime contracts according to whether they were federally-assisted or not. Among direct construction contracts, 73.7 percent were federally-assisted and 26.3 percent were state-funded. Among direct consulting contracts, 21.5 percent were federally-assisted and 78.5 percent were state-funded. All off-systems contracts were federally-assisted.

Table 3.1. Universe of Prime Contract Records Obtained, FFY 2005–2009

Contract Type	Total Number of Prime Contracts	Total Dollar Value of Prime Contracts	Number of Federally-Assisted Prime Contracts	Dollar Value of Federally-Assisted Prime Contracts	Number of State-Funded Prime Contracts	Dollar Value of State-Funded Prime Contracts
Direct Construction	1,428	$4,656.3M	1,053 (73.7%)	$4,241.9M (91.1%)	375 (26.3%)	$414.4M (8.9%)
Direct Consulting	731	$308.6M	157 (21.5%)	$110.6M (35.8%)	574 (78.5%)	$198.0M (64.2%)
Off-Systems Construction	775	$659.9M	775 (100.0%)	$659.9M (100.0%)	–	–
Off-Systems Consulting	665	$41.8M	665 (100.0%)	$41.8M ($100.0%)	–	–
TOTAL	**3,599**	**$5,666.6M**	**2,650 (73.6%)**	**$5,054.2M (89.2%)**	**949 (26.4%)**	**$612.4M (10.8%)**

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Once the universe of prime contracts was known, the focus turned to subcontracts. Since the DBE Program operates primarily through subcontracting participation, ensuring that suitable records of subcontract, subconsultant, supplier, and trucker (collectively "subcontract" or "subcontractor") activity are available for analysis is key.

Complete subcontract data, including not only DBEs but also non-DBEs and including not only subcontractors and subconsultants but also suppliers and truckers, are not necessary to produce the standard DBE utilization reports required by MoDOT leadership and by USDOT. However, such data *are* necessary to produce a defensible disparity study using NERA's methods. To its

great credit, MoDOT collects and retains far more data on subcontract activity than most other government agencies we have encountered, including other state DOTs.

Nevertheless, there remained some gaps in the records that required attention, particularly with respect to subrecipients.[200] When complete subcontract data were not available from MoDOT or from MoDOT's subrecipient, we sought to retrieve such data directly from the prime contractor or consultant that performed the contract.

Table 3.2. Prime Contract Sampling Frame and Results

Contract Type	Universe of Prime Contracts	Value of Prime Contract Universe	Sample of Prime Contracts	Value of Sample of Prime Contracts	Prime Contract Respondents	Value of Respondent Prime Contracts
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Direct Construction	1,428	$4,656.3M	774 (54.2%)	$4,079.0M (87.6%)	574 (74.2%)	$3,381.4M (82.9%)
Direct Consulting	731	$308.6M	396 (54.2%)	$286.8M (92.9%)	354 (89.4%)	$228.4M (79.6%)
Off-Systems Construction	775	$659.9M	352 (45.4%)	$556.6M (84.3%)	275 (78.1%)	$476.0M (85.5%)
Off-Systems Consulting	665	$41.8M	665 (100.0%)	$41.8M (100.0%)	451 (67.8%)	$39.8M (95.2%)
TOTAL	**3,599**	**$5,666.6M**	**2,187 (60.8%)**	**$4,964.2M (87.6%)**	**1,654 (75.6%)**	**$4,125.6M (83.1%)**

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

To do this, a statistical sampling plan was developed for each type of prime contract (i.e., off-systems construction, off-systems consulting, direct construction, direct consulting). For direct construction, direct consulting, and off-systems construction, we sampled prime contracts proportional to their dollar size, selecting the largest contracts with certainty, and sampling smaller contracts randomly with replacement.[201] For off-systems consulting, all prime contracts

[200] For MoDOT's direct contracts, the most significant data gap was the exclusion of non-DBE suppliers and truckers from the current subcontract data collection and retention protocols that are in place for construction contracts. For consulting contracts, the most significant gap was a lack of data on contract payment dollars (as opposed to award dollars).

[201] "With replacement" means that it is possible for a given contract 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. Out of 1,583 prime contracts in our overall sample for MoDOT, 51 were sampled twice (3.2%) and another 10 contracts were sampled three times (0.63%), yielding an effective sample size of 1,654.

were selected with certainty.[202] Columns (3) and (4) of Table 3.2 summarize the sampling frame for the study. Overall, there were 2,187 prime construction and consulting contracts worth $4.964 billion for which we sought to obtain missing subcontract information directly from the relevant prime contractors. This represents 60.8 percent of all the contracts in the universe and 87.6 percent of all contract dollars in the universe.

For each prime contract in the sample, we worked with MoDOT to obtain required information directly from the relevant prime contractors and consultants. The information included confirmation of their prime contract award amount(s), prime contract payment amount(s), all subcontractor business names, addresses, and phone numbers, all subcontractor gender and ethnicity designations, and all subcontractor award amounts and payment amounts.

As shown in Table 3.2, after an intensive data collection effort on the part of NERA and MoDOT, we were ultimately able to obtain complete information for 1,654 prime contracts, or 75.6 percent of all the prime contracts sampled, and 9,330 associated subcontracts. These 1,654 prime contracts had an overall value of $4.126 billion, or 83.1 percent of the total value of the sample. These percentages are sufficiently large to be well representative of the entire universe of prime contracts and subcontracts in the Study.

Table 3.3. Prime Contract Sampling Frame and Results

Contract Type	Prime Contract Respondents	Value of Respondent Prime Contracts	Federally-Assisted Respondents	Value of Federally-Assisted Respondent Prime Contracts	State-Funded Respondents	Value of State-Funded Respondent Prime Contracts
	(1)	(2)	(3)	(4)	(5)	(6)
Direct Construction	574	$3,381.4M	473 (82.4%)	$3,212.3M (95.0%)	101 (17.6%)	$169.1M (5.0%)
Direct Consulting	354	$228.4M	76 (21.5%)	$146.6M (64.2%)	278 (78.5%)	$81.8M (35.8%)
Off-Systems Construction	275	$476.0M	275 (100.0%)	$476,0M (100.0%)	–	–
Off-Systems Consulting	451	$39.8M	451 (100.0%)	$39.8M (100.0%)	–	–
TOTAL	**1,654**	**$4,125.5M**	**1,275 (77.1%)**	**$3,874.6M (93.9%)**	**379 (22.9%)**	**$250.9M (6.1%)**

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

[202] For off-systems prime contracts, subrecipients had to be contacted first in order to obtain the name and address of each prime contractor. Because there was no guarantee that we would be able to secure cooperation from every subrecipient, we chose to sample these contracts with certainty.

Table 3.3 shows the distribution of contracts collected according to whether they were federally-assisted or state-funded. This distribution is similar to what is observed in the overall contract universe (see Table 3.1).

In summary, the ultimate contract and subcontract database employed for the Study, which we refer to as the "Master Contract/Subcontract Database," contains 1,654 prime construction contracts and 9,330 associated subcontracts, the bulk of which were federally-assisted.[203] These contracts had a total award dollar value of $4.126 billion and a total payment value of $3.981 billion (see Table 3.4A).

2. Descriptive Statistics for the Master Contract/Subcontract Database

Below we provide various descriptive statistics from the Master Contract/Subcontract Database. Table 3.4A shows the total number of prime contracts, subcontracts, dollars awarded, and dollars paid for construction and consulting, by federal funding status, for all contracts in the database, including contracts awarded directly by MoDOT and contracts awarded by MoDOT subrecipients. Table 3.4B shows the same information but excluding subrecipient contracts, and Table 3.4C shows the same information exclusively for subrecipient contracts.

[203] See Appendix A for a listing of all MoDOT subrecipients included in the Master Contract/Subcontract Database.

Table 3.4A. Summary of Master Contract/Subcontract Database: Prime Contracts and Subcontracts by Contracting Category, FFY 2005-2009

CONTRACT CATEGORY	NUMBER OF CONTRACTS AWARDED	DOLLARS AWARDED ($)	DOLLARS PAID ($)
FEDERALLY-ASSISTED CONTRACTS			
CONSTRUCTION		3,688,269,300	3,573,639,924
Prime Contracts	748	2,213,320,478	2,132,040,916
Subcontracts	8,249	1,474,948,822	1,441,599,008
CONSULTING		186,315,918	168,698,577
Prime Contracts	527	139,097,952	128,676,562
Subcontracts	501	47,217,966	40,022,015
TOTAL		3,874,585,218	3,742,338,502
Prime Contracts	1,275	2,352,418,431	2,260,717,478
Subcontracts	8,750	1,522,166,787	1,481,621,024
STATE FUNDED CONTRACTS			
CONSTRUCTION		169,142,576	171,282,053
Prime Contracts	101	126,135,834	129,365,254
Subcontracts	416	43,006,742	41,916,799
CONSULTING		81,817,722	67,131,127
Prime Contracts	278	73,905,883	60,185,200
Subcontracts	164	7,911,839	6,945,926
TOTAL		250,960,298	238,413,179
Prime Contracts	379	200,041,717	189,550,454
Subcontracts	580	50,918,581	48,862,725
ALL CONTRACTS			
CONSTRUCTION		3,857,411,876	3,744,921,977
Prime Contracts	849	2,339,456,312	2,261,406,170
Subcontracts	8,665	1,517,955,564	1,483,515,807
CONSULTING		268,133,640	235,829,704
Prime Contracts	805	213,003,836	188,861,762
Subcontracts	665	55,129,804	46,967,942
TOTAL		4,125,545,516	3,980,751,681
Prime Contracts	1,654	2,552,460,148	2,450,267,932
Subcontracts	9,330	1,573,085,368	1,530,483,749

Source: NERA calculations from Master Contract/Subcontract Database. Notes: (1) Prime Contract dollar amounts are net of subcontract amounts. (2) Contracts that were not substantially complete are excluded from the "Dollars Paid" category.

Table 3.4B. Summary of Master Contract/Subcontract Database: Prime Contracts and Subcontracts by Contracting Category, Excluding Subrecipients, FFY 2005-2009

CONTRACT CATEGORY	NUMBER OF CONTRACTS AWARDED	DOLLARS AWARDED ($)	DOLLARS PAID ($)
FEDERALLY-ASSISTED CONTRACTS			
CONSTRUCTION		3,212,268,572	3,129,582,603
Prime Contracts	473	1,937,513,246	1,881,262,245
Subcontracts	6,007	1,274,755,326	1,248,320,359
CONSULTING		146,555,172	132,884,394
Prime Contracts	76	109,595,357	101,093,446
Subcontracts	194	36,959,816	31,790,948
TOTAL		3,358,823,744	3,262,466,997
Prime Contracts	549	2,047,108,603	1,982,355,691
Subcontracts	6,201	1,311,715,142	1,280,111,306
STATE FUNDED CONTRACTS			
CONSTRUCTION		169,142,576	171,282,053
Prime Contracts	101	126,135,834	129,365,254
Subcontracts	416	43,006,742	41,916,799
CONSULTING		81,817,722	67,131,127
Prime Contracts	278	73,905,883	60,185,200
Subcontracts	164	7,911,839	6,945,926
TOTAL		250,960,298	238,413,179
Prime Contracts	379	200,041,717	189,550,454
Subcontracts	580	50,918,581	48,862,725
ALL CONTRACTS			
CONSTRUCTION		3,381,411,148	3,300,864,656
Prime Contracts	574	2,063,649,080	2,010,627,499
Subcontracts	6,423	1,317,762,068	1,290,237,157
CONSULTING		228,372,894	200,015,520
Prime Contracts	354	183,501,240	161,278,646
Subcontracts	358	44,871,654	38,736,874
TOTAL		3,609,784,043	3,500,880,176
Prime Contracts	928	2,247,150,320	2,171,906,145
Subcontracts	6,781	1,362,633,723	1,328,974,031

Source: and Notes: See Table 3.4A.

Table 3.4C. Summary of Master Contract/Subcontract Database: Prime Contracts and Subcontracts by Contracting Category, Subrecipients Only, FFY 2005-2009

CONTRACT CATEGORY	NUMBER OF CONTRACTS AWARDED	DOLLARS AWARDED ($)	DOLLARS PAID ($)
FEDERALLY-ASSISTED CONTRACTS			
CONSTRUCTION		476,000,728	444,057,321
Prime Contracts	275	275,807,232	250,778,671
Subcontracts	2,242	200,193,496	193,278,650
CONSULTING		39,760,746	35,814,184
Prime Contracts	451	29,502,596	27,583,116
Subcontracts	307	10,258,150	8,231,068
TOTAL		515,761,473	479,871,504
Prime Contracts	726	305,309,828	278,361,787
Subcontracts	2,549	210,451,646	201,509,717
STATE FUNDED CONTRACTS			
CONSTRUCTION			
Prime Contracts			
Subcontracts			
CONSULTING			
Prime Contracts			
Subcontracts			
TOTAL			
Prime Contracts			
Subcontracts			
ALL CONTRACTS			
CONSTRUCTION		476,000,728	444,057,321
Prime Contracts	275	275,807,232	250,778,671
Subcontracts	2,242	200,193,496	193,278,650
CONSULTING		39,760,746	35,814,184
Prime Contracts	451	29,502,596	27,583,116
Subcontracts	307	10,258,150	8,231,068
TOTAL		515,761,473	479,871,504
Prime Contracts	726	305,309,828	278,361,787
Subcontracts	2,549	210,451,646	201,509,717

Source: and Notes: See Table 3.4A.

Tables 3.5A-C show the total number of prime contracts awarded during each year of the study period and the total dollar awards and payment amounts associated with those contracts. Table 3.5A shows this information for federally-assisted contracts, while Table 3.5B shows it for state funded contracts, and Table 3.5C shows it for all contracts.

Table 3.5A. Summary of Master Contract/Subcontract Database: Prime Construction Contracts by Year of Award, Federally-Assisted Contracts

FISCAL YEAR OF AWARD	NUMBER OF PRIME CONTRACTS	DOLLARS AWARDED ($)	DOLLARS PAID ($)
CONSTRUCTION			
2005	115	673,607,096	687,590,613
2006	129	713,812,570	719,071,185
2007	125	621,964,780	620,296,769
2008	155	789,223,125	770,261,528
2009	224	889,661,726	776,419,828
TOTAL	748	3,688,269,298	3,573,639,924
CONSULTING			
2005	65	71,790,989	64,825,416
2006	89	25,804,748	24,032,856
2007	107	16,092,206	13,710,548
2008	124	34,860,020	31,256,193
2009	142	37,767,954	34,873,565
TOTAL	527	186,315,918	168,698,577
ALL			
2005	180	745,398,085	752,416,029
2006	218	739,617,318	743,104,041
2007	232	638,056,986	634,007,317
2008	279	824,083,146	801,517,721
2009	366	927,429,680	811,293,393
TOTAL	1,275	3,874,585,216	3,742,338,501

Source: NERA calculations from Master Contract/Subcontract Database.

Table 3.5B. Summary of Master Contract/Subcontract Database: Prime Construction Contracts by Year of Award, State-Funded Contracts

FISCAL YEAR OF AWARD	NUMBER OF PRIME CONTRACTS	DOLLARS AWARDED ($)	DOLLARS PAID ($)
CONSTRUCTION			
2005	42	120,734,212	123,291,029
2006	17	25,062,750	25,237,489
2007	13	6,235,976	6,231,451
2008	19	6,823,798	7,389,114
2009	10	10,285,841	9,132,969
TOTAL	101	169,142,576	171,282,052
CONSULTING			
2005	77	22,312,889	18,740,866
2006	82	17,770,103	14,759,664
2007	43	18,352,609	14,471,192
2008	29	9,723,870	7,304,179
2009	47	13,658,251	11,855,226
TOTAL	278	81,817,722	67,131,127
ALL			
2005	119	143,047,101	142,031,894
2006	99	42,832,853	39,997,153
2007	56	24,588,585	20,702,643
2008	48	16,547,667	14,693,293
2009	57	23,944,092	20,988,196
TOTAL	379	250,960,298	238,413,179

Source: See Table 3.5A.

Table 3.5C. Summary of Master Contract/Subcontract Database: Prime Construction Contracts by Year of Award, All Contracts

FISCAL YEAR OF AWARD	NUMBER OF PRIME CONTRACTS	DOLLARS AWARDED ($)	DOLLARS PAID ($)
CONSTRUCTION			
2005	157	794,341,308	810,881,642
2006	146	738,875,320	744,308,674
2007	138	628,200,756	626,528,220
2008	174	796,046,923	777,650,643
2009	234	899,947,567	785,552,797
TOTAL	849	3,857,411,874	3,744,921,976
CONSULTING			
2005	142	94,103,878	83,566,282
2006	171	43,574,852	38,792,520
2007	150	34,444,815	28,181,740
2008	153	44,583,890	38,560,371
2009	189	51,426,206	46,728,792
TOTAL	805	268,133,640	235,829,704
ALL			
2005	299	888,445,186	894,447,923
2006	317	782,450,171	783,101,194
2007	288	662,645,571	654,709,960
2008	327	840,630,813	816,211,014
2009	423	951,373,772	832,281,589
TOTAL	1,654	4,125,545,514	3,980,751,680

Source: See Table 3.5A.

Tables 3.6A-C show the distribution of MoDOT contract dollars by contracting category and highway district.

Table 3.6A. Summary of Master Contract/Subcontract Database: Prime Construction Contracts by Highway District, Excluding Subrecipients

CONTRACT CATEGORY	NUMBER OF PRIME CONTRACTS	DOLLARS AWARDED ($)	DOLLARS PAID ($)
FEDERALLY-ASSISTED			
NORTHWEST	32	173,409,676	159,327,885
NORTH CENTRAL			
NORTHEAST	60	404,092,795	425,546,850
KANSAS CITY AREA	24	252,758,408	253,322,693
CENTRAL	100	556,678,353	552,363,254
ST. LOUIS AREA	133	844,457,557	805,956,832
SOUTHWEST	5	8,914,140	9,038,358
SPRINGFIELD AREA	26	141,417,862	132,140,395
SOUTH CENTRAL	4	38,810,149	39,948,112
SOUTHEAST	27	133,632,651	125,919,479
KS PART OF KANSAS CITY	21	130,670,917	128,290,123
IL PART OF ST. LOUIS	1	11,808,760	12,258,760
OUT OF MARKET AREA	42	543,027,756	513,544,354
STATE-FUNDED			
NORTHWEST	9	16,261,681	16,601,113
NORTH CENTRAL			
NORTHEAST	13	43,128,535	44,498,393
KANSAS CITY AREA	11	23,604,437	23,794,411
CENTRAL	15	8,837,260	9,078,618
ST. LOUIS AREA	28	39,031,249	38,441,532
SOUTHWEST	2	1,227,560	1,221,846
SPRINGFIELD AREA	3	1,658,793	1,785,740
SOUTH CENTRAL	1	246,489	246,489
SOUTHEAST	8	19,730,956	20,119,511
KS PART OF KANSAS CITY	3	702,556	702,556
IL PART OF ST. LOUIS			
OUT OF MARKET AREA	8	14,713,062	14,791,844

Source: NERA calculations from Master Contract/Subcontract Database.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 3.6B. Summary of Master Contract/Subcontract Database: Prime Consulting Contracts by Highway District, Excluding Subrecipients

CONTRACT CATEGORY	NUMBER OF PRIME CONTRACTS	DOLLARS AWARDED ($)	DOLLARS PAID ($)
FEDERALLY-ASSISTED			
NORTHWEST			
NORTH CENTRAL			
NORTHEAST			
KANSAS CITY AREA	26	40,370,359	36,476,790
CENTRAL	4	501,448	451,766
ST. LOUIS AREA	36	87,116,449	77,535,922
SOUTHWEST			
SPRINGFIELD AREA			
SOUTH CENTRAL			
SOUTHEAST			
KS PART OF KANSAS CITY	7	12,839,545	12,414,378
IL PART OF ST. LOUIS			
OUT OF MARKET AREA	3	5,727,372	6,005,536
STATE-FUNDED			
NORTHWEST	7	1,282,953	1,211,985
NORTH CENTRAL			
NORTHEAST			
KANSAS CITY AREA	89	22,475,952	18,990,870
CENTRAL	4	414,421	246,452
ST. LOUIS AREA	108	29,915,099	24,535,630
SOUTHWEST	3	1,162,648	1,146,615
SPRINGFIELD AREA	5	231,637	204,275
SOUTH CENTRAL	2	82,666	82,666
SOUTHEAST	3	484,563	484,563
KS PART OF KANSAS CITY	30	11,996,848	10,114,346
IL PART OF ST. LOUIS	1	89,929	66,843
OUT OF MARKET AREA	25	12,730,926	10,046,882

Source: See Table 3.1.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 3.6C. Summary of Master Contract/Subcontract Database: Prime Contracts by Contracting Category and Highway District, Subrecipients Only

CONTRACT CATEGORY	NUMBER OF PRIME CONTRACTS	DOLLARS AWARDED ($)	DOLLARS PAID ($)
CONSTRUCTION			
NORTHWEST	10	19,130,410	18,878,876
NORTH CENTRAL	3	958,546	971,960
NORTHEAST	13	5,786,273	5,989,974
KANSAS CITY AREA	29	75,207,677	69,993,184
CENTRAL	47	59,877,046	48,437,601
ST. LOUIS AREA	119	220,878,847	220,670,800
SOUTHWEST	8	5,687,202	5,421,961
SPRINGFIELD AREA	8	7,337,130	5,364,235
SOUTH CENTRAL	6	2,443,578	2,496,811
SOUTHEAST	11	5,362,770	5,356,506
KS PART OF KANSAS CITY	18	70,469,463	57,674,632
IL PART OF ST. LOUIS	1	1,640,958	1,490,293
OUT OF MARKET AREA	2	1,220,828	1,310,487
CONSULTING			
NORTHWEST	2	51,866	51,866
NORTH CENTRAL	82	2,986,583	2,933,199
NORTHEAST	39	660,854	683,031
KANSAS CITY AREA	36	7,047,192	6,476,461
CENTRAL	15	248,889	287,825
ST. LOUIS AREA	86	17,546,133	15,439,634
SOUTHWEST	33	629,788	658,436
SPRINGFIELD AREA	54	2,870,937	1,792,874
SOUTH CENTRAL	16	471,411	344,529
SOUTHEAST	67	2,371,098	2,507,899
KS PART OF KANSAS CITY	10	2,172,715	1,999,629
IL PART OF ST. LOUIS			
OUT OF MARKET AREA	11	2,703,280	2,638,799

Source: See Table 3.1

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

B. Geographic Market Definition

To determine the geographic dimension of MoDOT's construction and consulting contracting market, we used the Master Contract/Subcontract Database, as described in the previous section, to obtain the zip codes and thereby the county and state for each contractor and subcontractor establishment in our sample. Using this location information, we calculated the percentage of contract and subcontract dollars awarded to establishments by state and county during the study period.

Table 3.7. Distribution of Contracting Dollars by Geographic Location

Location	Construction (%)	Consulting (%)
Total Awards		
Inside MoDOT Market Area	87.5	90.3
Outside MoDOT Market Area	12.5	9.7
Total Payments		
Inside MoDOT Market Area	87.7	90.4
Outside MoDOT Market Area	12.3	9.6
Federally-Assisted Awards		
Inside MoDOT Market Area	87.5	93.9
Outside MoDOT Market Area	12.5	6.1
Federally-Assisted Payments		
Inside MoDOT Market Area	87.8	93.4
Outside MoDOT Market Area	12.2	6.6
State Funded Awards		
Inside MoDOT Market Area	85.8	82.2
Outside MoDOT Market Area	14.2	17.8
State Funded Payments		
Inside MoDOT Market Area	86.3	82.9
Outside MoDOT Market Area	13.7	17.1

Source: NERA calculations from Master Contract/Subcontract Database.

As discussed above, the geographic market area is defined as that region which accounts for at least 75 percent of overall contract dollars awarded. In MoDOT's case, the geographic area that best fit this requirement included the State of Missouri plus the Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area, and the Illinois portion of the St. Louis, MO-IL

Metropolitan Statistical Area.[204] This is the same geographic market area that NERA identified in our previous availability study for MoDOT.[205] Below, we will refer to this as the Missouri Department of Transportation Market Area ("MODOTMA").

As shown in Table 3.7, for construction, the overall share of expenditures made to establishments located inside the MODOTMA was 87.5 percent of dollars awarded and 87.7 percent of dollars paid. For consulting, the figures were 90.3 percent and 90.4 percent, respectively. For federally-assisted contracts, these percentages were the same or slightly larger. For state funded contracts, these percentages were slightly lower.

Outside of the MODOTMA, counties with a significant amount of spending activity (in decreasing order of importance) included Polk County, IA (Des Moines area); Cook County, IL (Chicago area); and Shawnee County, KS (Topeka area).[206]

C. Product Market Definition

Using 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 Groups for MoDOT construction contracting and consulting contracting, as measured by total dollars awarded and total dollars paid.

The relevant NAICS codes and their associated dollar weights appear below in Tables 3.8 through 3.11. It is clear from these four tables that, although numerous Industry Groups play a role in the construction and consulting contracting activities of MoDOT and its subrecipients, the actual contracting and subcontracting opportunities are not distributed evenly among them. The distribution of contract expenditures is, in fact, highly skewed.

For example, one Industry Group (NAICS 2373) alone accounts for over three-fifths of all construction dollars, while four Industry Groups (NAICS 2373, 2389, 2371, and 2123) collectively account for four-fifths. Nine Industry Groups collectively account for 90 percent of all construction dollars, and 20 Industry Groups collectively account for 99 percent. The remaining 1 percent is distributed among 72 additional Industry Groups (see Tables 3.8 and 3.9).

An even more concentrated pattern is observed for consulting, where one Industry Group (NAICS 5413) alone accounts for more than 90 percent of all contract dollars, and 7 Industry Groups collectively account for 99 percent of all contract dollars. The remaining 1 percent is distributed among 26 additional Industry Groups (see Tables 3.10 and 3.11).

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[204] The Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area includes the following counties: Franklin, Johnson, Leavenworth, Linn, Miami, and Wyandotte. The Illinois portion of the St. Louis, MO-IL Metropolitan Statistical Area includes the following counties: Bond, Calhoun, Clinton, Jersey, Macoupin, Madison, Monroe, and St. Clair.

[205] NERA Economic Consulting and Colette Holt & Associates (2004).

[206] We define "significant" here, somewhat arbitrarily, as counties that accounted for more than 0.25 percent of total award and paid dollars among three or more establishments.

Table 3.8. Distribution of Contract and Subcontract Dollars Awarded by Industry Group: Construction

NAICS Group	NAICS Description	Percentage	Cumulative Percentage
2373	Highway, Street, and Bridge Construction	63.85	63.85
2389	Other Specialty Trade Contractors	9.54	73.39
2371	Utility System Construction	3.80	77.20
2123	Nonmetallic Mineral Mining and Quarrying	3.51	80.70
2382	Building Equipment Contractors	3.07	83.77
4841	General Freight Trucking	2.22	85.99
3273	Cement and Concrete Product Manufacturing	1.96	87.95
2362	Nonresidential Building Construction	1.79	89.74
2381	Foundation, Structure, and Building Exterior Contractors	1.77	91.51
2383	Building Finishing Contractors	1.27	92.78
5617	Services to Buildings and Dwellings	1.20	93.98
2379	Other Heavy and Civil Engineering Construction	1.07	95.04
5413	Architectural, Engineering, and Related Services	0.62	95.66
4233	Lumber and Other Construction Materials Merchant Wholesalers	0.58	96.24
4236	Electrical and Electronic Goods Merchant Wholesalers	0.58	96.83
3241	Petroleum and Coal Products Manufacturing	0.57	97.40
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	0.55	97.95
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	0.44	98.39
4247	Petroleum and Petroleum Products Merchant Wholesalers	0.34	98.73
3323	Architectural and Structural Metals Manufacturing	0.31	99.04
	Balance (72 industry groups)	0.96	100.00
	TOTAL - $3,857,411,874		

Source: NERA calculations from Master Contract/Subcontract Database.

Notes: (1) Includes federally-assisted contracts and state-funded contracts. (2) Includes contracts let directly by MoDOT and contracts let be MoDOT subrecipients.

Table 3.9. Distribution of Contract and Subcontract Dollars Paid by Industry Group: Construction

NAICS Group	NAICS Description	Percentage	Cumulative Percentage
2373	Highway, Street, and Bridge Construction	63.42	63.42
2389	Other Specialty Trade Contractors	9.46	72.88
2371	Utility System Construction	3.89	76.77
2123	Nonmetallic Mineral Mining and Quarrying	3.50	80.27
2382	Building Equipment Contractors	3.09	83.35
4841	General Freight Trucking	2.87	86.22
3273	Cement and Concrete Product Manufacturing	2.01	88.24
2381	Foundation, Structure, and Building Exterior Contractors	1.79	90.02
2362	Nonresidential Building Construction	1.61	91.63
2383	Building Finishing Contractors	1.27	92.90
5617	Services to Buildings and Dwellings	1.15	94.05
2379	Other Heavy and Civil Engineering Construction	0.84	94.89
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	0.62	95.51
4236	Electrical and Electronic Goods Merchant Wholesalers	0.60	96.11
3241	Petroleum and Coal Products Manufacturing	0.60	96.70
5413	Architectural, Engineering, and Related Services	0.59	97.29
4233	Lumber and Other Construction Materials Merchant Wholesalers	0.58	97.87
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	0.45	98.32
4247	Petroleum and Petroleum Products Merchant Wholesalers	0.41	98.73
3323	Architectural and Structural Metals Manufacturing	0.32	99.05
	Balance (72 industry groups)	0.97	100.00
	TOTAL - $3,744,921,976		

Source and Notes: See Table 3.8.

Table 3.10. Distribution of Contract and Subcontract Dollars Awarded by Industry Group: Consulting

NAICS Group	NAICS Description	Percentage	Cumulative Percentage
5413	Architectural, Engineering, and Related Services	93.92	93.92
5417	Scientific Research and Development Services	2.29	96.21
5611	Office Administrative Services	0.89	97.10
5418	Advertising, Public Relations, and Related Services	0.65	97.75
5416	Management, Scientific, and Technical Consulting Services	0.56	98.30
2382	Building Equipment Contractors	0.42	98.72
5312	Offices of Real Estate Agents and Brokers	0.24	98.96
5415	Computer Systems Design and Related Services	0.23	99.18
	Balance (26 industry groups)	0.82	100.00
	TOTAL - $268,133,640		

Source and Notes: See Table 3.8.

Table 3.11. Distribution of Contract and Subcontract Dollars Paid by Industry Group: Consulting

NAICS Group	NAICS Description	Percentage	Cumulative Percentage
5413	Architectural, Engineering, and Related Services	94.05	94.05
5417	Scientific Research and Development Services	2.43	96.48
5611	Office Administrative Services	0.76	97.25
5418	Advertising, Public Relations, and Related Services	0.60	97.84
5416	Management, Scientific, and Technical Consulting Services	0.59	98.43
2382	Building Equipment Contractors	0.41	98.84
5312	Offices of Real Estate Agents and Brokers	0.21	99.05
	Balance (27 industry groups)	0.82	100.00
	TOTAL - $235,829,704		

Source and Notes: See Table 3.8.

Now that the geographic and industry parameters of MoDOT's construction and consulting contracting markets have been established, we will restrict our subsequent analyses, in Chapter IV and beyond, to business enterprises and other phenomena within this specific market area so as to narrowly tailor our findings to MoDOT's specific contracting circumstances.

IV. M/W/DBE Availability in MoDOT's Market Area

A. Introduction

Estimates of DBE availability are an important element of MoDOT's disparity study since they provide benchmarks for assessing the effectiveness of MoDOT's efforts to encourage DBE participation in public construction and consulting contracting. Furthermore, they provide a means by which to establish goals for DBE participation that are tailored to MoDOT's relevant market area.

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.[207] 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.[208] Census Bureau data from 2004 (the most recent available) 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.[209] 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.[210]

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.[211]

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[207] 49 C.F.R. § 26.67.

[208] Calculations by NERA from 2003 SSBF data.

[209] *See* U.S. Census Bureau (2004a) and (2004b).

[210] *See* Taylor, Paul, Rakesh Kochhar, Richard Fry, Gabriel Velasco, and Seth Motel (2011), "Twenty-to-One: Wealth Gaps Rise to Record Highs Between Whites, Blacks and Hispanics," Washington, DC: Pew Research Center.

[211] 49 C.F.R. § 26.67 and Appendix E.

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 understate DBE availability to a small degree.[212]

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*."[213]

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."[214] Likewise, this method was successful in the defense of the DBE programs for Minnesota DOT[215] and Illinois DOT,[216] as well as the M/WBE construction program for the City of Chicago.[217]

In addition to its favorable reception in the courts, when properly executed, the 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

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[212] For ease of exposition, we shall use the term DBE throughout the remainder of the report.

[213] *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, J. and C. Holt (2010), pp. 33-44.

[214] *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).

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

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

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

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.[218] Third, when properly executed, the Custom Census is less likely to be tainted by the effects of past and present discrimination than other methods.[219]

The Custom Census method has seven steps. These are:

1. Create a database of representative, recent, and complete MoDOT contracts in construction and consulting;
2. Identify MoDOT's relevant geographic market from this database;
3. Identify MoDOT'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 in Chapter III. Steps 4-7 are described in more detail below.

B. Identifying Business Establishments in the Relevant Markets

DBE availability (unweighted) is defined as the number of DBEs divided by the total number of business establishments in MoDOT's contracting market area—what we will refer to as the Baseline Business Universe.[220] Determining the total number of business establishments in the market area, however, is more straightforward than determining the number of minority- or women-owned establishments 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 listed DBEs; and (3) estimate the number of unlisted DBEs in the relevant market. This section describes how these tasks were accomplished for MoDOT.

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. 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

[218] *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").

[219] *See* Section B.5., below, for further discussion of this point.

[220] To yield a percentage, the resulting figure is multiplied by 100.

commentators argue that disparities should only be assessed between firms with similar "capacities."[221] However, most courts have properly refused to make the results of discrimination the benchmark for non-discrimination.[222] 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. 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.[223]

1. Estimate the Total Number of Business Establishments in the Market

We used data supplied by Dun & Bradstreet's Hoovers subsidiary to determine the total number of business establishments operating in the relevant geographic and product markets (these markets were discussed in the previous chapter). Dun & Bradstreet produces the most comprehensive publicly available database of business establishments in the U.S. This database contains over 15 million records and is updated continuously. Each record in Dun & Bradstreet represents a 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.

We used the Dun & Bradstreet database to identify the total number of businesses in each NAICS code which was identified as part of the MoDOT product market. Table 4.1 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. Table 4.2 shows the same information along with the associated industry weight according to dollars paid. Tables 4.3 and 4.4 are comparable to Tables 4.1 and 4.2 but are restricted to federally-assisted contracts only. Analogous data for consulting appear in Tables 4.5 through 4.8.

Although numerous industries play a role in MoDOT's Baseline Business Universe, contracting and subcontracting opportunities are not distributed evenly among them. The distribution of contract expenditures is, in fact, highly skewed, as documented above in Chapter III.

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[221] *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 Eighth Circuit Court of Appeals).

[222] *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 originals) ("MWBE construction firms are generally smaller and less experienced *because* of discrimination.… Additionally, we do not read *Croson* to require disparity studies that measure whether construction firms are able to perform a *particular contract*.").

[223] *Concrete Works*, 321 F.3d at 981 (emphasis in the original). *See also* Wainwright and Holt (2010), Appendix B "Understanding Capacity," and Section B.5, below.

Table 4.1. Construction—Number of Business Establishments and Industry Weight (Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Estab-lishments	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	353	64.45	64.45
2389	Other Specialty Trade Contractors	2,881	9.63	74.07
2371	Utility System Construction	283	3.80	77.87
2123	Nonmetallic Mineral Mining and Quarrying	119	3.52	81.40
2382	Building Equipment Contractors	3,992	3.09	84.49
4841	General Freight Trucking	1,640	2.24	86.73
3273	Cement and Concrete Product Manufacturing	281	1.97	88.70
2362	Nonresidential Building Construction	1,229	1.81	90.51
2381	Foundation, Structure, and Building Exterior Contractors	768	1.66	92.17
5617	Services to Buildings and Dwellings	2,178	1.21	93.38
2383	Building Finishing Contractors	1,377	1.19	94.57
2379	Other Heavy and Civil Engineering Construction	49	1.08	95.64
5413	Architectural, Engineering, and Related Services	1,359	0.61	96.25
4236	Electrical and Electronic Goods Merchant Wholesalers	378	0.59	96.84
3241	Petroleum and Coal Products Manufacturing	39	0.56	97.40
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	295	0.56	97.96
4233	Lumber and Other Construction Materials Merchant Wholesalers	214	0.55	98.51
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	589	0.45	98.96
4247	Petroleum and Petroleum Products Merchant Wholesalers	215	0.34	99.30
3323	Architectural and Structural Metals Manufacturing	102	0.31	99.61
4441	Building Material and Supplies Dealers	442	0.17	99.78
3342	Communications Equipment Manufacturing	26	0.11	99.89
5242	Agencies, Brokerages, and Other Insurance Related Activities	4,046	0.11	100.00

Source: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Notes: (1) Results are shown for the top 99 percent of contract dollars awarded. (2) Weights were renormalized so as to sum to 100.

Table 4.2. Construction—Number of Business Establishments and Industry Weight (Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Estab-lishments	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	353	63.91	63.91
2389	Other Specialty Trade Contractors	2,881	9.59	73.49
2371	Utility System Construction	283	3.91	77.41
2123	Nonmetallic Mineral Mining and Quarrying	119	3.53	80.94
2382	Building Equipment Contractors	3,992	3.11	84.05
4841	General Freight Trucking	1,640	2.91	86.95
3273	Cement and Concrete Product Manufacturing	281	2.03	88.98
2381	Foundation, Structure, and Building Exterior Contractors	768	1.65	90.63
2362	Nonresidential Building Construction	1,229	1.63	92.27
2383	Building Finishing Contractors	1,377	1.19	93.46
5617	Services to Buildings and Dwellings	2,178	1.16	94.62
2379	Other Heavy and Civil Engineering Construction	49	0.85	95.47
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	295	0.63	96.10
4236	Electrical and Electronic Goods Merchant Wholesalers	378	0.60	96.70
3241	Petroleum and Coal Products Manufacturing	39	0.59	97.29
5413	Architectural, Engineering, and Related Services	1,359	0.58	97.87
4233	Lumber and Other Construction Materials Merchant Wholesalers	214	0.55	98.42
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	589	0.45	98.87
4247	Petroleum and Petroleum Products Merchant Wholesalers	215	0.42	99.29
3323	Architectural and Structural Metals Manufacturing	102	0.32	99.60
4441	Building Material and Supplies Dealers	442	0.18	99.79
5242	Agencies, Brokerages, and Other Insurance Related Activities	4,046	0.11	99.90
3342	Communications Equipment Manufacturing	26	0.10	100.00

Source and Notes: See Table 4.1.

Table 4.3. Construction—Number of Business Establishments and Industry Weight (Federal Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Estab-lishments	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	353	63.80	63.80
2389	Other Specialty Trade Contractors	2881	9.78	73.58
2371	Utility System Construction	283	3.97	77.55
2123	Nonmetallic Mineral Mining and Quarrying	119	3.36	80.91
2382	Building Equipment Contractors	3992	3.13	84.04
4841	General Freight Trucking	1640	2.33	86.37
3273	Cement and Concrete Product Manufacturing	281	2.04	88.41
2362	Nonresidential Building Construction	1229	1.89	90.30
2381	Foundation, Structure, and Building Exterior Contractors	768	1.73	92.04
5617	Services to Buildings and Dwellings	2178	1.24	93.28
2383	Building Finishing Contractors	1377	1.24	94.52
2379	Other Heavy and Civil Engineering Construction	49	1.12	95.65
5413	Architectural, Engineering, and Related Services	1359	0.64	96.28
4236	Electrical and Electronic Goods Merchant Wholesalers	378	0.61	96.90
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	295	0.58	97.48
4233	Lumber and Other Construction Materials Merchant Wholesalers	214	0.58	98.05
3241	Petroleum and Coal Products Manufacturing	39	0.46	98.52
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	589	0.43	98.95
4247	Petroleum and Petroleum Products Merchant Wholesalers	215	0.34	99.28
3323	Architectural and Structural Metals Manufacturing	102	0.32	99.60
4441	Building Material and Supplies Dealers	442	0.18	99.78
5242	Agencies, Brokerages, and Other Insurance Related Activities	4046	0.11	99.89
3342	Communications Equipment Manufacturing	26	0.11	100.00

Source and Notes: See Table 4.1.

Table 4.4. Construction—Number of Business Establishments and Industry Weight (Federal Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Estab-lishments	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	353	63.24	63.24
2389	Other Specialty Trade Contractors	2881	9.74	72.97
2371	Utility System Construction	283	4.10	77.07
2123	Nonmetallic Mineral Mining and Quarrying	119	3.33	80.40
2382	Building Equipment Contractors	3992	3.16	83.56
4841	General Freight Trucking	1640	3.03	86.59
3273	Cement and Concrete Product Manufacturing	281	2.11	88.70
2381	Foundation, Structure, and Building Exterior Contractors	768	1.73	90.43
2362	Nonresidential Building Construction	1229	1.71	92.14
2383	Building Finishing Contractors	1377	1.25	93.39
5617	Services to Buildings and Dwellings	2178	1.20	94.59
2379	Other Heavy and Civil Engineering Construction	49	0.89	95.48
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	295	0.66	96.14
4236	Electrical and Electronic Goods Merchant Wholesalers	378	0.62	96.76
5413	Architectural, Engineering, and Related Services	1359	0.61	97.37
4233	Lumber and Other Construction Materials Merchant Wholesalers	214	0.57	97.94
3241	Petroleum and Coal Products Manufacturing	39	0.49	98.43
4247	Petroleum and Petroleum Products Merchant Wholesalers	215	0.42	98.86
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	589	0.41	99.27
3323	Architectural and Structural Metals Manufacturing	102	0.33	99.60
4441	Building Material and Supplies Dealers	442	0.19	99.79
5242	Agencies, Brokerages, and Other Insurance Related Activities	4046	0.12	99.90
3342	Communications Equipment Manufacturing	26	0.10	100.00

Source and Notes: See Table 4.1.

Table 4.5. Consulting—Number of Business Establishments and Industry Weight (Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Establishments	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	2,684	94.78	94.78
5417	Scientific Research and Development Services	211	2.30	97.08
5611	Office Administrative Services	346	0.90	97.98
5418	Advertising, Public Relations, and Related Services	265	0.66	98.63
2382	Building Equipment Contractors	1,263	0.42	99.05
5416	Management, Scientific, and Technical Consulting Services	2,857	0.33	99.38
5312	Offices of Real Estate Agents and Brokers	4,155	0.24	99.62
5415	Computer Systems Design and Related Services	1,011	0.22	99.84
2371	Utility System Construction	235	0.16	100.00
5242	Agencies, Brokerages, and Other Insurance Related Activities	4,046	0.11	100.00

Source and Notes: See Table 4.1.

Table 4.6. Consulting—Number of Business Establishments and Industry Weight (Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Establishments	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	2,684	94.90	94.90
5417	Scientific Research and Development Services	211	2.46	97.35
5611	Office Administrative Services	346	0.78	98.13
5418	Advertising, Public Relations, and Related Services	265	0.59	98.72
5416	Management, Scientific, and Technical Consulting Services	3,525	0.49	99.21
2382	Building Equipment Contractors	1,263	0.42	99.63
5312	Offices of Real Estate Agents and Brokers	4,155	0.21	99.84
3342	Communications Equipment Manufacturing	26	0.16	100.00

Source and Notes: See Table 4.1.

Table 4.7. Consulting—Number of Business Establishments and Industry Weight (Federal Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Establishments	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	2,684	96.75	96.75
5611	Office Administrative Services	346	1.30	98.04
5418	Advertising, Public Relations, and Related Services	265	0.90	98.94
2382	Building Equipment Contractors	1,263	0.48	99.42
5312	Offices of Real Estate Agents and Brokers	4,155	0.35	99.77
5417	Scientific Research and Development Services	211	0.23	100.00

Source and Notes: See Table 4.1.

Table 4.8. Consulting—Number of Business Establishments and Industry Weight (Federal Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Establishments	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	2,684	97.14	97.14
5611	Office Administrative Services	346	1.09	98.23
5418	Advertising, Public Relations, and Related Services	265	0.77	99.00
2382	Building Equipment Contractors	1,263	0.46	99.46
5312	Offices of Real Estate Agents and Brokers	4,155	0.30	99.76
5417	Scientific Research and Development Services	211	0.24	100.00

Source and Notes: See Table 4.1.

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 Missouri and surrounding states. Beyond the information already in Dun & Bradstreet/Hoovers, NERA collected lists of M\WBEs from the Missouri Department of Transportation other public and private entities. Specifically, directories were included from: American Indian Search, Arkansas Department of Transportation, Black Chamber of Commerce of Greater Kansas City, Business Research Services, Inc., City of Lexington-Fayette Urban County, City of Little Rock, City of Memphis, City of Nashville, City of O'Fallon, City of Omaha and Douglas County, De Soto Chamber of Commerce, Diversity Information Resources,

DiversityBusiness.com, Illinois Department of Transportation, Iowa Department of Economic Development, Iowa Department of Transportation, Joplin Area Chamber of Commerce, Kansas City Missouri Contract Compliance Division, Kansas Women's Business Center, Kentucky Transportation Cabinet, the Minority Business Development Agency of the US Department of Commerce, Missouri Department of Administration, National Association of Women in Construction, Native Edge, Missouri Office of Supplier and Workforce Diversity, Oklahoma Department of Transportation, Small Business Administration/Central Contractor Registry, The Greater Louisville Chamber of Commerce, and Women Construction Owners and Executives.[224]

If the listed DBEs identified in Tables 4.9-4.16 are in fact *all* DBEs and are the *only* DBEs among all of the businesses identified in Tables 4.1-4.8, then an estimate of "listed" DBE availability is simply the number of listed DBEs (taken from Tables 4.9–4.16, respectively) divided by the total number of businesses in the relevant market (taken from Tables 4.1-4.8, respectively). 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.

There are two reasons for this. First, it is likely that some proportion of the DBEs listed in the tables is not actually minority-owned or women-owned. Second, it is likely that there are additional "unlisted" DBEs among all of the businesses included in Tables 4.1-4.8. Such businesses do not appear in any of the directories we gathered and are therefore not included as DBEs in Tables 4.9-4.16. 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.

[224] 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 B. 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 contact; or, (3) the entity simply declined to provide us the list. These entities, as well, are listed in Appendix B.

Table 4.9. Construction—Number of Listed DBEs and Industry Weight (Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	38	64.45	64.45
2389	Other Specialty Trade Contractors	206	9.63	74.07
2371	Utility System Construction	28	3.80	77.87
2123	Nonmetallic Mineral Mining and Quarrying	8	3.52	81.40
2382	Building Equipment Contractors	280	3.09	84.49
4841	General Freight Trucking	119	2.24	86.73
3273	Cement and Concrete Product Manufacturing	21	1.97	88.70
2362	Nonresidential Building Construction	139	1.81	90.51
2381	Foundation, Structure, and Building Exterior Contractors	56	1.66	92.17
5617	Services to Buildings and Dwellings	131	1.21	93.38
2383	Building Finishing Contractors	95	1.19	94.57
2379	Other Heavy and Civil Engineering Construction	9	1.08	95.64
5413	Architectural, Engineering, and Related Services	135	0.61	96.25
4236	Electrical and Electronic Goods Merchant Wholesalers	29	0.59	96.84
3241	Petroleum and Coal Products Manufacturing	3	0.56	97.40
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	19	0.56	97.96
4233	Lumber and Other Construction Materials Merchant Wholesalers	17	0.55	98.51
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	24	0.45	98.96
4247	Petroleum and Petroleum Products Merchant Wholesalers	11	0.34	99.30
3323	Architectural and Structural Metals Manufacturing	16	0.31	99.61
4441	Building Material and Supplies Dealers	32	0.17	99.78
3342	Communications Equipment Manufacturing	5	0.11	99.89
5242	Agencies, Brokerages, and Other Insurance Related Activities	373	0.11	100.00

Source and Notes: See Table 4.1.

Table 4.10. Construction—Number of Listed DBEs and Industry Weight (Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	38	63.91	63.91
2389	Other Specialty Trade Contractors	206	9.59	73.49
2371	Utility System Construction	28	3.91	77.41
2123	Nonmetallic Mineral Mining and Quarrying	8	3.53	80.94
2382	Building Equipment Contractors	280	3.11	84.05
4841	General Freight Trucking	119	2.91	86.95
3273	Cement and Concrete Product Manufacturing	21	2.03	88.98
2381	Foundation, Structure, and Building Exterior Contractors	56	1.65	90.63
2362	Nonresidential Building Construction	139	1.63	92.27
2383	Building Finishing Contractors	95	1.19	93.46
5617	Services to Buildings and Dwellings	131	1.16	94.62
2379	Other Heavy and Civil Engineering Construction	9	0.85	95.47
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	19	0.63	96.10
4236	Electrical and Electronic Goods Merchant Wholesalers	29	0.60	96.70
3241	Petroleum and Coal Products Manufacturing	3	0.59	97.29
5413	Architectural, Engineering, and Related Services	135	0.58	97.87
4233	Lumber and Other Construction Materials Merchant Wholesalers	17	0.55	98.42
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	24	0.45	98.87
4247	Petroleum and Petroleum Products Merchant Wholesalers	11	0.42	99.29
3323	Architectural and Structural Metals Manufacturing	16	0.32	99.60
4441	Building Material and Supplies Dealers	32	0.18	99.79
5242	Agencies, Brokerages, and Other Insurance Related Activities	373	0.11	99.90
3342	Communications Equipment Manufacturing	5	0.10	100.00

Source and Notes: See Table 4.1.

Table 4.11. Construction—Number of Listed DBEs and Industry Weight (Federal Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	38	63.80	63.80
2389	Other Specialty Trade Contractors	206	9.78	73.58
2371	Utility System Construction	28	3.97	77.55
2123	Nonmetallic Mineral Mining and Quarrying	8	3.36	80.91
2382	Building Equipment Contractors	280	3.13	84.04
4841	General Freight Trucking	119	2.33	86.37
3273	Cement and Concrete Product Manufacturing	21	2.04	88.41
2362	Nonresidential Building Construction	139	1.89	90.30
2381	Foundation, Structure, and Building Exterior Contractors	56	1.73	92.04
5617	Services to Buildings and Dwellings	131	1.24	93.28
2383	Building Finishing Contractors	95	1.24	94.52
2379	Other Heavy and Civil Engineering Construction	9	1.12	95.65
5413	Architectural, Engineering, and Related Services	135	0.64	96.28
4236	Electrical and Electronic Goods Merchant Wholesalers	29	0.61	96.90
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	19	0.58	97.48
4233	Lumber and Other Construction Materials Merchant Wholesalers	17	0.58	98.05
3241	Petroleum and Coal Products Manufacturing	3	0.46	98.52
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	24	0.43	98.95
4247	Petroleum and Petroleum Products Merchant Wholesalers	11	0.34	99.28
3323	Architectural and Structural Metals Manufacturing	16	0.32	99.60
4441	Building Material and Supplies Dealers	32	0.18	99.78
5242	Agencies, Brokerages, and Other Insurance Related Activities	373	0.11	99.89
3342	Communications Equipment Manufacturing	5	0.11	100.00

Source and Notes: See Table 4.1.

Table 4.12. Construction—Number of Listed DBEs and Industry Weight (Federal Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumu-lative)
2373	Highway, Street, and Bridge Construction	38	63.24	63.24
2389	Other Specialty Trade Contractors	206	9.74	72.97
2371	Utility System Construction	28	4.10	77.07
2123	Nonmetallic Mineral Mining and Quarrying	8	3.33	80.40
2382	Building Equipment Contractors	280	3.16	83.56
4841	General Freight Trucking	119	3.03	86.59
3273	Cement and Concrete Product Manufacturing	21	2.11	88.70
2381	Foundation, Structure, and Building Exterior Contractors	56	1.73	90.43
2362	Nonresidential Building Construction	139	1.71	92.14
2383	Building Finishing Contractors	95	1.25	93.39
5617	Services to Buildings and Dwellings	131	1.20	94.59
2379	Other Heavy and Civil Engineering Construction	9	0.89	95.48
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	19	0.66	96.14
4236	Electrical and Electronic Goods Merchant Wholesalers	29	0.62	96.76
5413	Architectural, Engineering, and Related Services	135	0.61	97.37
4233	Lumber and Other Construction Materials Merchant Wholesalers	17	0.57	97.94
3241	Petroleum and Coal Products Manufacturing	3	0.49	98.43
4247	Petroleum and Petroleum Products Merchant Wholesalers	11	0.42	98.86
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	24	0.41	99.27
3323	Architectural and Structural Metals Manufacturing	16	0.33	99.60
4441	Building Material and Supplies Dealers	32	0.19	99.79
5242	Agencies, Brokerages, and Other Insurance Related Activities	373	0.12	99.90
3342	Communications Equipment Manufacturing	5	0.10	100.00

Source and Notes: See Table 4.1.

Table 4.13. Consulting—Number of Listed DBE Establishments and Industry Weight (Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	256	94.78	94.78
5417	Scientific Research and Development Services	26	2.30	97.08
5611	Office Administrative Services	21	0.90	97.98
5418	Advertising, Public Relations, and Related Services	70	0.66	98.63
2382	Building Equipment Contractors	111	0.42	99.05
5416	Management, Scientific, and Technical Consulting Services	348	0.33	99.38
5312	Offices of Real Estate Agents and Brokers	459	0.24	99.62
5415	Computer Systems Design and Related Services	159	0.22	99.84
2371	Utility System Construction	23	0.16	100.00

Source and Notes: See Table 4.1.

Table 4.14. Consulting—Number of Listed DBE Establishments and Industry Weight (Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	256	94.90	94.90
5417	Scientific Research and Development Services	26	2.46	97.35
5611	Office Administrative Services	21	0.78	98.13
5418	Advertising, Public Relations, and Related Services	70	0.59	98.72
5416	Management, Scientific, and Technical Consulting Services	438	0.49	99.21
2382	Building Equipment Contractors	111	0.42	99.63
5312	Offices of Real Estate Agents and Brokers	459	0.21	99.84
3342	Communications Equipment Manufacturing	5	0.16	100.00

Source and Notes: See Table 4.1.

Table 4.15. Consulting—Number of Listed DBE Establishments and Industry Weight (Federal Dollars Awarded), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	256	96.75	96.75
5611	Office Administrative Services	21	1.30	98.04
5418	Advertising, Public Relations, and Related Services	70	0.90	98.94
2382	Building Equipment Contractors	111	0.48	99.42
5312	Offices of Real Estate Agents and Brokers	459	0.35	99.77
5417	Scientific Research and Development Services	26	0.23	100.00

Source and Notes: See Table 4.1.

Table 4.16. Consulting—Number of Listed DBE Establishments and Industry Weight (Federal Dollars Paid), by NAICS Code

NAICS Industry Group	NAICS Description	Number of Listed DBEs	Industry Weight	Industry Weight (Cumulative)
5413	Architectural, Engineering, and Related Services	256	97.14	97.14
5611	Office Administrative Services	21	1.09	98.23
5418	Advertising, Public Relations, and Related Services	70	0.77	99.00
2382	Building Equipment Contractors	111	0.46	99.46
5312	Offices of Real Estate Agents and Brokers	459	0.30	99.76
5417	Scientific Research and Development Services	26	0.24	100.00

Source and Notes: See Table 4.1.

3. Verify Listed DBEs

a. Introduction

It is likely that information on DBEs from Dun & Bradstreet/Hoovers and other DBE directories is not correct in all instances. Phenomena such as ownership changes, associate or mentor status, recording errors, or even outright 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 phenomena as geographic relocation, ownership changes, directory compilation errors, fear of stigmatization, 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. For this Study, we corrected for the effect of these biases using statistical sampling procedures. We surveyed a large, stratified random sample of 5,000 establishments drawn from the Baseline Business Universe and measured how often they were misclassified (or unclassified) by race and/or gender.[225]

Strata were defined according to NAICS sectors and listed DBE status.[226] In the telephone 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 5,000 firms in our sample, 1,205 (24.1%) were listed DBEs and 3,795 (75.9%) were unclassified by race or gender. Of these 5,000 firms, however, 610 (12.2%) were excluded as "unable to contact." Exclusions resulted primarily from firms that were no longer in business.[227] Of the remaining 4,390 firms, 1,097 (25.0%) were listed DBEs and the remaining 3,293 establishments (75.0%) 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 (that is, firms putatively owned by nonminority males) could all be properly classified as non-DBEs. Both elements of the survey are described in more detail below.[228]

b. Survey of Listed DBEs

We selected a stratified random sample of 1,205 listed DBEs to verify the race and gender status of their owner(s). Of these, 108 (9.0 percent) were excluded as "unable to contact." Of the 1,097 remaining establishments, we obtained complete interviews from 594, for a response rate of 54.1 percent.

Of the 594 establishments interviewed, 119 (20.1 percent) were owned by nonminority males. Misclassification varied by putative race and gender, as shown in Table 4.17. Misclassification was highest among putative Hispanic-owned firms, followed by putative nonminority female-

[225] 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 Businesses," *Proceedings of the Second International Conference on Establishment Surveys*, Buffalo, NY, June 17-21, 2000.

[226] Thirteen separate industry strata were created based on NAICS code. All thirteen strata were then split according to listed DBE status to create a total of 26 strata. Generally, listed DBEs were sampled at a higher rate than unclassified establishments.

[227] Putative DBEs were not more likely to be affected by this than putative non-DBEs.

[228] By "putative," we mean the race and gender that we initially assigned to each firm based on the information provided by MoDOT, by Dun & Bradstreet/Hoovers, by our master DBE directory, or from other sources.

owned firms, Asian/Pacific Islander-owned firms, African American-owned firms, and finally Native American-owned firms.[229]

Misclassification was also observed in every NAICS stratum, ranging from a high of 47.1 percent in NAICS 44 (Retail Trade) to a low of 14.2 percent in NAICS 541 (Professional, Scientific, and Technical Services) as shown in Table 4.18.

Table 4.17. 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)	8.9	4.1	87.0	123
Hispanic (either gender)	25.0	18.2	56.8	44
Asian/Pacific Islander (either gender)	18.2	6.8	75.0	44
Native American (either gender)	7.7	26.9	65.4	26
Nonminority Female	24.4	3.1	72.6	357
All DBE Types	20.1	5.7	74.2	594

Source: NERA telephone surveys.

Notes: (1) Figures are rounded. Rounding was performed subsequent to any mathematical calculations. (2) Similar calculations, not shown here, were performed within each stratum.

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 African American-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 African American-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 putatively African American-owned firms that we did interview. In this example, our interviews show that 87.0 percent of these firms are indeed actually African American-owned, 8.9 percent are actually nonminority male-owned, 3.3 percent are nonminority female-owned, and 0.8 percent are actually owned by other minority

[229] 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" or "Asian/Pacific Islander" refers to an individual having origins in the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands; "Native American" refers to an individual having origins in any of the original peoples of North America or of Hawai'i.

groups (see Table 4.18). Therefore, we assign each of the remaining putative African American-owned firms a 87.0 percent probability of actually being African American-owned, a 8.9 percent probability of actually being nonminority male-owned, a 3.3 percent chance of being nonminority female-owned, and a 0.8 percent chance of being owned by persons from another minority group. We repeated this procedure within each sample stratum and for all putative race and gender categories.

Table 4.18. Listed DBE Survey—Amount of Misclassification, by Industry Grouping

Listed DBE By NAICS Code Grouping	Misclassification (Percentage Nonminority Male)	Percentage Actually DBE-owned	Number of Businesses Interviewed
NAICS 237	16.1	83.9	31
NAICS 541	14.2	85.8	155
NAICS 238	21.7	78.3	115
NAICS 48	23.3	76.7	43
NAICS 212	0.0	100.0	2
NAICS 561	28.6	71.4	35
NAICS 236	17.8	82.2	45
NAICS 32	22.2	77.8	9
NAICS 42	23.7	76.3	38
NAICS 33	14.3	85.7	28
NAICS 53	18.8	81.2	32
NAICS 44	47.1	52.9	17
NAICS 52	22.7	77.3	44
All NAICS Codes	20.0	80.0	594

Source: See Table 4.17.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

4. Verify Putative Non-DBEs

a. 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/Hoovers or in one or more of the other directories, and that would otherwise appear to be a non-DBE.

We selected a stratified random sample of 3,795 unclassified businesses from the Baseline Business Universe to verify the race and gender status of their owner(s). Of these, 502 (13.2

percent) were excluded as "unable to contact." Of the 3,293 remaining establishments, we obtained 1,615 complete interviews, for a response rate of 49.0 percent.

As shown in Table 4.19, of the 1,615 establishments interviewed overall, 1,395 (86.4 percent) were owned by nonminority males. Clearly, a large majority of unclassified businesses in the Baseline Business Universe are nonminority male-owned. Nevertheless, the survey results indicate that 13.6 percent are *not* nonminority male-owned. Among the latter, the largest group was nonminority female-owned (11.2 percent), with descending size shares accounted for by African American-owned (1.2 percent), Hispanic-owned (0.5 percent), and finally Asian- and Native American-owned (0.4 percent each).

Table 4.19. Unclassified Businesses Survey—By Race and Gender

Verified Race/Gender	Number of Businesses Interviewed	Percentage of Total
Nonminority male	1,395	86.4
Nonminority female	180	11.2
African American (either gender)	20	1.2
Hispanic (either gender)	8	0.5
Asian/Pacific Islander (either gender)	6	0.4
Native American (either gender)	6	0.4
TOTAL	1,615	100.0

Source: See Table 4.17.

Notes: (1) Figures are rounded. Rounding was performed subsequent to any mathematical calculations. (2) Similar calculations, not shown here, were performed within each stratum.

Misclassification was again observed within each industry stratum, as shown in Table 4.20. By industry grouping, NAICS 531 (Real Estate and Rental and Leasing) had the lowest share of actual nonminority male-owned firms, at 72.5 percent, while NAICS 32 (Manufacturing) had the highest, at 93.7 percent.

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.

Table 4.20. Unclassified Businesses Survey—By Industry Grouping

Listed DBE By NAICS Grouping	Percentage Actually Nonminority Male-owned	Percentage DBE	Number of Businesses Interviewed
NAICS 237	86.3	13.7	226
NAICS 541	84.9	15.1	139
NAICS 238	82.5	17.5	177
NAICS 48	86.0	14	193
NAICS 212	91.1	8.9	45
NAICS 561	82.5	17.5	63
NAICS 236	84.6	15.4	91
NAICS 32	93.7	6.3	111
NAICS 42	92.1	7.9	126
NAICS 33	90.1	9.9	111
NAICS 53	72.5	27.5	91
NAICS 44	88.5	11.5	113
NAICS 52	86.4	13.6	129
All NAICS Codes	86.4	13.6	1,615

Source: See Table 4.17.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

5. 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, annual individual firm 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*.[230] Business outcomes, however, can be

[230] *See* Enchautegui, et al. (1996).

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.

Moreover, terms such as "capacity," "qualifications," and "ability," are not well defined in any statistical sense. Does "capacity" mean the level of annual individual firm revenues, 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, annual individual firm revenues, bonding limits, or numbers 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 (i.e., "capacity") because of discrimination than firms that have benefited from the exclusionary system.

Using annual individual firm revenues as the measure of qualifications illustrates the point. If DBEs are subject to market area discrimination, their annual individual firm revenues will be smaller than nonminority, male-owned businesses because they will be less successful at obtaining work. Annual individual firm revenues measure the extent to which a firm has succeeded in the market area, 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, annual individual firm revenues, 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 MoDOT 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.[231] 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.[232] Similarly, economists using decennial census data have demonstrated that statistically significant disparities in business formation and business owner earnings between minorities and nonminorities 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.[233]

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 and DBE firms persists; and
- Most important, identifiable indicators of "capacity" are themselves impacted by discrimination.

[231] *See* Bourdon and Levitt (1980); *see also* Eccles (1981); *and* Gould (1980).

[232] *See* Wainwright (2008).

[233] Wainwright (2000).

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

Top-level estimates of DBE availability appear below in Table 4.21. Four sets of weighted availability measures are provided for construction and four for consulting. The first is based on award dollars for all contracts (Table 4.21, rows 1 and 5), the second on paid dollars for all contracts (Table 4.21, rows 2 and 6), the third on award dollars for federally-assisted contracts (Table 4.21, rows 3 and 7), and the fourth based on paid dollars for federally-assisted contracts (Table 4.21, rows 4 and 8). All four weighting procedures yield similar results.[234]

Overall, DBE availability in the construction sector is between 20.36 and 20.41 percent. Non-DBE availability is between 79.59 and 79.64 percent. Among DBEs, availability of African American-owned businesses is between 2.52 and 2.58 percent, availability of Hispanic-owned businesses is between 0.68 and 0.69 percent, availability of Asian-owned businesses is between 0.33 and 0.34 percent, and availability of Native American-owned businesses is between 0.97 and 0.99 percent. Availability of minority-owned businesses as a group is between 4.53 and 4.56 percent. Availability of nonminority female-owned businesses is between 15.80 and 15.87 percent.

Table 4.21. Overall Estimated DBE Availability

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.52	0.68	0.33	0.99	4.53	15.87	20.40	79.60
WEIGHTED BY PAID DOLLARS	2.57	0.69	0.33	0.98	4.56	15.80	20.36	79.64
CONSTRUCTION (FEDERALLY-ASSISTED CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.53	0.69	0.34	0.98	4.53	15.87	20.41	79.59
WEIGHTED BY PAID DOLLARS	2.58	0.69	0.33	0.97	4.56	15.80	20.37	79.63
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.38	1.05	2.65	0.39	6.46	15.07	21.53	78.47
WEIGHTED BY PAID DOLLARS	2.37	1.05	2.65	0.39	6.46	15.06	21.52	78.48
CONSULTING (FEDERALLY-ASSISTED CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.37	1.05	2.64	0.40	6.46	15.08	21.54	78.46
WEIGHTED BY PAID DOLLARS	2.37	1.05	2.64	0.39	6.46	15.06	21.52	78.48

[234] Comparable estimates for each MoDOT Highway District appear below in Appendix E.

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Overall, DBE availability in the consulting sector is between 21.52 and 21.54 percent. Non-DBE availability is between 78.46 and 78.48 percent. Among DBEs, availability of African American-owned businesses is between 2.37 and 2.38 percent, availability of Hispanic-owned businesses is 1.05 percent, availability of Asian-owned businesses is between 2.64 and 2.65 percent, and availability of Native American-owned businesses is between 0.39 and 0.40 percent. Availability of minority-owned businesses as a group is 6.46 percent. Availability of nonminority female-owned businesses is between 15.06 and 15.08 percent.

Overall, DBE availability has increased since MoDOT's last availability study, which was issued in late 2004.[235] Table 4.22 shows comparable DBE availability estimates from 2004 and 2012.[236] In construction, availability estimates increased for African Americans, minority-owned firms as a group, nonminority women-owned firms, and DBEs as a group. The largest relative increase in DBE availability between 2004 and 2012 occurred for nonminority women, followed by African American-owned firms. In consulting, DBE availability increased for African American-owned firms, Hispanic-owned firms, Asian-owned firms, for minority-owned firms as a group, nonminority women-owned firms, and DBEs as a group. Once again, the largest relative increase in availability was observed for nonminority women, followed by Hispanic-owned firms, and African American-owned firms.

Table 4.22. Comparison of DBE Availability 2004 and 2012 (Weighted by Award Dollars)

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (FEDERALLY-ASSISTED CONTRACTS)								
2004 STUDY	2.08	1.08	0.72	1.30	5.18	12.33	17.51	82.49
2012 STUDY	2.58	0.69	0.33	0.97	4.56	15.80	20.37	79.63
CONSULTING (FEDERALLY-ASSISTED CONTRACTS)								
2004 STUDY	1.65	0.63	2.32	1.17	5.77	8.72	14.48	85.52
2012 STUDY	2.37	1.05	2.64	0.39	6.46	15.06	21.52	78.48

Sources: For 2004 figures, see NERA (2004), p. 59. For 2012 figures, see Table 4.21, *supra*.

[235] *See* NERA Economic Consulting (2004), p. 59.

[236] The 2004 study was restricted to federally-assisted contracts. Therefore, the DBE availability figures presented in Table 4.22 are for federally-assisted contracts only. As Table 4.21 shows, however, the availability estimates for state-funded contracts are very similar.

Tables 4.23 through 4.26 present detailed estimates of DBE availability in the construction sector in MoDOT's relevant market area. Tables 4.27 through 4.30 do the same for the consulting sector. Availability estimates are presented by race, gender, DBE status, and NAICS industry group.[237] These estimates have been statistically corrected to adjust for misclassification and non-classification bias in the Baseline Business Universe, as described earlier in this Chapter.

Four sets of weighted availability measures are provided for construction. The first is based on award dollars for all contracts (Tables 4.23 and 4.27), the second on paid dollars for all contracts (Tables 4.24 and 4.28), the third on award dollars for federally-assisted contracts (Tables 4.25 and 4.29), and the fourth based on paid dollars for federally-assisted contracts (Tables 4.26 and 4.30). All four yield similar results.

Table 4.23. Detailed DBE Availability—Construction (All Contracts, Award Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.43	0.00	0.00	0.00	13.98	14.41	85.59
Nonresidential Building Construction (NAICS 2362)	2.81	0.34	0.52	0.06	17.46	21.19	78.81
Utility System Construction (NAICS 2371)	1.70	0.33	0.00	1.51	20.02	23.56	76.44
Highway, Street, and Bridge Construction (NAICS 2373)	2.23	0.27	0.00	1.94	15.15	19.59	80.41
Other Heavy and Civil Engineering Construction (NAICS 2379)	2.55	2.29	2.04	0.75	13.51	21.14	78.86
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	4.02	0.98	0.68	0.05	20.30	26.02	73.98
Building Equipment Contractors (NAICS 2382)	2.77	1.22	0.83	0.01	17.53	22.35	77.65
Building Finishing Contractors (NAICS 2383)	2.28	1.13	0.68	0.22	17.26	21.57	78.43
Other Specialty Trade Contractors (NAICS 2389)	2.63	1.37	0.70	0.22	16.87	21.80	78.20
Petroleum and Coal Products Manufacturing (NAICS 3241)	3.21	0.00	0.00	0.00	8.05	11.26	88.74
Cement and Concrete Product Manufacturing (NAICS 3273)	0.79	0.00	0.00	0.00	10.85	11.64	88.36
Architectural and Structural Metals Manufacturing (NAICS 3323)	0.00	1.17	0.98	1.56	16.26	19.97	80.03
Communications Equipment Manufacturing (NAICS 3342)	0.00	0.97	0.00	0.49	13.91	15.37	84.63
Lumber and Other Construction Materials Merchant Wholesalers	0.00	0.93	1.34	0.00	10.04	12.32	87.68

[237] Estimates are shown for those NAICS industry groups comprising the top 99.0 percent of MoDOT award dollars and paid dollars.

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
(NAICS 4233)							
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	0.00	0.00	2.72	0.34	9.70	12.75	87.25
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	1.32	0.00	1.28	0.00	10.74	13.35	86.65
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	0.47	0.00	1.83	0.00	9.73	12.03	87.97
Building Material and Supplies Dealers (NAICS 4441)	0.90	0.00	0.00	0.00	14.02	14.92	85.08
General Freight Trucking (NAICS 4841)	4.72	0.73	0.00	0.54	12.78	18.77	81.23
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	1.97	0.00	0.05	0.00	15.33	17.34	82.66
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	2.17	1.09	1.09	2.09	22.01	28.45	71.55
Architectural, Engineering, and Related Services (NAICS 5413)	2.07	0.91	2.50	1.26	17.33	24.06	75.94
Services to Buildings and Dwellings (NAICS 5617)	2.52	0.23	0.05	0.23	17.58	20.61	79.39

Source: See Table 4.21

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 4.24. Detailed DBE Availability—Construction (All Contracts, Paid Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.46	0.00	0.00	0.00	14.00	14.45	85.55
Nonresidential Building Construction (NAICS 2362)	2.87	0.35	0.53	0.07	17.54	21.36	78.64
Utility System Construction (NAICS 2371)	1.71	0.32	0.00	1.52	20.02	23.57	76.43
Highway, Street, and Bridge Construction (NAICS 2373)	2.23	0.27	0.00	1.94	15.15	19.59	80.41
Other Heavy and Civil Engineering Construction (NAICS 2379)	2.55	2.29	2.04	0.75	13.51	21.14	78.86
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	4.01	0.98	0.68	0.05	20.27	25.99	74.01
Building Equipment Contractors (NAICS 2382)	2.77	1.22	0.82	0.01	17.53	22.35	77.65
Building Finishing Contractors (NAICS 2383)	2.28	1.13	0.68	0.22	17.26	21.57	78.43
Other Specialty Trade Contractors (NAICS 2389)	2.63	1.37	0.70	0.22	16.87	21.80	78.20
Petroleum and Coal Products Manufacturing (NAICS 3241)	3.21	0.00	0.00	0.00	8.05	11.26	88.74
Cement and Concrete Product Manufacturing (NAICS 3273)	0.80	0.00	0.00	0.00	10.89	11.69	88.31
Architectural and Structural Metals Manufacturing (NAICS 3323)	0.00	1.17	0.98	1.56	16.26	19.97	80.03
Communications Equipment Manufacturing (NAICS 3342)	0.00	0.97	0.00	0.49	13.91	15.37	84.63
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	0.00	0.93	1.34	0.00	10.04	12.32	87.68
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	0.00	0.00	2.72	0.34	9.70	12.75	87.25
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	1.32	0.00	1.28	0.00	10.74	13.35	86.65
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	0.47	0.00	1.83	0.00	9.73	12.03	87.97
Building Material and Supplies Dealers (NAICS 4441)	0.90	0.00	0.00	0.00	14.02	14.92	85.08
General Freight Trucking (NAICS 4841)	4.72	0.73	0.00	0.54	12.78	18.77	81.23
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	1.97	0.00	0.05	0.00	15.33	17.34	82.66

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	2.14	1.08	1.08	2.08	22.01	28.39	71.61
Architectural, Engineering, and Related Services (NAICS 5413)	2.04	0.90	2.48	1.33	17.53	24.28	75.72
Services to Buildings and Dwellings (NAICS 5617)	2.52	0.23	0.05	0.23	17.58	20.61	79.39

Source: See Table 4.21.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 4.25. Detailed DBE Availability—Construction (Federally-Assisted Contracts, Award Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.30	0.00	0.00	0.00	13.98	14.28	85.72
Nonresidential Building Construction (NAICS 2362)	2.81	0.34	0.52	0.06	17.46	21.19	78.81
Utility System Construction (NAICS 2371)	1.70	0.33	0.00	1.51	20.02	23.56	76.44
Highway, Street, and Bridge Construction (NAICS 2373)	2.23	0.27	0.00	1.94	15.15	19.59	80.41
Other Heavy and Civil Engineering Construction (NAICS 2379)	2.55	2.29	2.04	0.75	13.51	21.14	78.86
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	4.02	0.98	0.68	0.05	20.30	26.02	73.98
Building Equipment Contractors (NAICS 2382)	2.77	1.22	0.83	0.01	17.53	22.36	77.64
Building Finishing Contractors (NAICS 2383)	2.28	1.13	0.68	0.22	17.26	21.57	78.43
Other Specialty Trade Contractors (NAICS 2389)	2.64	1.38	0.70	0.23	16.87	21.82	78.18
Petroleum and Coal Products Manufacturing (NAICS 3241)	3.21	0.00	0.00	0.00	8.05	11.26	88.74
Cement and Concrete Product Manufacturing (NAICS 3273)	0.79	0.00	0.00	0.00	10.84	11.63	88.37
Architectural and Structural Metals Manufacturing (NAICS 3323)	0.00	1.17	0.98	1.56	16.26	19.97	80.03
Communications Equipment Manufacturing (NAICS 3342)	0.00	0.97	0.00	0.49	13.91	15.37	84.63
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	0.00	0.93	1.34	0.00	10.04	12.32	87.68
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	0.00	0.00	2.72	0.34	9.70	12.75	87.25
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	1.32	0.00	1.28	0.00	10.74	13.35	86.65
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	0.47	0.00	1.83	0.00	9.73	12.03	87.97
Building Material and Supplies Dealers (NAICS 4441)	0.90	0.00	0.00	0.00	14.02	14.92	85.08
General Freight Trucking (NAICS 4841)	4.72	0.73	0.00	0.54	12.78	18.77	81.23
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	1.97	0.00	0.05	0.00	15.33	17.34	82.66

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	2.15	1.09	1.09	2.09	22.01	28.42	71.58
Architectural, Engineering, and Related Services (NAICS 5413)	2.07	0.91	2.50	1.26	17.33	24.06	75.94
Services to Buildings and Dwellings (NAICS 5617)	2.52	0.23	0.05	0.23	17.58	20.61	79.39

Source: See Table 4.21.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 4.26. Detailed DBE Availability—Construction (Federally-Assisted Contracts, Paid Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)	0.31	0.00	0.00	0.00	14.01	14.32	85.68
Nonresidential Building Construction (NAICS 2362)	2.87	0.35	0.53	0.07	17.54	21.36	78.64
Utility System Construction (NAICS 2371)	1.71	0.32	0.00	1.52	20.02	23.57	76.43
Highway, Street, and Bridge Construction (NAICS 2373)	2.23	0.27	0.00	1.94	15.15	19.59	80.41
Other Heavy and Civil Engineering Construction (NAICS 2379)	2.55	2.29	2.04	0.75	13.51	21.14	78.86
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)	4.01	0.98	0.68	0.05	20.27	25.99	74.01
Building Equipment Contractors (NAICS 2382)	2.77	1.22	0.83	0.01	17.53	22.36	77.64
Building Finishing Contractors (NAICS 2383)	2.28	1.13	0.68	0.22	17.26	21.57	78.43
Other Specialty Trade Contractors (NAICS 2389)	2.64	1.38	0.70	0.23	16.87	21.82	78.18
Petroleum and Coal Products Manufacturing (NAICS 3241)	3.21	0.00	0.00	0.00	8.05	11.26	88.74
Cement and Concrete Product Manufacturing (NAICS 3273)	0.80	0.00	0.00	0.00	10.88	11.69	88.31
Architectural and Structural Metals Manufacturing (NAICS 3323)	0.00	1.17	0.98	1.56	16.26	19.97	80.03
Communications Equipment Manufacturing (NAICS 3342)	0.00	0.97	0.00	0.49	13.91	15.37	84.63
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)	0.00	0.93	1.34	0.00	10.04	12.32	87.68
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)	0.00	0.00	2.72	0.34	9.70	12.75	87.25
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)	1.32	0.00	1.28	0.00	10.74	13.35	86.65
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)	0.47	0.00	1.83	0.00	9.73	12.03	87.97
Building Material and Supplies Dealers (NAICS 4441)	0.90	0.00	0.00	0.00	14.02	14.92	85.08
General Freight Trucking (NAICS 4841)	4.72	0.73	0.00	0.54	12.78	18.77	81.23
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)	1.97	0.00	0.05	0.00	15.33	17.34	82.66

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)	2.14	1.08	1.08	2.07	22.01	28.38	71.62
Architectural, Engineering, and Related Services (NAICS 5413)	2.04	0.90	2.48	1.33	17.53	24.28	75.72
Services to Buildings and Dwellings (NAICS 5617)	2.52	0.23	0.05	0.23	17.58	20.61	79.39

Source: See Table 4.21.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 4.27. Detailed DBE Availability—Consulting (All Contracts, Award Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Utility System Construction (NAICS 2371)	1.76	0.24	0.00	1.55	20.05	23.61	76.39
Building Equipment Contractors (NAICS 2382)	2.79	1.23	0.85	0.00	17.60	22.47	77.53
Offices of Real Estate Agents and Brokers (NAICS 5312)	2.79	1.10	1.13	1.96	25.72	32.70	67.30
Architectural, Engineering, and Related Services (NAICS 5413)	2.31	1.03	2.64	0.54	15.36	21.87	78.13
Computer Systems Design and Related Services (NAICS 5415)	4.61	1.38	3.61	0.26	16.43	26.29	73.71
Management, Scientific, and Technical Consulting Services (NAICS 5416)	3.27	0.81	1.73	0.12	17.78	23.72	76.28
Scientific Research and Development Services (NAICS 5417)	2.36	0.71	2.99	0.00	17.53	23.59	76.41
Advertising, Public Relations, and Related Services (NAICS 5418)	3.44	0.52	1.41	0.00	27.45	32.83	67.17
Office Administrative Services (NAICS 5611)	3.18	0.00	0.00	0.00	17.72	20.90	79.10

Source: See Table 4.21.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 4.28. Detailed DBE Availability—Consulting (All Contracts, Paid Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Building Equipment Contractors (NAICS 2382)	2.79	1.23	0.85	0.00	17.60	22.47	77.53
Communications Equipment Manufacturing (NAICS 3342)	0.00	0.97	0.00	0.49	13.91	15.37	84.63
Offices of Real Estate Agents and Brokers (NAICS 5312)	2.79	1.10	1.13	1.96	25.72	32.70	67.30
Architectural, Engineering, and Related Services (NAICS 5413)	2.31	1.03	2.63	0.54	15.39	21.90	78.10
Management, Scientific, and Technical Consulting Services (NAICS 5416)	3.18	0.90	1.88	0.18	17.73	23.88	76.12
Scientific Research and Development Services (NAICS 5417)	2.36	0.71	2.99	0.00	17.53	23.59	76.41
Advertising, Public Relations, and Related Services (NAICS 5418)	3.44	0.52	1.41	0.00	27.45	32.83	67.17
Office Administrative Services (NAICS 5611)	3.18	0.00	0.00	0.00	17.72	20.90	79.10

Source: See Table 4.21.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 4.29. Detailed DBE Availability—Consulting (Federally-Assisted Contracts, Award Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Building Equipment Contractors (NAICS 2382)	2.79	1.23	0.85	0.00	17.60	22.47	77.53
Offices of Real Estate Agents and Brokers (NAICS 5312)	2.79	1.10	1.13	1.96	25.72	32.70	67.30
Architectural, Engineering, and Related Services (NAICS 5413)	2.30	1.03	2.63	0.54	15.37	21.88	78.12
Scientific Research and Development Services (NAICS 5417)	2.36	0.71	2.99	0.00	17.53	23.59	76.41
Advertising, Public Relations, and Related Services (NAICS 5418)	3.44	0.52	1.41	0.00	27.45	32.83	67.17
Office Administrative Services (NAICS 5611)	3.18	0.00	0.00	0.00	17.72	20.90	79.10

Source: See Table 4.21.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 4.30. Detailed DBE Availability—Consulting (Federally-Assisted Contracts, Paid Dollars)

Detailed Industry Group	African American	Hispanic	Asian	Native American	Non-minority Female	DBE	Non-DBE
Building Equipment Contractors (NAICS 2382)	2.79	1.23	0.85	0.00	17.60	22.47	77.53
Offices of Real Estate Agents and Brokers (NAICS 5312)	2.79	1.10	1.13	1.96	25.72	32.70	67.30
Architectural, Engineering, and Related Services (NAICS 5413)	2.30	1.03	2.63	0.55	15.40	21.91	78.09
Scientific Research and Development Services (NAICS 5417)	2.36	0.71	2.99	0.00	17.53	23.59	76.41
Advertising, Public Relations, and Related Services (NAICS 5418)	3.44	0.52	1.41	0.00	27.45	32.83	67.17
Office Administrative Services (NAICS 5611)	3.18	0.00	0.00	0.00	17.72	20.90	79.10

Source: See Table 4.21.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

V. Market-Based Disparities in Business Formation and Business Owner Earnings

A. Introduction

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 a constitutional duty not to contribute to the perpetuation of discrimination in the private sector of their relevant geographic and product markets.

After years of comparative neglect, research on the economics of entrepreneurship—especially upon self-employment—has expanded in the last 20 years.[238] As a result, there is now a good deal of agreement in the literature on the microeconomic correlates of self-employment.[239] In the U.S., it appears that self-employment rises with age, is higher among men than women, and higher among non-minorities than minorities. 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.

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 and 2003; Olson, Zuiker and Montalto, 2000; Mora

[238] Microeconometric 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 Laffonte (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.

[239] Parker (2004) and Aronson (1991) provide good overviews.

and Davila, 2006; Robles and Cordero-Gúzman, 2007),[240] immigration policy (Borjas and Bronars, 1989), and retirement policies (Quinn, 1980). Studies by Long (1982), Blau (1987), and more recently by Schuetze (1998), have considered the role of taxes.[241] 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.[242]

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.[243] 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 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

[240] 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.

[241] 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.

[242] Evans and Leighton (1989) found that non-minority 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.

[243] 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.

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.[244] 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 these are both 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 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

[244] 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.

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 the 5 percent Public Use Microdata Sample data ("PUMS") 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 and 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.[245]

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.

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

[245] 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 VI, *infra*.

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 MoDOT'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 Missouri Department of Transportation Market Area (MODOTMA), which is comprised of the State of Missouri plus the Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area and the Illinois portion of the St. Louis, MO-IL Metropolitan Statistical Area. This variable estimates the differential effect of location in the MODOTMA relevant to the rest of the country. This model appears as Specification 1 in Tables 5.1 through 5.6. Next, we estimated Specification 2, which is the same model as Specification 1 but with the addition of indicator variables that interact race and gender with the MODOTMA indicator. These variables estimate the differential effect of location in the MODOTMA *and* membership in the given race or gender group. 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.[246]

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.[247]

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.

The data source used is the American Community Survey (ACS) Public Use Microdata Sample (PUMS) for 2006–2010. 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 file from the ACS contains records for a subsample of the full ACS. The data used here are the multi-year estimates combining the 2006 through 2010 ACS PUMS records. The combined file contains over six million person-level records. Released in early 2012, 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

[246] If none of these terms is significant then Specification 3 reduces to Specification 1.

[247] 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.

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 5.1, 5.2 and 5.3 report results from our regression analyses of annual earnings among wage and salary workers. Table 5.1 focuses on the economy as a whole, Table 5.2 on the construction sector, and Table 5.3 on the goods and services sector. 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 5.1 Specification 1 the estimated percentage difference in average annual wages between African Americans (both genders) and nonminority males in 2006–2010 was -32.0 percent. That is, average annual wages among African Americans were 32.0 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 5.1 through 5.6, a t-statistic of 1.99 or larger indicates statistical significance at a 95 percent confidence level or better.[248] In the example just used, the t-statistic of 214.39 indicates that the result is statistically significant.

Specification 1 in Table 5.1 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 -22.5 percent for Hispanics to a high of -32.0 percent for African Americans.

Specification 1 in Table 5.2 shows similar results when the basic analysis is restricted to the construction 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 consistent with the presence of discrimination in these markets. Observed disparities are large as well, ranging from a low of -19.8 percent for Hispanics to a high of -34.8 percent for nonminority women.

Similarly, Specification 1 in Table 5.3 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, consistent with the presence of discrimination in these markets. Observed disparities are large as well, ranging from a low of -28.4 percent for Hispanics to a high of -38.4 percent for nonminority women.

[248] From a two-tailed test.

A comparison of Tables 5.1 and 5.2 shows that for Hispanics and Asians, the disparities in the construction 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 5.1 and 5.3 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 MODOTMA-Specific Interaction Terms

Next, we turn to Specifications 2 and 3 in Tables 5.1–5.3. 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 MODOTMA differ significantly from those elsewhere in the U.S. economy. Specification 2 in Table 5.1, for example, shows a -22.5 percent wage difference that estimates the direct effect of being Hispanic in 2006–2010, as well as a statistically significant 7.9 percent wage increment that captures the indirect effect of residing in the MODOTMA and being Hispanic. That is, wages for Hispanics in the MODOTMA, on average, were 7.9 percent higher than for Hispanics in the nation as a whole and 14.6 percent lower (-22.5 percent plus 7.9 percent) than for nonminority males in the MODOTMA.

Specification 3 simply repeats Specification 2, dropping any MODOTMA interactions that are not statistically significant. In Table 5.1, for example, interaction terms were included in the final specification for Hispanics, Asians/Pacific Islanders, and nonminority women. The net result of Specification 3 in Table 5.1 is evidence of large, adverse, and statistically significant wage disparities for all minority groups and for nonminority women consistent with the presence of discrimination in these markets. The same is true for the construction sector (Table 5.2) as well as for the goods and services sector (Table 5.3).

Table 5.1. Annual Wage Earnings Regressions, All Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.320 (214.39)	-0.320 (212.02)	-0.320 (214.44)
Hispanic	-0.225 (156.88)	-0.225 (156.67)	-0.225 (156.74)
Asian/Pacific Islander	-0.258 (138.23)	-0.259 (137.93)	-0.259 (137.97)
Native American	-0.303 (59.04)	-0.303 (58.28)	-0.303 (59.06)
Two or more races	-0.265 (82.69)	-0.265 (81.69)	-0.265 (82.72)
Nonminority Female	-0.316 (359.47)	-0.316 (355.34)	-0.316 (355.63)
Age	0.181 (720.76)	0.181 (720.77)	0.181 (720.77)
Age^2	-0.002 (628.03)	-0.002 (628.04)	-0.002 (628.04)
MODOTMA	0.017 (3.93)	0.007 (1.26)	0.006 (1.22)
MODOTMA*African American		0.001 (0.05)	n/a
MODOTMA*Hispanic		0.079 (4.65)	0.080 (4.69)
MODOTMA*Asian/Pacific Islander		0.069 (3.09)	0.069 (3.12)
MODOTMA*Native American		-0.046 (1.11)	n/a
MODOTMA*Two or more races		-0.009 (0.35)	n/a
MODOTMA*Nonminority female		0.019 (3.40)	0.020 (3.60)
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	4205873	4205873	4205873
Adj. R^2	.4495	.4495	.4495

Source: NERA calculations from the 2006-2010 ACS Public Use Microdata Sample.

Notes: (1) See above, section B.3.(a)-(b) for a description of Specifications 1 through 3; (2) 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; (3) Reported number is the percentage difference in annual wages between a given group and nonminority men; (4) 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; (5) Geography is defined based on place of residence; (6) "MODOTMA" is shorthand for "Missouri Department of Transportation Market Area," which includes the State of Missouri plus the Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area and the Illinois portion of the St. Louis, MO-IL Metropolitan Statistical Area; (7) "n/a" in Specification 3 means that the category was not included in the regression because it was not statistically significant in Specification 2, as described above in section B.3.b.

Table 5.2. Annual Wage Earnings Regressions, Construction and Related Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.340 (51.86)	-0.340 (51.34)	-0.340 (51.86)
Hispanic	-0.198 (45.69)	-0.198 (45.48)	-0.198 (45.69)
Asian/Pacific Islander	-0.211 (23.26)	-0.212 (23.24)	-0.211 (23.26)
Native American	-0.300 (20.12)	-0.297 (19.75)	-0.300 (20.12)
Two or more races	-0.220 (18.95)	-0.221 (18.75)	-0.220 (18.95)
Nonminority Female	-0.348 (94.91)	-0.348 (93.50)	-0.348 (94.91)
Age	0.144 (162.25)	0.144 (162.26)	0.144 (162.25)
Age^2	-0.001 (139.58)	-0.001 (139.58)	-0.001 (139.58)
MODOTMA	0.081 (5.40)	0.088 (5.58)	0.081 (5.40)
MODOTMA*African American		-0.023 (0.37)	n/a
MODOTMA*Hispanic		-0.005 (0.1)	n/a
MODOTMA*Asian/Pacific Islander		0.115 (0.79)	n/a
MODOTMA*Native American		-0.187 (1.50)	n/a
MODOTMA*Two or more races		0.022 (0.25)	n/a
MODOTMA*Nonminority female		-0.045 (1.62)	n/a
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	351443	351443	351443
Adj. R^2	.2573	.2573	.2573

Source and Notes: See Table 5.1.

Table 5.3. Annual Wage Earnings Regressions, Goods and Services Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.372 (243.36)	-0.373 (240.60)	-0.373 (243.42)
Hispanic	-0.283 (185.21)	-0.284 (184.92)	-0.284 (185.00)
Asian/Pacific Islander	-0.282 (143.47)	-0.283 (143.09)	-0.283 (143.12)
Native American	-0.370 (67.50)	-0.370 (66.75)	-0.370 (67.52)
Two or more races	-0.320 (94.58)	-0.320 (93.45)	-0.320 (94.61)
Nonminority Female	-0.383 (451.85)	-0.384 (445.59)	-0.384 (446.07)
Age	0.217 (791.20)	0.217 (791.21)	0.217 (791.21)
Age^2	-0.002 (686.64)	-0.002 (686.65)	-0.002 (686.65)
MODOTMA	-0.007 (1.50)	-0.024 (4.15)	-0.023 (4.22)
MODOTMA*African American		0.008 (0.65)	n/a
MODOTMA*Hispanic		0.099 (5.18)	0.099 (5.17)
MODOTMA*Asian/Pacific Islander		0.054 (2.27)	0.053 (2.25)
MODOTMA*Native American		-0.016 (0.33)	n/a
MODOTMA*Two or more races		-0.007 (0.28)	n/a
MODOTMA*Nonminority female		0.030 (4.89)	0.030 (4.97)
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	3854430	3854430	3854430
Adj. R^2	.4002	.4002	.4002

Source and Notes: See Table 5.1.

c. Conclusions

Clearly, minorities and women earn substantially and significantly less from their labor than do their similarly situated nonminority male counterparts—in the Missouri Department of Transportation 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 5.4 focuses on the economy as a whole, Table 5.5 on the construction sector, and Table 5.6 on the goods and services sector. 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[249]

Specification 1 in Table 5.4 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 39.0 percent lower than for comparable nonminority males; for Hispanics, 22.5 percent lower; for Asians, 10.3 percent lower; for Native Americans, 38.7 percent lower; and for nonminority women, 39.4 percent lower.

Turning to the construction sector, Specification 1 in Table 5.5 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 41.6 percent lower than for comparable nonminority males; for Hispanics, 17.4 percent lower; for Asians, 16.5 percent lower; for Native Americans, 31.7 percent lower; and for nonminority women, 44.8 percent lower.

[249] See above, section B.3.a., for a detailed description of Specification 1.

For the Goods and Services sector, Specification 1 in Table 5.6 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 42.7 percent lower than for comparable nonminority males; for Hispanics, 28.9 percent lower; for Asians, 12.8 percent lower; for Native Americans, 44.2 percent lower; and for nonminority women, 42.1 percent lower.

b. Specifications 2 and 3 - the Full Model Including MODOTMA-Specific Interaction Terms[250]

Next, we turn to Specifications 2 and 3 in Tables 5.4–5.6. Specification 2 is the basic regression model enhanced by a set of interaction terms to test whether minorities and women in the MODOTMA differ significantly from those elsewhere in the U.S. economy. Specification 3 drops any MODOTMA interaction terms that are not statistically significant.

For the economy as a whole in 2006-2010, Table 5.4 shows that none of the MODOTMA interaction terms is statistically significant, indicating that disparities are, on average, no better or worse in the MODOTMA than in the nation as a whole.

For the construction sector in 2006–2010, Table 5.5 shows that the estimates for the MODOTMA are in agreement with results for the nation as a whole, with the exception of Native Americans, who show evidence of lower disparities in the MODOTMA than in the nation as a whole, while disparities for other minorities and nonminority women in the MODOTMA are no better or worse than in the nation as a whole

For the goods and services sector in 2006–2010, Table 5.6 shows that only the MODOTMA interaction term for Asian/Pacific Islanders is statistically significant, indicating that disparities for Asian/Pacific Islanders in the goods and services sector are better in the MODOTMA than in the nation as a whole, while disparities for other minorities and nonminority women in the MODOTMA are no better or worse than in the nation as a whole.

[250] See above, section B.3.b., for a detailed description of Specifications 2 and 3.

Table 5.4. Annual Business Owner Earnings Regressions, All Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.390 (39.38)	-0.391 (39.19)	-0.390 (39.38)
Hispanic	-0.225 (25.84)	-0.225 (25.77)	-0.225 (25.84)
Asian/Pacific Islander	-0.103 (8.33)	-0.105 (8.47)	-0.103 (8.33)
Native American	-0.387 (14.07)	-0.389 (14.01)	-0.387 (14.07)
Two or more races	-0.367 (21.49)	-0.367 (21.24)	-0.367 (21.49)
Nonminority Female	-0.394 (81.56)	-0.395 (80.90)	-0.394 (81.56)
Age	0.167 (102.77)	0.167 (102.77)	0.167 (102.77)
Age^2	-0.002 (90.40)	-0.002 (90.40)	-0.002 (90.40)
MODOTMA	-0.150 (6.33)	-0.165 (6.33)	-0.150 (6.33)
MODOTMA*African American		0.113 (1.20)	n/a
MODOTMA*Hispanic		-0.048 (0.44)	n/a
MODOTMA*Asian/Pacific Islander		0.247 (1.70)	n/a
MODOTMA*Native American		0.157 (0.57)	n/a
MODOTMA*Two or more races		-0.024 (0.17)	n/a
MODOTMA*Nonminority female		0.037 (1.13)	n/a
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	458462	458462	458462
Adj. R^2	.1629	.1629	.1629

Source: NERA calculations from the 2006-2010 ACS Public Use Microdata Sample.

Notes: (1) See above, section B.4.(a)-(b) for a description of specifications 1 through 3; (2) 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; (3) Reported number is the percentage difference in annual business earnings between a given group and nonminority men; (4) 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; (5) Geography is defined based on place of residence; (6) "MODOTMA" is shorthand for "Missouri Department of Transportation Market Area," which includes the State of Missouri plus the Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area and the Illinois portion of the St. Louis, MO-IL Metropolitan Statistical Area; (7) "n/a" in Specification 3 means that the category was not included in the regression because it was not statistically significant in Specification 2, as described above in section B.4.b.

Table 5.5. Business Owner Earnings Regressions, Construction and Related Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.416 (16.63)	-0.415 (16.41)	-0.416 (16.63)
Hispanic	-0.174 (9.90)	-0.175 (9.88)	-0.174 (9.91)
Asian/Pacific Islander	-0.165 (4.23)	-0.160 (4.07)	-0.165 (4.23)
Native American	-0.317 (5.66)	-0.335 (5.97)	-0.335 (5.97)
Two or more races	-0.286 (7.07)	-0.279 (6.76)	-0.286 (7.07)
Nonminority female	-0.448 (27.28)	-0.449 (27.10)	-0.448 (27.28)
Age	0.131 (35.57)	0.131 (35.57)	0.131 (35.57)
Age^2	-0.001 (32.21)	-0.001 (32.22)	-0.001 (32.21)
MODOTMA	-0.165 (3.50)	-0.169 (3.50)	-0.170 (3.61)
MODOTMA*African American		-0.068 (0.31)	n/a
MODOTMA*Hispanic		0.057 (0.26)	n/a
MODOTMA*Asian/Pacific Islanders		-0.673 (1.95)	n/a
MODOTMA*Native American		1.621 (2.35)	1.625 (2.35)
MODOTMA*Two or more races		-0.297 (1.24)	n/a
MODOTMA*Nonminority Female		0.136 (0.90)	n/a
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	74811	74811	74811
Adj. R^2	.0509	.0509	.0509

Source and Notes: See Table 5.4.

Table 5.6. Business Owner Earnings Regressions, Goods and Services Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.427 (40.05)	-0.429 (39.83)	-0.427 (40.05)
Hispanic	-0.289 (29.93)	-0.289 (29.83)	-0.289 (29.94)
Asian/Pacific Islander	-0.128 (9.70)	-0.131 (9.90)	-0.131 (9.87)
Native American	-0.442 (14.13)	-0.441 (13.97)	-0.442 (14.13)
Two or more races	-0.412 (21.72)	-0.413 (21.56)	-0.412 (21.73)
Nonminority female	-0.421 (88.94)	-0.421 (87.82)	-0.421 (88.95)
Age	0.186 (99.41)	0.186 (99.40)	0.186 (99.41)
Age^2	-0.002 (86.37)	-0.002 (86.37)	-0.002 (86.37)
MODOTMA	-0.155 (5.58)	-0.172 (5.53)	-0.159 (5.72)
MODOTMA*African American		0.121 (1.14)	n/a
MODOTMA*Hispanic		-0.074 (0.58)	n/a
MODOTMA*Asian/Pacific Islanders		0.387 (2.33)	0.365 (2.23)
MODOTMA*Native American		-0.116 (0.38)	n/a
MODOTMA*Two or more races		0.074 (0.42)	n/a
MODOTMA*Nonminority Female		0.034 (0.91)	n/a
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (88 categories)	Yes	Yes	Yes
N	383651	383651	383651
Adj. R^2	.1125	.1125	.1125

Source and Notes: See Table 5.4.

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, in general, differs little in the Missouri Department of Transportation 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 (individual firm revenues). These observations illustrate why employment size, years in business, and individual firm 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.[251] 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 in most cases they are not as likely to do so, and that minority and female business formation rates in most cases 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,

[251] We use the phrases "business formation rates" and "self-employment rates" interchangeably in this Study.

prevents minorities and women from acquiring the financial credit and capital that are so often prerequisites 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 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.[252] 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.[253] 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 2006–2010 ACS PUMS.

2. Findings: Race and Gender Disparities in Business Formation

As a point of reference for what follows, Tables 5.7 and 5.8 provide a summary of business ownership rates in 2006–2010 by race and gender. A striking feature of both tables is how much higher, in general, business ownership rates are for nonminority males than for other groups.

Table 5.7, for example, shows a 7.85 percentage point difference between the overall self-employment rate of African Americans and nonminority males in the MODOTMA (12.05 – 4.20 = 7.85). As shown in the rightmost column, this 7.85 percentage point gap translates into an

[252] See also the materials cited at fn. 238 *supra*.

[253] For a detailed discussion, see G.S. Maddala (1983. Probit analysis is performed here using the "dprobit" command in the statistical program STATA.

African American business formation rate in the MODOTMA that is 65.1 percent lower than the nonminority male business formation rate (i.e., 4.20 – 12.05 ÷ 12.05 ≈ -65.1%).

Table 5.8 provides similar information for the construction sector and the goods and services sector. Large deficits are observed in construction for all Hispanics, nonminority women, minorities as a group, and minorities and women combined. Large deficits are observed in goods and services for African Americans, Hispanics, Native Americans, persons reporting multiple races, minorities as a group, nonminority women, and minorities and women combined.

There is little doubt that part of the group differences documented in Tables 5.7 and 5.8 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.[254] 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 Tables 5.7 and 5.8 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 5.9 focuses on the economy as a whole and Tables 5.10 and 5.11 focus on the construction 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.

[254] Wainwright (2000), p. 86.

Table 5.7. Self-Employment Rates in 2006–2010 for Selected Race and Gender Groups: United States and the Missouri Department of Transportation Market Area, All Industries

Race/Gender	U.S. (%)	Missouri Department of Transportation Market Area (%)	Percent Difference from Nonminority Male in Column (2)
	(1)	(2)	(3)
African American	5.37	4.20	-65.1
Hispanic	8.54	7.16	-40.6
Asian/Pacific Islander	10.27	10.89	-9.6
Native American	8.69	6.95	-42.3
Two or more races	8.90	8.56	-29.0
Minority	7.88	6.11	-49.3
Nonminority female	8.59	7.44	-38.3
DBE	8.25	7.08	-41.2
Nonminority male	13.97	12.05	

Source: NERA calculations from the 2006-2010 ACS Public Use Microdata Sample.

Table 5.8. Self-Employment Rates in 2006–2010 for Selected Race and Gender Groups: United States and the Missouri Department of Transportation Market Area, Construction Sector and Goods and Services Sectors

Race/Gender	U.S. (%)	Missouri Department of Transportation Market Area (%)	Percent Difference from Nonminority Male in Column (2)
	(1)	(2)	(3)
Construction Sector			
African American	16.86	21.51	-1.4
Hispanic	15.34	12.08	-44.6
Asian/Pacific Islander	17.39	21.88	0.3
Native American	18.32	27.55	26.3
Two or more races	20.22	24.84	13.9
Minority	16.02	18.09	-17.1
Nonminority female	14.97	14.21	-34.8
DBE	15.75	16.12	-26.1
Nonminority male	26.25	21.81	
Goods and Services Sectors			
African American	4.81	3.55	-65.4
Hispanic	7.51	6.58	-35.9
Asian/Pacific Islander	9.97	10.62	3.5
Native American	7.38	4.70	-54.2
Two or more races	7.90	7.04	-31.4
Minority	7.10	5.39	-47.5
Nonminority female	8.41	7.29	-28.9
DBE	7.79	6.79	-33.8
Nonminority male	11.75	10.26	

Source: NERA calculations from the 2006-2010 ACS Public Use Microdata Sample.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

a. Specification 1 - the Basic Model[255]

Specification 1 in Table 5.9 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 5.10 and 5.11 shows large, negative, and statistically significant business formation disparities for every group in the construction sectors as well as in the goods and services sector.

b. Specifications 2 and 3 - the Full Model Including MODOTMA-Specific Interaction Terms[256]

Several of the MODOTMA interaction terms included in Specification 2 were significant. The final results are shown in Specification 3 for Tables 5.9-5.11.

To summarize for the economy-wide results (Table 5.9):

- For African Americans, business formation rates are 4.0 percentage points lower than what would be expected in a race- and gender-neutral market area.
- For Hispanics, business formation rates are 2.1 percentage points lower than what would be expected in a race- and gender-neutral market area. [257]
- For Asians, business formation rates are 1.3 percentage points higher 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 2.7 percentage points lower than what would be expected in a race- and gender-neutral market area.

To summarize for the construction sector results (Table 5.10):

- For African Americans, business formation rates are 8.8 percentage points lower than what would be expected in a race- and gender-neutral market area.

[255] See above, section C.2.a., for a detailed description of Specification 1.

[256] See above, section C.2.b., for a detailed description of Specifications 2 and 3.

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

- For Hispanics, business formation rates are 7.1 percentage points lower than what would be expected in a race- and gender-neutral market area.

- For Asians, business formation rates are 11.9 percentage points higher than what would be expected in a race- and gender-neutral market area.

- For Native Americans, business formation rates are 5.4 percentage points higher than what would be expected in a race- and gender-neutral market area.

- For nonminority women, business formation rates are 6.7 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 5.11):

- For African Americans, business formation rates are 5.1 percentage points lower than what would be expected in a race- and gender-neutral market area.

- For Hispanics, business formation rates are 3.0 percentage points lower than what would be expected in a race- and gender-neutral market area.

- For Asians, business formation rates are 1.5 percentage points higher than what would be expected in a race- and gender-neutral market area.

- For Native Americans, business formation rates are 2.9 percentage points lower than what would be expected in a race- and gender-neutral market area.

- For nonminority women, business formation rates are 2.6 percentage points lower than what would be expected in a race- and gender-neutral market area.

Table 5.9. Business Formation Regressions, All Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.040 (93.82)	-0.040 (92.82)	-0.040 (93.84)
Hispanic	-0.031 (82.59)	-0.031 (82.54)	-0.031 (82.55)
Asian/Pacific Islander	-0.018 (34.44)	-0.018 (34.76)	-0.018 (34.73)
Native American	-0.027 (19.46)	-0.027 (19.39)	-0.027 (19.46)
Two or more races	-0.018 (19.70)	-0.018 (19.62)	-0.018 (19.71)
Nonminority Female	-0.027 (100.48)	-0.027 (99.58)	-0.027 (100.47)
Age	0.010 (143.19)	0.010 (143.19)	0.010 (143.19)
Age^2	-0.000 (98.96)	-0.000 (98.96)	-0.000 (98.96)
MODOTMA	-0.006 (5.30)	-0.008 (5.75)	-0.007 (5.78)
MODOTMA*African American		-0.004 (0.93)	n/a
MODOTMA*Hispanic		0.011 (2.09)	0.010 (1.94)
MODOTMA*Asian/Pacific Islander		0.032 (5.01)	0.031 (4.89)
MODOTMA*Native American		0.010 (0.73)	n/a
MODOTMA*Two or more races		0.006 (0.80)	n/a
MODOTMA*Nonminority Female		0.002 (1.54)	n/a
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (25 categories)	Yes	Yes	Yes
N	4481708	4481708	4481708
Pseudo R^2	.2170	.2170	.2170

Source: NERA calculations from the 2006-2010 ACS Public Use Microdata Sample.

Notes: (1) See above, section C.2.(a)-(b) for a description of specifications 1 through 3; (2) 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; (3) Reported number 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; (4) 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; (5) Geography is defined based on place of residence; (6) "MODOTMA" is shorthand for "Missouri Department of Transportation Market Area," which includes the State of Missouri plus the Kansas portion of the Kansas City, MO-KS Metropolitan Statistical Area and the Illinois portion of the St. Louis, MO-IL Metropolitan Statistical Area; (7) "n/a" in Specification 3 indicates that the category was not included in the regression because it was not statistically significant in Specification 2, as described above in section C.2.b.

Table 5.10. Business Formation Regressions, Construction and Related Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.088 (26.40)	-0.089 (26.43)	-0.088 (26.42)
Hispanic	-0.071 (32.44)	-0.071 (32.48)	-0.071 (32.48)
Asian/Pacific Islander	-0.059 (12.42)	-0.059 (12.56)	-0.059 (12.55)
Native American	-0.078 (10.41)	-0.079 (10.57)	-0.079 (10.57)
Two or more races	-0.035 (5.91)	-0.035 (5.93)	-0.035 (5.91)
Nonminority Female	-0.097 (47.51)	-0.098 (47.28)	-0.098 (47.25)
Age	0.023 (55.30)	0.023 (55.30)	0.023 (55.30)
Age^2	-0.000 (37.81)	-0.000 (37.81)	-0.000 (37.81)
MODOTMA	-0.040 (6.30)	-0.045 (6.93)	-0.043 (6.69)
MODOTMA*African American		0.059 (1.94)	n/a
MODOTMA*Hispanic		0.025 (0.89)	n/a
MODOTMA*Asian/Pacific Islander		0.181 (2.28)	0.178 (2.25)
MODOTMA*Native American		0.136 (2.01)	0.133 (1.97)
MODOTMA*Two or more races		0.024 (0.58)	n/a
MODOTMA*Nonminority female		0.033 (2.12)	0.031 (1.98)
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (25 categories)	Yes	Yes	Yes
N	418213	418213	418213
Pseudo R^2	.0770	.0770	.0770

Source and Notes: See Table 5.9.

Table 5.11. Business Formation Regressions, Goods and Services Industries, 2006–2010

Independent Variables	Specification		
	(1)	(2)	(3)
African American	-0.051 (99.84)	-0.051 (98.66)	-0.051 (99.85)
Hispanic	-0.030 (61.62)	-0.030 (61.43)	-0.030 (61.66)
Asian/Pacific Islander	-0.025 (42.31)	-0.025 (42.50)	-0.025 (42.55)
Native American	-0.029 (15.81)	-0.028 (15.59)	-0.029 (15.82)
Two or more races	-0.020 (17.92)	-0.021 (17.85)	-0.020 (17.94)
Nonminority Female	-0.026 (86.72)	-0.026 (85.32)	-0.026 (86.72)
Age	0.010 (116.02)	0.010 (116.02)	0.010 (116.02)
Age^2	-0.000 (77.71)	-0.000 (77.71)	-0.000 (77.71)
MODOTMA	-0.001 (0.88)	-0.001 (0.63)	-0.002 (1.24)
MODOTMA*African American		-0.004 (1.00)	n/a
MODOTMA*Hispanic		0.003 (0.54)	n/a
MODOTMA*Asian/Pacific Islander		0.034 (4.61)	0.035 (4.77)
MODOTMA*Native American		-0.010 (0.66)	n/a
MODOTMA*Two or more races		0.007 (0.80)	n/a
MODOTMA*Nonminority female		-0.002 (0.85)	n/a
Education (16 categories)	Yes	Yes	Yes
Geography (51 categories)	Yes	Yes	Yes
Industry (25 categories)	Yes	Yes	Yes
N	4178050	4178050	4178050
Pseudo R^2	.0642	.0642	.0642

Source and Notes: See Table 5.9.

c. Conclusions

This section has demonstrated that, for African Americans, Hispanics, persons reporting multiple races, minorities as a group, nonminority women, and minorities and women as a group, observed business formation rates in the construction sector of the Missouri Department of Transportation market area are substantially and statistically significantly lower than those that would be expected to be observed if commercial markets operated in a race- and gender-neutral manner. Minorities and women generally 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. Moreover, as demonstrated in previous sections, these groups, as well as other minority 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 Availability[258]

In Table 5.12, the Probit regression results from Tables 5.9, 5.10 and 5.11 for the overall economy in the Missouri market area, the construction sector, and the goods and services sector, respectively, are combined with weighted average self-employment rates by race and gender from the 2006–2010 ACS PUMS (Tables 5.7 and 5.8) 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 5.12.

The business formation rate in the MODOTMA for African Americans in the construction sector is 21.51 percent (see middle panel of Table 5.12, top row). According to the regression specification underlying Table 5.10, however, that rate would be 30.31 percent, or 40.9 percent higher, in a race- and gender-neutral market area. Put differently, the disparity ratio of the actual business formation rate to the expected business formation rate for African Americans is 70.97. Disparity indices are adverse and statistically significant in construction for African Americans, Hispanics, nonminority women, and minorities and women combined.

In construction, the largest disparities observed are for Hispanics (62.98), followed in descending order by nonminority women (67.96), African Americans (70.97), minorities and women combined (75.12), persons reporting multiple races (87.65), and minorities as a group (88.42).

Given the large disparities observed in the construction sector for most presumptive groups, 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 for the construction sector in Table 5.12 can be combined with the estimates of current DBE availability documented in Table 4.21 and elsewhere to provide estimates of expected availability. These estimates appear below in Table 7.16. Expected DBE availability exceeds actual current DBE availability in five of the seven cases observed.

[258] This exercise also addresses the requirements of 49 C.F.R. 26.45 (“Step 2”) for the USDOT DBE Program.

Table 5.12. Actual and Potential Business Formation Rates in the Missouri Department of Transportation Market Area

Race/Gender	Business Formation Rate (%)	Expected Business Formation Rate (%)	Disparity Ratio
All Industries	(1)	(2)	(3)
African American	4.20	8.20	51.22
Hispanic	7.16	9.26	77.32
Asian/Pacific Islander	10.89	9.59	113.56
Native American	6.95	9.65	72.02
Two or more races	8.56	10.36	82.63
Minority	6.11	8.92	68.50
Nonminority female	7.44	10.14	73.37
DBE	7.08	9.96	71.08
Construction Sector	(1)	(2)	(3)
African American	21.51	30.31	70.97
Hispanic	12.08	19.18	62.98
Asian/Pacific Islander	21.88	9.98	219.24
Native American	27.55	22.15	124.38
Two or more races	24.84	28.34	87.65
Minority	18.09	20.46	88.42
Nonminority female	14.21	20.91	67.96
DBE	16.12	21.46	75.12
Goods and Services Sectors	(1)	(2)	(3)
African American	3.55	8.65	41.04
Hispanic	6.58	9.58	68.68
Asian/Pacific Islander	10.62	9.62	110.40
Native American	4.70	7.6	61.84
Two or more races	7.04	9.04	77.88
Minority	5.39	8.16	66.05
Nonminority female	7.29	9.89	73.71
DBE	6.79	9.52	71.32

Source: 2006–2010 ACS Public Use Microdata Sample. *See* Tables 5.7-5.11. MBE and DBE results are from similar regression analyses, not reported here.

Notes: (A) Figures are rounded. Rounding was performed subsequent to any mathematical calculations. (B) Figures in column (1) are average self-employment rates weighted using ACS population-based person weights, as also shown in Tables 5.7 and 5.8. (C) 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 5.9, 5.10 or 5.11, respectively. MBE and DBE figures were derived from similar regression analyses, not reported separately. (D) 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 DBEs. The Census Bureau's *Survey of Business Owners and Self-Employed Persons* (SBO), formerly known as the *Survey of Minority- and Women-Owned Business Enterprises* (SMWOBE), 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.[259]

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.[260]

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 Missouri.[261] In the remainder of this section, we present SBO statistics for the United States as a whole and in Missouri 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 5.13 and 5.14 contain data for all industries combined. Table 5.13 is for the U.S. as a whole, Table 5.14 is for the State of Missouri. Panel A in these two tables summarizes the SBO results for each race and/or gender grouping. For example, Panel A of Table 5.13 shows a total of 26.29 million firms in the U.S. in 2007 (column 1) with overall sales and receipts of $10.949

[259] 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/.

[260] 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.

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

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).

The remaining rows in Panel A provide comparable statistics for nonminority male-owned, women-owned, and minority-owned firms. For example, Table 5.13 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 5.14 provides comparable information for Missouri. The SBO counted 482,535 firms in Missouri, of which 214,022 were nonminority male-owned, 130,772 were female-owned; 24,685 were African American-owned; 6,178 were Hispanic-owned; 9,752 were Asian-owned; 2.895 were Native American-owned; and 323 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 5.14 shows that nonminority male-owned firms were 44.35 percent of all firms in Missouri, female-owned firms were 27.10 percent, and African American-owned firms were 5.12 percent. Additionally, 1.28 percent of firms were Hispanic-owned, 2.02 percent were Asian-owned, 0.60 percent were Native American-owned, and 0.07 percent were Native Hawaiian- or Pacific Islander-owned.

Column (2) in Panel B provides the same percentage distribution for overall sales and receipts. Table 5.14, for example, shows that although nonminority male-owned firms were 44.35 percent of all firms, they accounted for 72.50 percent of all sales and receipts. African American-owned firms, in contrast, were 5.12 percent of all firms in Missouri, but they accounted for only 1.16 percent of all sales and receipts. Similarly, women accounted for 27.10 percent of all firms in Missouri but earned only 9.78 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 5.14, for example, shows that nonminority male-owned firms accounted for 50.84 percent of all employer firms but earned 74.08 percent of all sales and receipts. African American-owned employer firms accounted for 2.23 percent of all employer firms but only 1.03 percent of all sales and receipts. Women-owned employer firms accounted for 18.16 percent of all employer firms but only 9.26 percent of all sales and receipts.

Large disparities between the fraction of firms that are minority- or women-owned and their fraction of sales and receipts in Missouri are observed not only for African Americans and women, but also for female-owned firms, Hispanic-owned firms, Asian-owned firms, Native American-owned firms, and Native Hawaiian- or Pacific Islander-owned 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 Missouri (Table 5.14), the sales and receipts disparity indices (in columns 2 and 4) fall at or beneath the 80 percent threshold in 11 out of 12 cases. All of these disparity indices are statistically significant within a 95 percent confidence interval.

Table 5.13. 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)	(6) 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: (1) Figures are rounded. Rounding was performed subsequent to any mathematical calculations. (2) Excludes publicly-owned, foreign-owned, and not-for-profit firms.

Table 5.14. Disparity Ratios from the 2007 Survey of Business Owners, State of Missouri, 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	482,535	206,968,932	102,041	192,360,764	1,093,560	33,840,541
Nonminority Male	214,022	150,042,343	51,879	142,495,601	713,923	24,392,736
Female	130,772	20,234,979	18,527	17,819,653	139,547	3,727,202
African American	24,685	2,411,130	2,273	1,976,507	18,807	454,532
Hispanic	6,178	1,383,964	1,264	1,215,073	9,520	255,886
Asian	9,752	3,649,953	3,144	3,375,452	25,336	491,369
Native Hawaiian/Pac. Islander	323	28,425	38	19,840	365	9,558
Am. Indian & Alaska Native	2,895	430,833	477	354,223	2,827	85,195
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	44.35%	72.50%	50.84%	74.08%	65.28%	72.08%
Female	27.10%	9.78%	18.16%	9.26%	12.76%	11.01%
African American	5.12%	1.16%	2.23%	1.03%	1.72%	1.34%
Hispanic	1.28%	0.67%	1.24%	0.63%	0.87%	0.76%
Asian	2.02%	1.76%	3.08%	1.75%	2.32%	1.45%
Native Hawaiian/Pac. Islander	0.07%	0.01%	0.04%	0.01%	0.03%	0.03%
Am. Indian & Alaska Native	0.60%	0.21%	0.47%	0.18%	0.26%	0.25%
Panel C. Disparity Ratios		(2) vs. (1)		(4) vs. (3)	(5) vs. (3)	(6) vs. (3)
Nonminority Male		163.45		145.70	128.41	141.78
Female		36.08		51.02	70.28	60.66
African American		22.77		46.13	77.21	60.30
Hispanic		52.23		50.99	70.28	61.04
Asian		87.26		56.95	75.19	47.13
Native Hawaiian/Pac. Islander		20.52		27.70	89.63	75.84
Am. Indian & Alaska Native		34.70		39.39	55.30	53.86

Source and Notes: See Table 5.13.

Table 5.15 shows comparable SBO data for the construction sector in the U.S. as a whole. Here, large disparities are evident in the construction sector for African Americans, Hispanics, Asians, Pacific Islanders, Native Americans, and women. For example, although African Americans account for 3.75 percent of all firms in construction, they earn only 0.88 percent of all sales and receipts in that sector. Hispanics account for 10.16 percent of firms but only 3.79 percent of receipts. For Asians, the figures are 2.11 percent and 1.24 percent, respectively. For Native Americans, the figures are 1.12 percent and 0.56 percent, respectively. For women, disparities are not as acute as for minorities but are still fairly large. Women account for 8.01 percent of all construction firms but earned only 6.46 percent of construction sales and receipts.

Among firms with paid employees, large disparities are observed for African Americans, Hispanics, and Native Americans. Overall, disparities in this category appear somewhat less acute than among firms as a whole. However, they remain far larger than comparable figures 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 5.15, for example, nonminority males represent 62.52 percent of all firms but 66.27 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 smaller than its fraction among firms as a whole, whereas for nonminority males it is larger.

Table 5.16 shows comparable results for the construction sector in Missouri. Among all firms in construction, large disparities are observed for African Americans, Hispanics, Asians, Pacific Islanders, and Native Americans, but not for women. Among firms with paid employees, large disparities are observed for Hispanics and Asians. As in Table 5.15, nonminority males have a much higher ratio of employer firms to firms as a whole than do minorities. Unlike Table 5.15, women in the Missouri construction sector also have a relatively high ratio of employer firms to firms as a whole.

Table 5.15. Disparity Ratios from the 2007 Survey of Business Owners, United States, Construction

	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	3,353,169	1,499,596,401	752,350	1,345,891,690	6,250,139	272,620,302
Nonminority Male	2,096,431	1,140,441,771	498,581	1,041,607,378	4,523,906	205,558,987
Female	268,668	96,889,179	54,067	87,883,713	492,327	21,126,808
African American	125,818	13,188,433	9,605	9,808,001	56,088	1,976,639
Hispanic	340,770	56,769,929	38,319	41,512,416	260,420	8,918,859
Asian	70,722	18,664,077	10,542	16,005,420	77,302	3,353,304
Native Hawaiian/Pac. Islander	4,991	1,555,430	847	1,354,435	5,993	284,022
Am. Indian & Alaska Native	37,693	8,449,654	5,178	7,026,449	37,722	1,529,180
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	62.52%	76.05%	66.27%	77.39%	72.38%	75.40%
Female	8.01%	6.46%	7.19%	6.53%	7.88%	7.75%
African American	3.75%	0.88%	1.28%	0.73%	0.90%	0.73%
Hispanic	10.16%	3.79%	5.09%	3.08%	4.17%	3.27%
Asian	2.11%	1.24%	1.40%	1.19%	1.24%	1.23%
Native Hawaiian/Pac. Islander	0.15%	0.10%	0.11%	0.10%	0.10%	0.10%
Am. Indian & Alaska Native	1.12%	0.56%	0.69%	0.52%	0.60%	0.56%
Panel C. Disparity Ratios		(2) vs. (1)		(4) vs. (3)	(5) vs. (3)	(6) vs. (3)
Nonminority Male		121.64		116.78	109.22	113.78
Female		80.64		90.86	109.61	107.84
African American		23.44		57.08	70.29	56.79
Hispanic		37.25		60.56	81.81	64.23
Asian		59.01		84.87	88.27	87.78
Native Hawaiian/Pac. Islander		69.69		89.39	85.17	92.54
Am. Indian & Alaska Native		50.13		75.85	87.69	81.50

Source and Notes: See Table 5.13.

Table 5.16. Disparity Ratios from the 2007 Survey of Business Owners, State of Missouri, Construction

	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	74,419	28,073,849	15,480	25,407,708	122,733	5,190,324
Nonminority Male	48,806	20,639,278	9,461	19,044,455	83,187	3,705,113
Female	5,491	2,084,655	1,365	1,955,814	11,967	504,154
African American	1,559	237,340	129	205,742	1,061	45,597
Hispanic	869	188,728	112	142,700	806	33,744
Asian	386	59,152	48	43,384	301	10,996
Native Hawaiian/Pac. Islander	19	2,566	1	n/a	n/a	n/a
Am. Indian & Alaska Native	593	152,955	47	127,687	588	29,371
Panel B. Column Percentages						
All Firms	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Nonminority Male	65.58%	73.52%	61.12%	74.96%	67.78%	71.39%
Female	7.38%	7.43%	8.82%	7.70%	9.75%	9.71%
African American	2.09%	0.85%	0.83%	0.81%	0.86%	0.88%
Hispanic	1.17%	0.67%	0.72%	0.56%	0.66%	0.65%
Asian	0.52%	0.21%	0.31%	0.17%	0.25%	0.21%
Native Hawaiian/Pac. Islander	0.03%	0.01%	0.01%	n/a	n/a	n/a
Am. Indian & Alaska Native	0.80%	0.54%	0.30%	0.50%	0.48%	0.57%
Panel C. Disparity Ratios		(2) vs. (1)		(4) vs. (3)	(5) vs. (3)	(6) vs. (3)
Nonminority Male		112.10		122.64	110.90	116.80
Female		100.64		87.30	110.58	110.16
African American		40.36		97.17	103.74	105.42
Hispanic		57.57		77.63	90.77	89.86
Asian		40.62		55.07	79.09	68.32
Native Hawaiian/Pac. Islander		35.80		n/a	n/a	n/a
Am. Indian & Alaska Native		68.37		165.52	157.79	186.38

Source and Notes: See Table 5.13. “n/a” indicates that data were withheld to avoid disclosure of data for individual companies. Data are included in higher level totals.

VI. 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.[262]

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.[263]

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 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:

[262] 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 enterprise, 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.

[263] 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 National Opinion Research Center (2005), p. 11.

- 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 (see Tables 6.15, 6.22, 6.29).

- 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 (see Tables 6.8, 6.9, 6.18, 6.19, 6.25, 6.26).

- When minority-owned firms *did* receive a loan, they were obligated to pay higher interest rates on the loans than comparable nonminority-owned firms (see Tables 6.13, 6.14, 6.21, 6.27).

- A larger proportion of minority-owned firms than nonminority-owned firms report that credit market conditions are a serious concern (see Tables 6.3, 6.4, 6.5, 6.6, 6.7, 6.17, 6.24).

- 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 (see Tables 6.5, 6.6).

- There is no evidence that discrimination in the market for credit is significantly different in the West South Central census division or in the construction and construction-related professional services industries than it is in the nation or the economy as a whole (various tables).

- There is no evidence that the level of discrimination in the market for credit has diminished between 1993 and 2003 (various tables).

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.

We begin with the 1993 dataset and continue chronologically through the 2003 dataset and then to evidence from NERA's own comparable surveys conducted in various geographies between 1999 and 2007. This chronological progression allows the reader to see the consistency of the main findings over time. This approach serves as well to demonstrate the value of over-sampling minority and female small business owners, as was the case in the 1993 and 1998 surveys, but not the 2003 survey. Unfortunately, the much anticipated 2008 survey results never materialized because the Federal Reserve cancelled this important survey effort.[264]

[264] For more on this, see fn. 306 below.

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.[265] 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.[266]

In his 2003 report for *Builders Association of Greater Chicago v. the City of Chicago*,[267] 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, Gunner Myrdal observed,

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[265] 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. Additionally, 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.

[266] *See* Chapter V, above.

[267] 298 F.Supp.2d 725 (N.D. Ill. 2003).

> 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."[268]

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 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 self-employed African Americans 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

[268] G. Myrdal (1944, 308).

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 a 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:

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

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.[269] 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.[270] Within the

[269] Additional discussion of Probit regression appears in Chapter V, Section C.1.

[270] 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 non-minority 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

framework of this model, a positive estimate of β_3 is consistent with the presence of discrimination.[271]

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.[272] 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, Native Americans).[273]

Table 6.1 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).[274] 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

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and Trost (1994) impose questionable exclusion restrictions, like omitting marital status from the loan supply equation.

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

[272] 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.

[273] There were also two firms in the "Other race" category in 1993 that reported multiple or mixed race.

[274] 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.

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 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 6.2 presents evidence for the West North Central (WNC) division, which includes the State of Missouri and six surrounding states.[275] The WNC sample includes the owners of 600 firms, of which 241 owners (40.2%) said that they had applied for a loan over the preceding three-year period.

The overall denial rate in the WNC is lower than the national rate reported in Table 6.1, but this difference is not statistically significant. The difference in the denial rates between African American-owned and nonminority-owned firms is higher in the WNC (39.0 percentage points nationally and 46.5 percentage points in the WNC), but again this difference is not statistically significant. Indeed, in the large majority of cases, the weighted sample means are not statistically significantly different in the WNC than in the nation as a whole—either overall or by race, ethnicity or gender.

[275] The West North Central division includes Missouri, Kansas, Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

Table 6.1. Selected Population-Weighted Sample Means of Loan Applicants from 1993 NSSBF Data

	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
Credit History of Firm/Owners					
% 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
Other Firm Characteristics					
% 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
% 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
Characteristics of Loan Application					
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: (1) Sample weights are used to provide statistics that are nationally representative of all small businesses. (2) Sample restricted to firms that applied for a loan over the preceding three years.

Table 6.2. Selected Sample Means of Loan Applicants—WNC

	All	Non-minority	African American	Hispanic	Other Races
% of Firms Denied in the Last Three Years	21.1	20.8	67.3	22.1	-
Credit History of Firm/Owners					
% Owners with Judgments Against Them	3.2	2.8	43.0	-	-
% Firms Delinquent in Business Obligations	23.2	23.8	26.6	-	-
% Owners Delinquent on Personal Obligations	15.2	15.2	50.9	-	-
% Owners Declared Bankruptcy in Past 7yrs	3.1	3.2	-	-	-
Other Firm Characteristics					
% Female-Owned	12.8	13.1	16.4	-	-
Sales (in 1,000s of 1992 $)	1,426.8	1,452.2	950.9	243.2	1,037.8
Profits (in 1,000s of 1992 $)	(255.9)	(265.5)	(31.2)	29.3	12.1
Assets (in 1,000s of 1992 $)	564.6	576.6	270.6	84.4	358.4
Liabilities (in 1,000s of 1992 $)	374.4	382.0	158.0	58.3	291.8
Owner's Years of Experience	18.2	18.3	18.6	14.5	18.8
Owner's Share of Business	76.2	75.9	76.3	80.9	91.0
% <= 8^{th} Grade Education	-	-	-	-	-
% 9^{th}-11^{th} Grade Education	2.9	2.7	24.3	-	-
% High School Graduate	28.9	29.3	32.7	22.1	-
% Some College	32.0	32.5	16.4	41.3	-
% College Graduate	18.9	18.0	26.6	19.2	81.7
% Postgraduate Education	17.3	17.5	-	17.4	18.3
% Line of credit	51.7	51.6	49.1	19.2	100.0
Total Full-time Employment in 1990	9.1	9.1	6.6	4.8	13.2
Total Full-time Employment in 1992	11.7	11.7	5.5	11.9	16.0
Firm age, in years	13.9	13.9	14.6	7.2	19.0
% New Firm Since 1990	13.7	13.7	16.4	22.1	-
% Firms Located in MSA	59.2	58.7	100.0	100.0	18.3
% Sole Proprietorship	39.2	39.6	24.3	63.4	-
% Partnership	7.9	8.2	-	-	-
% S Corporation	23.6	24.3	10.2	-	-
% C Corporation	29.3	27.9	65.5	36.6	100.0
% Existing Relationship with Lender	26.7	27.1	32.7	17.4	-
% Firms with Local Sales Market	62.1	63.3	-	82.6	-
Characteristics of Loan Application					
Amount Requested (in 1,000s of 1992 $)	196.7	200.2	175.1	52.9	83.5
% Loans to be Used for Working Capital	10.0	10.0	10.2	22.1	-
% Loans to be Used for Equipment/Machinery	0.8	0.8	-	-	-
% Loans to be Used for Land/Buildings	-	-	-	-	-
% Loan to be Backed by Real Estate	28.4	29.2	-	17.4	-
Total Sample Size (unweighted)	365	36	21	9	6

Source: See Table 6.1.

Notes: (1) Sample weights are used to provide statistics that are nationally representative of all small businesses. (2) Some variable means are computed from slightly smaller samples because of missing values. (3) "Other Races" are not reported separately due to small sample size.

D. Qualitative Evidence

Before moving on to the results of our multivariate analysis, we first report on what business owners themselves say are their main problems. While this evidence 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 White-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. It therefore complements the econometric analysis provided subsequently, which can distinguish between these two hypotheses.

Table 6.3 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 nonminorities (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 American 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.[276] The finding that African American-owned and Hispanic-owned firms are largely indistinguishable from White-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 6.4 for the WNC division—with African American firms being more likely than nonminority-owned firms to say that credit market conditions had been a serious problem in the preceding 12 months.

[276] 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.

Table 6.3. Problems Firms Experienced During Preceding 12 Months—USA

	All	White	African American	Hispanic	Other Races
Credit Market Conditions					
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
Other Potential Problems (% reporting problem is serious)					
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 6.1.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 6.4. Problems Firms Experienced During Preceding 12 Months—WNC

	All	Non-minority	African American	Hispanic	Other Races
Credit Market Conditions					
Percent reporting not a problem	69.6	70.1	42.0	75.7	67.4
Percent reporting somewhat of a problem	20.8	20.3	39.6	15.9	32.6
Percent reporting serious problem	9.7	9.6	18.4	8.4	0.0
Other Potential Problems (% reporting problem is serious)					
Training costs	4.4	4.5	8.0	0.0	0.0
Worker's compensation costs	22.9	23.1	8.0	31.5	14.6
Health insurance costs	34.5	34.5	49.3	32.7	14.6
IRS regulation or penalties	14.2	13.5	28.3	19.0	37.1
Environmental regulations	9.2	9.4	4.0	15.6	0.0
Americans with Disabilities Act	2.8	2.8	0.0	8.0	0.0
Occupational Safety and Health Act	5.6	5.8	4.0	0.0	0.0
Family and Medical Leave Act	1.9	1.9	0.0	8.4	0.0
Number of observations (unweighted)	365	36	21	9	6

Source: See Table 6.1.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table 6.5 reports the views of NSSBF respondents for the U.S. as a whole and Table 6.6 reports views for the WNC division 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 White-owned firms. White-owned firms were

especially worried about health care costs. Hispanic and other minority-owned firms were especially worried about general business conditions.

In the WNC, credit availability is a far more important issue for African American-owned firms than for nonminority-owned firms. Over three times as many African American-owned firms reported credit availability as the most important issue than nonminority-owned firms.

Table 6.5. Percentage of Firms Reporting Most Important Issues Affecting Them Over the Next 12 Months—USA

	All	White	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 6.1.

Table 6.6. Percentage of Firms Reporting Most Important Issues Affecting Them Over the Next 12 Months—WNC

	All	Non-minority	African American	Hispanic	Other Races
Credit availability	5.6	5.5	17.8	0.0	0.0
Health care, health insurance	27.3	28.0	13.3	24.6	0.0
Taxes, tax policy	7.4	7.4	9.0	13.6	0.0
General U.S. business conditions	7.4	7.3	4.5	12.9	15.7
High interest rates	4.6	4.7	4.5	4.2	0.0
Costs of conducting business	3.2	2.9	2.8	0.0	32.6
Labor force problems	3.0	3.0	6.7	0.0	0.0
Profits, cash flow, expansion, sales	8.5	8.6	4.5	29.8	0.0
Number of observations (unweighted)	365	36	21	9	6

Source: See Table 6.1.

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 negative 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 for Other minorities, and 3.3 percent for women.[277]

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.[278] 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. This survey showed that minority-owned businesses rely heavily on credit cards to fund their businesses; often do not apply for credit, even though they need it, for fear of being denied; and were especially likely to need working capital. In particular, as shown in Table 6.7, minority-owned firms report that availability of credit is their top problem. The biggest difference in responses between minorities and White 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.

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

[278] 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.

Table 6.7. Types of Problems Facing Your Business, by Race and Gender

	Non-minority Male	Non-minority Female	Minority Male	Minority Female	African American	Hispanic	Asian/ Pacific Islander
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, downloadable at http://www.uschamber.com/publications/reports/access_to_capital.htm (viewed 7 April 2012).

Notes: (1) Percentages may total to more than 100% because respondents had the option to select multiple choices. (2) "Minority" also includes 14 firms owned by Native Americans.

In summary, African American-owned and Hispanic-owned firms in particular and to a lesser extent other minority-owned firms and woman-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 6.8 and Table 6.9, 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 WNC division.[279] As indicated earlier, the 1993-2003 datasets have the particular advantage that they

[279] Firms owned 50-50 by minorities and non-minorities are excluded from this and all subsequent analyses, as are non-minority firms owned 50-50 by women and men.

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.[280] In Column (1) of Table 6.8 (in which the regression 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.[281]

The remainder of Table 6.8 includes additional explanatory variables to hold constant differences in the characteristics of firms that may vary by race, ethnicity or gender.[282] 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 White-owned firms to have their loan request denied.

The models reported in Columns (3) through (5) of Table 6.8 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 groups. Column (5) adds variables indicating the month and year in which the loan was requested and the type of financial institution to which

[280] 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 6.8, the estimated coefficient of -0.003 on 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.

[281] This estimate largely replicates the raw difference in denial rates between African American-owned and nonminority-owned businesses reported in Table 6.1. 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 White 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 6.8 and subsequent tables we report only unweighted estimates.

[282] In preliminary analyses, these models were also estimated separately, focusing specifically on the differences in coefficient estimates between nonminorities and African Americans. The F-Test conducted to determine whether parameter estimates were the same for African Americans and nonminorities 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 nonminorities and using the coefficient on the African Americans 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.

the firm applied.[283] In total, these three columns add 176 variables to the more parsimonious specification reported in Column (2).[284] 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 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.

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 nonminorities; or that denial rates for firms owned by nonminority women were significantly different from those for firms owned by White men.[285]

In Table 6.9, we see results for the WNC division similar to those reported in Table 6.8 for the nation as a whole. The table shows that the results of our loan denial model in the WNC, which includes the State of Missouri and a six-state surrounding area, are not substantially different from the nationwide results reported in Table 6.8. The indicator variable for the WNC division is insignificantly different from zero, as are the interaction terms between race/ethnicity/gender and the WNC division.[286]

[283] 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 institutions 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%).

[284] 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 6.8 (see Tables 6.27 and 6.28).

[285] 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.

[286] The number of Native Americans in the WNC sample was too small to yield statistical results.

Table 6.8. Determinants of Loan Denial Rates—USA

	(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/Pacific Islander	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 years		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 of experience		-0.003 (2.59)	-0.001 (1.30)	-0.002 (1.55)	-0.002 (1.72)
Owner share of business		0.001 (1.91)	0.000 (0.71)	0.000 (0.26)	0.000 (0.30)
Owner 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
Geographic Division (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 6.1.

Notes: (1) Reported estimates are derivatives from Probit models, t-statistics are in parentheses. (2) "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. (3) "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 6.9. Determinants of Loan Denial Rates—WNC Division

	(1)	(2)	(3)	(4)	(5)
African American	0.438 (10.83)	0.280 (6.52)	0.230 (5.32)	0.234 (5.12)	0.240 (5.03)
Asian/Pacific Islander	0.225 (4.18)	0.168 (3.10)	0.139 (2.53)	0.126 (2.23)	0.124 (2.14)
Native American	0.004 (0.03)	-0.138 (1.00)	-0.092 (0.65)	-0.039 (0.25)	-0.074 (0.49)
Hispanic	0.132 (2.61)	0.066 (1.31)	0.073 (1.44)	0.047 (0.91)	0.045 (0.87)
Nonminority female	0.085 (2.49)	0.048 (1.41)	0.052 (1.54)	0.043 (1.24)	0.039 (1.09)
African American*WNC	0.058 (0.30)	0.075 (0.35)	0.101 (0.47)	0.092 (0.41)	0.067 (0.31)
Asian/Pacific Islander*WNC	–	–	–	–	–
Native American*WNC	–	–	–	–	–
Hispanic*WNC	-0.090 (0.46)	-0.005 (0.02)	-0.126 (0.73)	-0.147 (0.94)	-0.166 (1.12)
Nonminority female*WNC	0.012 (0.10)	-0.052 (0.40)	-0.098 (0.86)	-0.096 (0.82)	-0.080 (0.67)
WNC division	-0.041 (1.01)	-0.057 (1.42)	-0.034 (0.83)	0.004 (0.08)	0.009 (0.18)
Creditworthiness Controls (4 variables)	No	Yes	Yes	Yes	Yes
Owner 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
Geographic Division (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	2,005	2,005	2,004	1,983	1,971
Pseudo R^2	0.062	0.142	0.229	0.255	0.273
Chi^2	145.42	335.93	539.64	596.36	636.90
Log likelihood	-1,107.2	-1,011.9	-909.7	-873.6	-847.5

Source: See Table 6.1.

Note: Creditworthiness controls are those used in Table 6.8 above.

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, 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.[287]

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 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 the 1993 NSSBF data is that less detail is available on the finances of the owner of the firm, as opposed to the firm itself.[288] Although our 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—as opposed to those of the firm itself. These factors would be necessary to identify whether the business owner has sufficient personal resources to draw upon should the

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

[288] 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.

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 in the 1993 NSSBF dataset may introduce a bias into our analysis if African American business owners have fewer resources than White business owners. As we will see below, however, and as noted in the previous footnote, this deficiency is rectified in the 1998 and 2003 SSBF datasets, with little change in the main findings.

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.[289] 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 one of these other purposes are at least partially collateralized because the financial institution could sell them, albeit at a potentially somewhat reduced rate, should the small business default.[290]

In order to determine whether the findings for the WNC division were different from those for the nation, in the second column of Table 6.10 we also report the coefficient and t-statistics on an interaction term between the WNC division and African American ownership. In no case was the estimated coefficient on this interaction significant, implying that the national results also apply to the WNC, hence we do not discuss it further below, as the national results are also representative for the WNC.

Results from these analyses provide no indication that omitting the owner's personal wealth substantially biases the results presented above in Tables 6.8 and 6.9. Estimates presented in row numbers 1 through 8 of Table 6.10 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

[289] As reported earlier, the mean and median size of firms is 5.5 and 31.6 full-time equivalent workers, respectively. Fourteen percent of firms have one or fewer employees and 27 percent have two or fewer employees.

[290] 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 similarly insulates the bank from the need to seek repayment directly from the owner.

firms seeking credit for uses other than working capital, African American-owned firms are 20, 22, 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 attributable to differences in the geographic location of African American- and White-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 negatively 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.[291]

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 approval 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 6.10, reject the hypothesis that differences in loan denial rates are attributable to different propensities to locate in the center of a city. Estimates indicate that African American-owned firms that sell to the local market are 16 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. There is no evidence that the figures for the WNC are significantly different from those in the nation as a whole.

[291] A strong test to distinguish between statistical discrimination and "Becker-Type" discrimination (referring to the standard economic model of discrimination first expounded by University of Chicago economist Gary Becker) 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 6.10. Alternative Models of Loan Denials

Specification	African American	African American* WNC	Asian/ Pacific Islander	Hispanic	Non-minority Female	Sample Size
All	0.230 (5.32)	0.101 (0.47)	0.139 (2.53)	0.073 (1.44)	0.052 (1.54)	2,004
Organization Type						
1) Proprietorships and Partnerships	0.250 (3.17)	–	0.254 (2.29)	0.053 (0.61)	0.025 (0.36)	536
2) Corporations	0.201 (3.84)	0.074 (0.35)	0.113 (1.75)	0.072 (1.11)	0.061 (1.54)	1,454
Age of Firm						
3) 12 Years or Under	0.271 (4.45)	-0.192 (0.66)	0.207 (2.76)	0.048 (0.61)	0.038 (0.73)	1,074
4) Over 12 Years	0.178 (2.86)	–	-0.002 (0.03)	0.109 (1.55)	0.109 (2.18)	922
1993 Firm Size						
5) Fewer than 10 Employees	0.224 (3.74)	0.163 (0.60)	0.138 (1.71)	0.044 (0.62)	0.003 (0.07)	868
6) 10 or More Employees	0.222 (3.32)	–	0.127 (1.57)	0.129 (1.58)	0.107 (2.24)	1,130
Intended Use of Loan						
7) Working Capital	0.256 (4.68)	0.121 (0.42)	0.079 (1.14)	0.003 (0.04)	0.069 (1.45)	1,086
8) Other Use	0.164 (2.30)	0.149 (0.44)	0.255 (2.8)	0.157 (2.01)	0.041 (0.85)	915
Scope of Sales Market						
9) Local	0.162 (2.41)	–	0.181 (2.40)	0.005 (0.07)	0.059 (1.17)	875
10) Regional, National, or International	0.196 (5.08)	0.045 (0.37)	0.042 (0.91)	0.097 (1.96)	0.031 (1.21)	1,126
Creditworthiness						
11) No Past Problems	0.232 (4.23)	–	0.184 (3.22)	0.027 (0.57)	0.071 (2.18)	1,374
12) One Past Problem	0.287 (2.95)	–	-0.019 (0.12)	0.239 (1.70)	0.093 (0.96)	374
13) More Than One Problem	0.295 (2.79)	–	0.246 (1.57)	0.051 (0.29)	-0.139 (0.91)	226

Source: See Table 6.1.

Notes: (1) Reported estimates are derivatives from Probit models, t-statistics are in parentheses. (2) Each line of this table represents a separate regression with the same control variables as Column 3 of Table 6.8. (3) The dependent variable in all specifications represents an indicator for whether or not a loan application was denied. (4) Control for WNC also included.

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 6.1 and 6.2,

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 6.8 and 6.9 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 6.10, 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 White-owned firms is statistically indistinguishable within each of these groups. Asian/Pacific Islander-owned firms and nonminority female-owned firms with clean credit histories, are also at a significant disadvantage relative to nonminority-male owned firms.

Finally, we considered whether African American-owned firms are treated differently from White-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 more likely that the race of the applicant is unknown 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/Pacific Islander and Hispanic applicants, it is possible that surname does provide such a signal, albeit a somewhat noisy 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 White-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 nonminorities 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.[292]

In Tables 6.11 and 6.12, 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.[293] There is no evidence, either for the U.S. as a whole or for the WNC, 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 WNC and in the nation

[292] It appears that race may also rarely be known to those institutions that issue credit ratings. As we mentioned above, Cavalluzo, Cavalluzo, 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.

[293] 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.

as a whole that Asian- and Pacific Islander-owned firms are less likely to access business credit cards.

Table 6.11. Models of Credit Card Use

Specification	African American	Asian/ Pacific Islander	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 6.1.

Notes: (1) Reported estimates are derivatives from Probit models, t-statistics are in parentheses. (2) Each line of this table represents a separate regression with the same control variables as Column 3 of Table 6.8 but excluding the loan characteristics. (3) The dependent variable indicates whether the firm used business or personal credit cards to finance business expenses. (4) In all specifications, the sample size is all firms. (5) Other races are excluded due to sample size limitations.

Table 6.12. Models of Credit Card Use–WNC

Specification	African American	Asian/ Pacific Islander	Native American	Hispanic	Non-minority Female	Sample Size
1) Business Credit Card	0.042 (1.59)	-0.096 (3.23)	0.081 (0.94)	0.030 (0.97)	0.024 (1.06)	4,633
2) Personal Credit Card	0.029 (1.08)	-0.013 (0.41)	0.019 (0.22)	-0.033 (1.07)	0.035 (1.49)	4,633

Source: See Table 6.1.

Notes: See Table 6.11. Control for WNC included.

F. Differences in Interest Rates Charged on Approved Loans

Although most of our analysis has addressed whether minority- and White-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 White-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) $$I_i = \beta_0 + \beta_1 CW_i + \beta_2 X_i + \beta_3 R_i + \beta_4 LC_i + \varepsilon_i,$$

where I represents the interest rate charged on the loan, LC represents characteristics of the loan (see the notes to Table 6.8 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 overlook this implication in the results reported below, but its impact should be kept in mind.

The results obtained from estimating equation (2) are reported in Row 1 of Table 6.13, which includes the complete set of control variables comparable to those in Column 5 of Table 6.8. Estimates indicated that African American-owned firms pay rates of interest that are roughly 100 basis points higher than similarly situated White-owned firms. Row 2 shows that even African American-owned firms with good credit histories are charged higher interest rates relative to White-owned firms.[294]

The remainder of the table presents similar specification checks to those reported in Table 6.10. 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 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/Pacific Islanders, do face disadvantages in the market for small business credit that does not appear to be attributable to differences in geography or creditworthiness.

[294] 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.

Table 6.14 shows results for the WNC. Findings are comparable to those for the nation as a whole.

Table 6.13. Models of Interest Rate Charged —USA

Specification	African American	Asian/ Pacific Islander	Native American	Hispanic	Non-minority Female	Sample Size
1) All loans (controls as in column 5, Table 6.8)	1.034 (3.72)	0.413 (1.37)	-0.427 (0.63)	0.517 (1.97)	0.025 (0.14)	1,454
Creditworthiness						
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
Organization Type						
3) Proprietorships and Partnerships	1.735 (2.57)	0.826 (1.03)	2.589 (0.90)	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
1993 Firm Size						
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
Scope of Sales Market						
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 6.1.

Notes: (1) Reported estimates are Ordinary Least Squares (OLS) coefficients, t-statistics in parentheses. (2) Each line of this table represents a separate regression with all of the control variables as Column 5 of Table 6.8 (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. (3) The sample consists of firms who had applied for a loan and had their application approved. (4) "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 6.14. Models of Interest Rate Charged—WNC

Specification	African American	African American * WNC	Asian/ Pacific Islander	Native American	Hispanic	Non-minority Female	Sample Size
1) All loans (controls as in Column 5, Table 6.8)	1.122 (3.97)	-1.720 (1.23)	0.245 (0.81)	-0.331 (0.46)	0.625 (2.33)	0.039 (0.22)	1,454
Creditworthiness							
2) No credit problems	1.374 (3.68)	-2.145 (1.52)	0.227 (0.62)	1.422 (1.50)	0.584 (1.94)	0.142 (0.71)	1,137
Organization Type							
3) Proprietorships and Partnerships	1.750 (2.56)	–	0.841 (1.04)	2.535 (0.88)	1.062 (1.76)	-0.237 (0.51)	364
4) Corporations	0.729 (2.19)	-1.348 (1.02)	0.116 (0.34)	-0.571 (0.78)	0.557 (1.72)	0.123 (0.63)	1,090
1993 Firm Size							
5) Fewer than 10 Employees	1.426 (2.97)	-3.175 (1.62)	-0.215 (0.36)	-0.016 (0.01)	0.931 (1.99)	-0.219 (0.69)	574
6) 10 or More Employees	0.409 (1.07)	–	0.060 (0.16)	0.223 (0.25)	0.687 (1.83)	0.153 (0.71)	880
Scope of Sales Market							
7) Local	0.770 (1.59)	–	-0.055 (0.10)	1.825 (1.15)	0.898 (2.22)	0.390 (1.25)	633
8) Regional, National, or International	1.715 (4.56)	-2.324 (1.70)	0.830 (2.02)	-1.376 (1.71)	0.460 (1.10)	-0.175 (0.76)	821

Source: See Table 6.1.

Notes: See Table 6.13

G. Loan Approval Rates and Access to Credit

The results presented so far may be biased toward finding too small a disparity between White- 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 nonminorities 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 6.15 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 40 and 23 percentage points more likely than White-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 6.15 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 White-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 White-owned firms).[295] Results obtained in section (b) of Table 6.15 for the WNC division are very similar to those found for the nation as a whole. As section (c) of Table 6.15 shows, African American-owned firms in construction also appear to be fearful of applying because of the possibility of their application being turned down.[296]

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 6.8 and 6.9) 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.

More formally, suppose that loan denial rates for equally creditworthy White- 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 White- and minority-owned firms, respectively. Among the White-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.

[295] 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.

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

Table 6.15. Racial Differences in Failing to Apply for Loans Fearing Denial

Specification	African American	Asian/ Pacific Islander	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 6.8, 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) WNC					
No Other Control Variables, except for WNC dummy and race*WNC interactions (n=4,635)	0.404 (16.15)	0.094 (3.38)	0.148 (1.84)	0.230 (8.00)	0.033 (1.55)
Full Set of Control Variables (same as Table 6.8, Column 3 except for loan characteristics) (n=4,631)	0.256 (9.75)	0.048 (1.76)	0.024 (0.33)	0.159 (5.45)	-0.008 (0.39)
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 6.8, 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 6.1.

Notes: (1) Reported estimates are Probit derivatives, t-statistics in parentheses. (2) Sample consists of all firms. (3) Dependent variable equals one if the firm said they did not apply for a loan fearing denial, zero otherwise.

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.[297]

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

[297] 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.

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 6.10 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 6.16, are consistent with the previous analysis; we find that selection is not much of an issue for African American-owned firms nationally, in the WNC division, or in construction sub-samples, or for Asian/ Pacific Islander-owned firms nationally or in the WNC. Regardless of 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 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 e.g. Table 6.8, Column 5). Among the pool of firms seeking additional credit, however, Hispanic-owned firms are 17 percentage points more likely to be denied access to credit, and this difference is statistically significant.

Table 6.16. Models of Failure to Obtain Credit Among Firms that Desired Additional Credit

Specification	African American	Asian/ Pacific Islander	Native American	Hispanic	Non-minority Female
a) USA					
No Other Control Variables (n=2,647)	0.455 (14.85)	0.299 (6.83)	0.188 (1.57)	0.297 (7.77)	0.126 (4.01)
Full Set of Control Variables (same as Table 6.8, Column 3 except for loan characteristics) (n=2,644)	0.276 (6.93)	0.180 (3.42)	-0.009 (0.06)	0.165 (3.51)	0.049 (1.38)
b) WNC					
No Other Control Variables (n=2,647)	0.448 (14.18)	0.294 (6.62)	0.211 (1.71)	0.300 (7.66)	0.119 (3.65)
Full Set of Control Variables (same as Table 6.8, Column 3 except for loan characteristics) (n=2,644)	0.259 (6.34)	0.172 (3.24)	-0.005 (0.03)	0.170 (3.53)	0.046 (1.24)
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 6.8, 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 6.1.

Notes: (1) Reported estimates are Probit derivatives, t-statistics in parentheses. (2) The sample consists of all firms that applied for loans along with those who needed credit, but did not apply for fear of refusal. (3) Failure to obtain credit includes those firms that were denied and those that did not apply for fear of refusal. (4) Dependent variable is set to one if the firm failed to obtain credit and to 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.[298] 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

[298] 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.

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, African American-owned firms in the 1998 survey report that the biggest problem their firm currently faces is "financing and interest rates." (Table 6.17). In the 1993 survey, respondents were asked to report problems in the preceding 12 months (Tables 6.3 and 6.4) and over the next 12 months (Tables 6.5 and 6.6). Interestingly, even though credit availability was by far the most important category for African Americans (21 percent in Table 6.5), interest rates were relatively unimportant (2 percent). The 1998 SSBF, however, did not report separate categories.

Table 6.17. What is the Most Important Problem Facing Your Business Today?

	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=3,561).

Note: 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.[299]

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%
Asian/Pacific, 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%
Asian/Pacific, Native Americans, etc.	27.5%	23.1%
Hispanics	41.5%	34.3%
Nonminority females	22.7%	24.2%
Overall	24.7%	23.3%

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

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 nonminorities, 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 nonminorities stated prejudice was the reason, whereas among minorities the figure was 6.8 percent.

In Tables 6.8 and 6.9 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 White men.

A similar exercise is performed below in Tables 6.18 and 6.19 using data from the 1998 SSBF. Column 1 in Table 6.18 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 6.18, column 5, Hispanic-owned firms have a 17.1 percentage point higher probability of being denied than nonminority male-owned firms. In Table 6.8, 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 6.18. Determinants of Loan Denial Rates—USA

	(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/Pacific Islander	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 years		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 of experience		-0.002 (1.42)	-0.001 (0.49)	-0.000 (0.34)	-0.000 (0.21)
Owner share of business		0.000 (0.75)	-0.000 (0.12)	0.000 (0.03)	-0.000 (0.33)
Dun & Bradstreet credit ratings (4 variables)	No	Yes	Yes	Yes	Yes
Owner 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
Geographic Division (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 6.17.

Notes: (1) Reported estimates are derivatives from Probit models, t-statistics are in parentheses. (2) "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. (3) "Characteristics of the loan" includes the size of the loan applied for.

Table 6.19. Determinants of Loan Denial Rates—WNC

	(1)	(2)	(3)	(4)	(5)
African American	0.384 (7.09)	0.217 (4.67)	0.176 (4.25)	0.150 (3.70)	0.177 (4.01)
Asian/Pacific Islander	0.138 (2.38)	0.119 (2.37)	0.045 (1.17)	0.020 (0.57)	0.023 (0.66)
Hispanic	0.328 (5.98)	0.240 (4.93)	0.185 (4.23)	0.160 (3.81)	0.151 (3.64)
Nonminority Female	0.094 (2.32)	0.051 (1.58)	0.024 (0.95)	0.016 (0.65)	0.010 (0.42)
African American*WNC	0.532 (2.07)	0.582 (1.84)	0.832 (2.47)	0.834 (2.48)	0.775 (2.17)
Asian/Pacific Islander*WNC	–	–	–	–	–
Hispanic*WNC	–	–	–	–	–
Nonminority female*WNC	–	–	–	–	–
WNC division	-0.103 (1.82)	-0.078 (1.80)	-0.051 (1.49)	-0.055 (1.54)	-0.055 (1.55)
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
Geographic Division (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	910	910	910	910	891
Pseudo R^2	0.1128	0.2907	0.3807	0.3986	0.407
Chi^2	94.78	244.25	319.8	334.89	338.91
Log likelihood	-372.7	-297.9	-260.1	-252.6	-246.9

Source: See Table 6.17.

Notes: (1) t-statistics in parentheses. (2) Other creditworthiness controls are the four other variables included in Column 2 of Table 6.18.

Table 6.19 focusing on the WNC division yields similar results—showing significantly larger denial probabilities for African American- and Hispanic-owned firms (17.7 percent and 15.1 percent, respectively) than for nonminority male-owned firms. The WNC indicator was not significant in Table 6.19. With one significant exception, neither were the interaction terms between WNC and race, ethnicity or gender, indicating that the loan denial results for the WNC are not significantly different than for the nation as a whole. The exception was for African Americans, where the results indicate that loan denial rates relative to nonminority males are statistically significantly even higher in the WNC than in the nation as a whole.

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 Dun & Bradstreet credit rating in five categories (low, moderate, average, significant and high) indicating the likelihood of loan default.[300]

Despite the fact that these new variables do help to predict loan denials,[301] the estimated race differences including these variables are unchanged from those reported above.[302] 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 6.18 and 6.19 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–*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 6.20 replicates column 1 of Table 6.18 using *denylast* as the dependent variable with the smaller sub-sample. African Americans, Hispanics, Asians/Pacific Islanders, and nonminority females are all

[300] 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.

[301] 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 the same when a control for WSC was also included.

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

confirmed to face higher denial rates than nonminority males using this specification. For African Americans and Hispanics, the difference is 46 and 36 percentage points, respectively. For Asians/Pacific Islanders, the difference is 19 percentage points, and for nonminority females, 8 percentage points.

Table 6.20. More Loan Denial Probabilities

	(1)	(2)	(3)	(4)
	Denylast	*Denylast*	*Denylast*	*Denylast*
African American	0.457 (8.00)	0.246 (4.76)	0.422 (7.20)	0.202 (4.04)
Asian/Pacific Islander	0.185 (2.81)	0.027 (0.65)	0.176 (2.68)	0.025 (0.60)
Hispanic	0.360 (6.28)	0.171 (3.67)	0.336 (5.83)	0.147 (3.26)
Nonminority female	0.083 (2.00)	0.005 (.20)	0.091 (2.13)	0.005 (0.18)
African American*WNC			0.495 (1.89)	0.793 (2.22)
Asian/Pacific Islander*WNC				
Hispanic*WNC				
Nonminority female*WNC				
WNC			-0.111 (1.78)	-0.059 (1.31)
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
Geographic Division	No	Yes	No	Yes
Industry	No	Yes	No	Yes
N	846	846	832	832
Pseudo R^2	0.1112	0.4265	0.1172	0.4324
Chi^2	90.94	348.71	94.8	349.73
Log likelihood	-363.3	-234.5	-357	-229.6

Source: See Table 6.18.

Results consistent with discrimination are confirmed for African Americans and Hispanics in Column (2) of Table 6.20 when a host of demographic and financial characteristics and geographic and industry indicators are included. When interaction terms for the WNC division are added to the model as in Columns (3) and (4), results for African Americans and Hispanics remain statistically significant. Moreover, the results for Asians/Pacific Islanders and nonminority females are significant in Column (3), though not in Column (4). The WNC indicator is not significant in any of the specifications, nor is the interaction terms between WNC and Asian/Pacific Islander, Hispanic, or nonminority female. However,, as in Table 6.19, the

interaction between WNC and African American is significant, indicating a more severe loan denial disparity for African Americans in the WNC than in the nation as a whole.

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

Tables 6.21 through 6.23 provide confirmation from the 1998 survey of a number of other results from the 1993 survey reported above.

First, Table 6.21, which is similar to Tables 6.13 and 6.14, finds that conditional on obtaining a loan, African Americans are charged a higher price for their credit—on average 106 basis points nationally. These results are not significantly different in construction and construction-related industries either.[303]

In Table 6.22, which is similar to Table 6.15, 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 WNC as well and also in the construction and construction-related industries.[304]

Finally, Table 6.23, which is comparable to Tables 6.11 and 6.12, 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 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 credit cards in the WNC division (rows 3 and 4) 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, as well. This is an important market failure, and one which government agencies such as MoDOT cannot simply ignore if they are to avoid passive participation in a discriminatory market area.

[303] There is some indication that nonminority females nationally pay slightly less for their loans, but this difference is not quite statistically significant. African Americans in the WNC appear to pay less for their loans than African Americans nationally, but again this difference is not statistically significant.

[304] There is some evidence of this phenomenon for Hispanics nationally as well. However, the coefficient of 0.173 in Row (2) of Table 6.22 is not quite statistically significant.

Table 6.21. Models of Interest Rate Charged

Specification	African American	African American * WNC	African American * Construc-tion	Asian/ Pacific Islander	Hispanic	Non-minority Female
1a) All Loans (as in Column 5 of Table 6.18) 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 6.18) n=765	1.064 (2.38)	-0.798 (0.33)	0.348 (0.35)	0.467 (1.11)	0.198 (0.45)	-0.267 (0.92)
1c) All Loans (as in Column 5 of Table 6.18), WNC only n=72	-1.607 (0.13)	–	–	-3.358 (0.41)	–	0.466 (0.43)

Source: See Table 6.18.

Notes: (1) Each line of this table represents a separate regression with all of the control variables. (2) The sample consists of firms who had applied for a loan and had their application approved.

Table 6.22. Racial Differences in Failing to Apply for Loans Fearing Denial

Specification	African American	Asian/ Pacific Islander	Hispanic	Non-minority 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) WNC division				
No Other Control Variables (n=272)	0.414 (3.77)	0.424 (2.42)	0.046 (0.88)	
Full Set of Control Variables (n=253)	0.052 (2.20)	0.349 (2.95)	0.004 (0.83)	-0.002 (0.0)
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 6.18.

Note: (1) Reported estimates are Probit derivatives with t-statistics in parentheses. (2) Full set of control variables as in Column 5 of Table 6.18, except for loan amount, year of application, and type of lender.

Table 6.23. Models of Credit Card Use

Specification	African American	Asian/ Pacific Islander	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 WNC	0.104 (0.64)	-0.064 (0.29)	0.012 (0.05)	-0.046 (0.54)	284
4) Personal Credit Card WNC	0.232 (1.34)	-0.196 (0.98)	0.320 (1.45)	-0.043 (0.5)	284
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 6.18.

Notes: (1) Each line of this table represents a separate regression with the same control variables as Column 5 of Table 6.18, except for loan amount, year of application, and type of lender. (2) The dependent variable indicates whether the firm used business or personal credit cards to finance business expenses. (3) In all specifications, the sample size includes all firms. (4) Reported estimates are Probit derivatives 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.[305] This is the fourth and final survey of U.S. small businesses conducted by the Board of Governors since 1987.[306] 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-subsidiary, 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 Dun & Bradstreet Market Identifier file. The number of employees varied from zero to 486 with a weighted median of 3.0 and weighted mean of 8.6.

[305] *See* www.federalreserve.gov/pubs/oss/oss3/ssbf03/ssbf03home.html.

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

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.[307]

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.[308] Although the population weights were adjusted to accommodate these changes, even these weighted percentages are significantly smaller for minorities in 2003 than in 1998.[309]

Mach and Wolken (2006) reported using these data that 13.1% of firms were owned by non-White or Hispanic individuals; the share is statistically lower than in 1998 (14.6 percent). The shares for African Americans and Asians/Pacific Islanders each held roughly constant at 4 percent; 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 (Table 4). 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 remainder of this section presents our findings from this analysis.[310]

1. Qualitative Evidence

Table 6.24 reports the results of asking business owners for the most important problem currently facing their firm. Consistent with the 1993 and 1998 surveys, firms owned by minority and women-owned firms were more likely to say that their most important problem was "financing and interest rates." Once again the African American-White 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.

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[307] *See* fn. 263, above.

[308] 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.

[309] Mach and Wolken (2006, Table 2) report that weighted figures for Blacks 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.

[310] 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.

Table 6.24. What is the Most Important Problem Facing Your Business Today?

	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 or profitability	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 insurances	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%
None	5.3%	3.4%	9.4%	4.1%	8.6%	6.0%
Cash flow	6.2%	5.1%	4.6%	7.1%	6.8%	6.3%
Growth	0.9%	2.7%	0.4%	1.1%	0.8%	1.0%
Foreign competition	1.3%	0.0%	1.0%	0.1%	0.7%	1.0%
Competition - other	1.6%	0.8%	1.8%	0.1%	1.1%	1.4%
Availability of materials/resources	0.8%	0.8%	0.6%	1.6%	1.2%	0.9%
Labor problems other than cost or quality	1.2%	2.2%	0.2%	0.0%	1.3%	1.1%
Internal management/administrative problems	4.2%	2.5%	4.3%	1.0%	6.1%	4.4%
Environmental constraints	1.4%	0.7%	1.6%	2.3%	2.0%	1.6%
Advertising and public awareness	2.2%	1.8%	2.4%	1.8%	3.3%	2.4%
Market/economic/industry factors	4.9%	1.9%	4.0%	2.3%	6.2%	4.8%
Health care cost and availability	1.5%	0.0%	0.7%	0.8%	1.4%	1.4%
Energy costs	1.5%	0.0%	0.7%	3.7%	1.2%	1.4%
Costs other than health care and energy	2.2%	1.0%	0.1%	3.6%	1.0%	1.9%
Owner’s personal problems	0.3%	0.0%	0.0%	0.0%	0.8%	0.4%
Technology	0.4%	0.0%	0.7%	0.0%	0.5%	0.4%
Dealing with insurance companies	0.3%	0.4%	0.0%	0.0%	0.4%	0.3%
War and September 11th	0.2%	0.0%	1.3%	0.0%	0.5%	0.3%

Source: NERA calculations from the 2003 SSBF (n=4,072).

Note: Results are weighted.

2. Differences in Loan Denial Rates by Race/Ethnicity

Tables 6.25 and 6.26 present estimates of loan denial probabilities for the nation as a whole and for the WNC using a regression model comparable to that which was used with the 1993 and 1998 survey waves.[311]

Column (1) in Table 6.25 (comparable to Table 6.8 for 1993 and 6.18 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 6.26 (comparable to Table 6.9 for 1993 and 6.19 for 1998) focuses on the WNC division and yields similar results—showing significantly larger denial probabilities for African American-owned firms than for nonminority male-owned firms. The WNC gender interaction term is also significant, indicating that nonminority women were almost 16 percent more likely to be denied in the WNC in 2003.

[311] 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 6.25. Determinants of Loan Denial Rates—USA

	(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/Pacific Islander	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 years		0.046 (1.36)	0.041 (1.35)	0.052 (1.81)	0.044 (1.66)
Firm Bankrupt past 7 years		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 of experience		0.000 (0.31)	0.000 (1.00)	0.000 (0.82)	0.000 (0.62)
Owner share of business		0.000 (0.08)	0.000 (0.61)	0.000 (0.38)	0.000 (0.47)
Dun & Bradstreet credit ratings (4 variables)	No	Yes	Yes	Yes	Yes
Owner 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
Geographic Division (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 6.26. Notes: (1) "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. (2) "Characteristics of the loan" includes the size of the loan applied for.

Table 6.26. Determinants of Loan Denial Rates—WNC

	(1)	(2)	(3)	(4)	(5)
African American	0.453 (8.23)	0.128 (5.35)	0.095 (4.69)	0.087 (4.99)	0.088 (4.91)
Asian/Pacific Islander	0.047 (1.38)	0.016 (1.44)	0.006 (0.84)	0.002 (0.44)	0.000 (0.12)
Hispanic	0.061 (1.66)	0.006 (0.70)	0.003 (0.44)	0.001 (0.24)	0.000 (0.16)
Native and Other	0.164 (2.09)	0.050 (1.81)	0.023 (1.31)	0.017 (1.34)	0.016 (1.41)
Nonminority female	0.028 (1.44)	0.001 (0.29)	0.000 (0.14)	0.000 (0)	0.000 (0.18)
African American*WNC	–	–	–	–	–
Asian/Pacific Islander*WNC	–	–	–	–	–
Hispanic-Other*WNC	–	–	–	–	–
Native-Other*WNC	–	–	–	–	–
Nonminority female*WNC	0.294 (2.30)	0.142 (1.98)	0.158 (2.01)	0.147 (2.06)	0.157 (2.00)
WNC division	-0.060 (2.30)	-0.013 (2.09)	-0.009 (2.16)	-0.006 (2.14)	-0.005 (2.22)
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
Geographic Division (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	1,657	1,649	1,649	1,649	1,599
Pseudo R^2	0.0992	0.2377	0.3018	0.3396	0.3738
Chi^2	86.4	201.99	256.49	288.53	314.81
Log likelihood	-392.5	-323.9	-296.6	-280.6	-263.7

Source: See Table 6.24.

Notes: (1) t-statistics in parentheses. (2) Creditworthiness controls include presence of legal judgments against the firm during the previous 3 years, more than 60 days delinquent on any personal obligations of the firm's owner during the previous 3 years, more than 60 days delinquent on any business obligations of the firm during the previous 3 years, and declaration of owner of firm bankruptcy during the previous 7 years. (3) 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. (4) For other variables, see notes for Table 6.25.

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

Table 6.27 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 6.13 and 6.14 for 1993 and Table 6.21 for 1998). As was found in earlier surveys, African American business owners are hurt here as well since they have to pay, on average, 105 more basis points for their loans than nonminority male business owners with identical characteristics. Hispanic business owners, as well, pay 99 more basis points than their nonminority male counterparts.

The loan price differential is present for African American and Hispanic business owners in the WNC as well. According to the results in Table 6.27, Hispanic business owners in the WNC may pay 149 basis points more for their loans, on average, than comparable nonminority males. For African Americans, the differential is 127 basis points.

Table 6.28 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 6.11 and 6.12 for 1993 and Table 6.23 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. Unlike earlier years, there is some evidence that African Americans are less likely to use personal credit cards for business expenses. However, this result is not observed for business credit cards, nor is it observed in the WNC.

Table 6.27. Models of Interest Rate Charged

Specification	African American	Asian/ Pacific Islander	Hispanic	Native and Other	Nonminority Female
1a) All Loans (as in Column 5 of Table 6.25) n=1,537	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 6.26) n=1,537	1.267 (2.20)	0.419 (1.04)	1.494 (3.33)	0.509 (0.54)	-0.230 (1.04)

Source: See Table 6.24.

Notes: (1) Each line of this table represents a separate regression with all of the control variables as indicated. (2) 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. (3) The sample consists of firms that had applied for a loan and had their application approved.

Table 6.28. Models of Credit Card Use

Specification	African American	Asian/ Pacific Islander	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, WNC	0.274 (1.20)	0.054 (0.18)	0.354 (1.43)	–	0.182 (1.91)	299
4) Personal Credit Card, WNC	-0.372 (1.47)	0.003 (0.01)	-0.051 (0.15)	0.010 (0.11)	-0.218 (0.0)	309

Source: See Table 6.24.

Notes: (1) Each line of this table represents a separate regression with the same control variables as Column 5 of Table 6.27, except for loan amount, year of application, and type of lender. (2) The dependent variable indicates whether the firm used business or personal credit cards to finance business expenses. (3) In all specifications, the sample size is all firms. (4) Reported estimates are Probit derivatives with t-statistics in parentheses.

Finally, consistent with earlier results, Table 6.29 (comparable to Tables 6.15 for 1993 and 6.22 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 WNC the phenomenon is evident as well—African American business owners are more than 18 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. Nationally, there is evidence of this phenomenon for nonminority female business owners as well.

Table 6.29. Racial Differences in Failing to Apply for Loans Fearing Denial

Specification	African American	Asian/ Pacific Islander	Hispanic	Native American and Other	Non-minority Female
a) USA					
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) WNC division					
No Other Control Variables (n=3,694)	0.405 (9.66)	0.050 (1.62)	0.144 (4.11)	0.143 (2.19)	0.076 (4.55)
Full Set of Control Variables (n=3,666)	0.180 (4.92)	0.031 (1.12)	0.057 (1.99)	0.055 (1.05)	0.040 (2.69)
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 6.24.

Notes: (1) Reported estimates are Probit derivatives with t-statistics in parentheses. (2) Full set of control variables as in Column 5 of Table 6.27, except for loan amount, year of application, and type of lender. (3) In Panel (b), interaction terms between race, gender, and WNC were all insignificant.

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

NERA has conducted local credit market surveys at nine other times and places since 1999. These include the Chicago metropolitan area in 1999, the State of Maryland in 2000, 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 (again) in 2005, the State 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 6.30, and are remarkably similar to results seen in Tables 6.8-6.9, 6.18-6.19, and 6.25-6.26. 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 6.31, 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 6.13-6.14, 6.21 and 6.27. African Americans pay almost 170 basis points more, on average, for their business credit than do nonminority males, declining to 150 basis 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 6.30. Determinants of Loan Denial Rates—Nine Jurisdictions

	(1)	(2)
	Most Recent Application	*Last Three Years*
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/Pacific Islander	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 3 years	0.228 (3.99)	0.328 (4.74)
N	1,855	1,855
Pseudo R^2	.1905	.1721
Chi^2	336.0	363.3
Log likelihood	-714.1	-873.7

Source: NERA Credit Market Surveys, 1999-2007.

Notes: (1) Reported estimates are derivatives from Probit models, t-statistics are in parentheses. (2) Indicator variables are also included for the various jurisdictions.

Table 6.31. Determinants of Interest Rates—Nine Jurisdictions

	(1)	(2)
African American	1.683 (3.44)	1.491 (2.98)
Asian/Pacific Islander	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 3 years		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 6.30.

Notes: (1) Reported estimates are OLS regression models, t-statistics are in parentheses. (2) 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 were included. (3) Seven additional indicators for jurisdiction were 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/Pacific Islander-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 of 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 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 White 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 that 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 do 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 are considerably smaller than those observed in this study regarding business credit.[312]

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

[312] In the Boston Fed study 10 percent of White 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 White males and between 50.0 and 65.9 percent for African Americans-owned firms (depending on which NSSBF or SSBF survey is used).

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.[313]

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 consistent that African American-owned firms and other DBE firms 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.

[313] The gap in denial rates between African Americans and nonminorities with similar characteristics is between 34-46 percentage points in the small business credit market compared with 7 percentage points in the mortgage market.

VII. M/W/DBE Utilization and Disparity in MoDOT Contracting Activity

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 V and VI documented the extent of disparity facing minority- and women-owned firms in the private sector of MoDOT's market area, where contracting and procurement activity is typically *not* subject to such requirements. In this Chapter, we combined the evidence from Chapter IV, which estimates DBE availability in MoDOT's Market Area, with the Master Contract/Subcontract Database described in Chapter III in order to examine whether there is statistical evidence of disparities in public sector construction and consulting contracting activities supported by MoDOT.

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, such as MoDOT's state-funded construction and consulting contracts. As a result of the DBE Program, however, MoDOT has a longstanding policy of pursuing affirmative action in its federally-assisted contracting activities. As documented below, DBE utilization rates are much lower and disparity ratios much more adverse on MoDOT's state-funded contracts than on its federally-assisted contracts.

Given the history of U.S. Department of Transportation DBE policies, MoDOT's own data may not show evidence of underutilization, even if such underutilization exists in the private sector of its relevant market area. This is especially true where a state DOT's DBE Program is well established. Instead, the state DOT's own data, in our view, is most useful for examining the effectiveness of its DBE policies during the study time period. On the other hand, if actual MoDOT DBE utilization still turns out to be significantly less than DBE availability in certain contracting categories, then MoDOT's data will provide evidence of adverse disparities as well.

The statistical evidence reported in Chapter III has already established from which specific industries MoDOT procures construction and consulting services 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 IV has established what percentage of all firms in MoDOT's geographic and product markets are DBEs.

This Chapter will document:

- To what extent have DBEs been utilized in the contracting and subcontracting activities of MoDOT and its subrecipients 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, consulting, and for both categories combined. We also report results separately for federally-assisted contracts and for state-funded contracts. Further, for federally-assisted contracts, we report results for MoDOT directly-let contracts and for subrecipient-let contracts. All results are reported by race and gender as well as for all DBEs combined, and cover the entire MoDOT market area.[314]

B. DBE Utilization

For this Study, we examined 1,654 prime contracts and 9,330 associated subcontracts awarded during the FFY 2005-2009 time period and with a total award value of $4.126 billion and a total payment value of $3.981 billion.[315] Of these, 1,275 prime contracts and 8,750 associated subcontracts were issued on federally-assisted projects, with a total award value of $3.875 billion and a total paid value of $3.742 billion. Another 379 prime contracts and 580 associated subcontracts were issued on state-funded projects, with a total award value of $251 million and a total paid value of $238 million.

Table 7.1. DBE Utilization in Contracting at MoDOT (All Contracts)

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction	Consulting	Overall	Construction	Consulting	Overall
	(%)	(%)	(%)	(%)	(%)	(%)
African American	0.98	4.12	1.18	0.98	4.00	1.16
Hispanic	0.12	0.01	0.11	0.09	0.00	0.08
Asian/Pacific Islander	0.12	2.61	0.28	0.12	2.40	0.25
Native American	1.34	0.21	1.27	1.35	0.19	1.28
Minority Total	2.56	6.95	2.84	2.54	6.59	2.78
Nonminority Females	10.33	7.03	10.11	10.76	6.70	10.52
DBE Total	12.89	13.98	12.96	13.29	13.29	13.29
Non-DBE Total	87.11	86.02	87.04	86.71	86.71	86.71
Total (%)	100.00	100.00	100.008	100.00	100.00	100.00
Total ($)	3,857,411,876	268,133,640	4,125,545,516	3,744,921,977	235,829,704	3,980,751,681

Source: NERA Master Contract/Subcontract Database.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

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 extensive computer-assisted cross-referencing of firms in our database with firms in (a)

[314] DBE utilization statistics by MoDOT Highway District, analogous to those presented above in Tables 7.1 through 7.5, appear below in Appendix D.

[315] Payments on contracts that were not substantially complete at the time of the Study data collection were excluded from the paid dollar totals.

MoDOT's directory of certified DBEs, (b) the master directory of DBEs assembled for this study, (c) Dun & Bradstreet, (d) company profiles drawn from American Business Information, Standard & Poors, and other sources, and (e) the results of our race/gender misclassification/non-classification surveys.

During the study period, as a group, we found that DBEs were awarded 12.89 percent and paid 13.29 percent of all contract and subcontract dollars in construction; and awarded 13.98 percent and paid 13.29 percent of all contract and subcontract dollars in consulting. Altogether, DBEs were awarded 12.96 percent and paid 13.29 percent of all contract and subcontract dollars during the study period. Among DBEs, firms owned by nonminority females earned the largest fraction of contracting and subcontracting dollars, followed in descending order by Native Americans, African Americans, Asians/Pacific Islanders, and Hispanics (see Table 7.1).

Table 7.2. DBE Utilization in Contracting at MoDOT (Federally-Assisted Contracts Only)

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction	Consulting	Overall	Construction	Consulting	Overall
	(%)	(%)	(%)	(%)	(%)	(%)
African American	1.02	5.03	1.22	1.03	4.77	1.20
Hispanic	0.12	0.00	0.11	0.09	0.00	0.09
Asian/Pacific Islander	0.13	3.41	0.28	0.13	2.98	0.25
Native American	1.38	0.31	1.33	1.39	0.27	1.34
Minority Total	2.65	8.75	2.94	2.63	8.01	2.87
Nonminority Females	10.52	6.41	10.32	10.99	5.69	10.75
DBE Total	13.17	15.16	13.26	13.62	13.71	13.62
Non-DBE Total	86.83	84.84	86.74	86.38	86.29	86.38
Total (%)	100.00	100.00	100.008	100.00	100.00	100.00
Total ($)	3,688,269,300	186,315,918	3,874,585,218	3,573,639,924	168,698,577	3,742,338,502

Source and Note: See Table 7.1.

Restricting the data to federally-assisted contracts and associated subcontracts, we found that DBEs were awarded 13.17 percent and paid 13.62 percent of contract and subcontract dollars in construction; and awarded 15.16 percent and paid 13.71 percent of contract and subcontract dollars in consulting. Altogether, DBEs were awarded 13.26 percent and paid 13.62 percent of federally-assisted dollars during the study period. Among DBEs, firms owned by nonminority females earned the largest fraction of contracting and subcontracting dollars, followed in descending order by Native Americans, African Americans, Asians/Pacific Islanders, and Hispanics (see Table 7.2).

Federally-assisted contracts are further subdivided into those that were let directly by MoDOT and those that were let by MoDOT subrecipients. Table 7.3 shows utilization results for MoDOT's directly let federally-assisted contracts. For these contracts, we found that DBEs were awarded 12.81 percent and paid 13.35 percent of contract and subcontract dollars in

construction; and awarded 14.69 percent and paid 13.06 percent of contract and subcontract dollars in consulting. Altogether, DBEs were awarded 12.89 percent and paid 13.34 percent of directly let federally-assisted dollars during the study period. Among DBEs, firms owned by nonminority females earned the largest fraction of contracting and subcontracting dollars, followed in descending order by Native Americans, African Americans, Asians/Pacific Islanders, and Hispanics.

Table 7.3. DBE Utilization in Contracting at MoDOT (Federally-Assisted Contracts Only, MoDOT Direct Contracts)

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction	Consulting	Overall	Construction	Consulting	Overall
	(%)	(%)	(%)	(%)	(%)	(%)
African American	0.81	5.08	1.00	0.82	4.68	0.98
Hispanic	0.07	0.00	0.07	0.06	0.00	0.06
Asian/Pacific Islander	0.09	3.64	0.24	0.08	3.16	0.21
Native American	1.30	0.35	1.26	1.30	0.30	1.26
Minority Total	2.27	9.08	2.57	2.27	8.15	2.51
Nonminority Females	10.54	5.61	10.33	11.09	4.91	10.83
DBE Total	12.81	14.69	12.89	13.35	13.06	13.34
Non-DBE Total	87.19	85.31	87.11	86.65	86.94	86.66
Total (%)	100.00	100.00	100.008	100.00	100.00	100.00
Total ($)	3,212,268,572	146,555,172	3,358,823,744	3,129,582,603	132,884,394	3,262,466,997

Source and Note: See Table 7.1.

When we restrict the federally-assisted data to contracts and associated subcontracts awarded by MoDOT subrecipients, as in Table 7.4, we found that DBEs were awarded 15.57 percent and paid 15.49 percent of contract and subcontract dollars in construction; and awarded 16.88 percent and paid 16.12 percent of contract and subcontract dollars in consulting. Altogether, DBEs were awarded 15.67 percent and paid 15.54 percent of federally-assisted dollars let by subrecipients during the study period. Among DBEs, firms owned by nonminority females earned the largest fraction of contracting and subcontracting dollars, followed in descending order by African Americans, Native Americans, Asians/Pacific Islanders, and Hispanics.[316]

[316] A complete listing of MoDOT subrecipients represented in the Master Contract/Subcontract Database appears in Appendix A.

Table 7.4. DBE Utilization in Contracting at MoDOT (Federally-Assisted Contracts Only, Subrecipient Contracts)

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction	Consulting	Overall	Construction	Consulting	Overall
	(%)	(%)	(%)	(%)	(%)	(%)
African American	2.46	4.84	2.64	2.49	5.07	2.69
Hispanic	0.44	0.00	0.41	0.30	0.00	0.27
Asian/Pacific Islander	0.40	2.59	0.57	0.42	2.29	0.56
Native American	1.94	0.13	1.80	1.98	0.14	1.84
Minority Total	5.23	7.56	5.41	5.19	7.51	5.36
Nonminority Females	10.33	9.32	10.26	10.30	8.61	10.17
DBE Total	15.57	16.88	15.67	15.49	16.12	15.54
Non-DBE Total	84.43	83.12	84.33	84.51	83.88	84.46
Total (%)	100.00	100.00	100.008	100.00	100.00	100.00
Total ($)	476,000,728	39,760,746	515,761,473	444,057,321	35,814,184	479,871,504

Source and Note: See Table 7.1.

Finally, turning to state funded contracts and associated subcontracts, we found that DBEs were awarded 6.78 percent and paid 6.49 percent of contract and subcontract dollars in construction; and awarded 11.30 percent and paid 12.24 percent of contract and subcontract dollars in consulting. Altogether, DBEs were awarded 8.25 percent and paid 8.11 percent of state-funded dollars during the study period. Among DBEs, firms owned by nonminority females earned the largest fraction of contracting and subcontracting dollars, followed in descending order by African Americans, Native Americans, Asians/Pacific Islanders, and Hispanics (see Table 7.5).

From a comparison of Table 7.5 to Tables 7.2, 7.3, or 7.4, it is clear that DBE participation is substantially higher when goals are available for use, particularly in the case of construction.

The utilization statistics presented above in Tables 7.1 through 7.5 represent the construction sector as a whole and the consulting sector as a whole. It is important to also examine DBE utilization at a more detailed industry level as well. These more detailed utilization figures are documented in the next section.

Table 7.5. DBE Utilization in Contracting at MoDOT (State-Funded Contracts Only)

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction	Consulting	Overall	Construction	Consulting	Overall
	(%)	(%)	(%)	(%)	(%)	(%)
African American	0.00	2.04	0.67	0.00	2.07	0.58
Hispanic	0.00	0.03	0.01	0.00	0.01	0.00
Asian/Pacific Islander	0.00	0.79	0.26	0.00	0.94	0.26
Native American	0.56	0.00	0.37	0.56	0.00	0.40
Minority Total	0.56	2.86	1.31	0.56	3.01	1.25
Nonminority Females	6.22	8.45	6.95	5.93	9.22	6.86
DBE Total	6.78	11.30	8.25	6.49	12.24	8.11
Non-DBE Total	93.22	88.70	91.75	93.51	87.76	91.89
Total (%)	100.00	100.00	100.008	100.00	100.00	100.00
Total ($)	169,142,576	81,817,722	250,960,298	171,282,053	67,131,127	238,413,179

Source and Note: See Table 7.1.

C. Disparity Analysis

1. Sector Level Results

In this section, we compare our estimates of DBE utilization in MoDOT contracting and subcontracting activities to our estimates of DBE availability in MoDOT's geographic and product market area.

Tables 7.6 and 7.7 present the results of this comparison using dollars awarded and dollars paid, respectively, as the metric of utilization. These two tables cover all funding sources, both federal and state, and all contracts, whether let directly by MoDOT or by MoDOT subrecipients. Tables 7.8 and 7.9 are for federally-assisted contracts, whether let directly by MoDOT or by MoDOT subrecipients. Tables 7.10 and 7.11 are for federally-assisted contracts that were let directly by MoDOT. Tables 7.12 and 7.13 are for federally-assisted contracts that were let by MoDOT subrecipients. Finally, Tables 7.14 and 7.15 are for state-funded 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 IV. The disparity ratio, which appears in the final column of Tables 7.6 through 7.15, 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 MoDOT's contracting and subcontracting at a level that is consistent with their estimated availability in the relevant marketplace. 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.

Table 7.6. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Awarded) (All Funds)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	0.98	2.52	38.80 ***
Hispanic	0.12	0.68	16.84 ***
Asian/Pacific Islander	0.12	0.33	36.14
Native American	1.34	0.99	
Minority-owned	2.56	4.53	56.49 ***
Nonminority female	10.33	15.87	65.08 ***
DBE total	12.89	20.40	63.17 ***
Consulting			
African American	4.12	2.38	
Hispanic	0.01	1.05	0.77 ***
Asian/Pacific Islander	2.61	2.65	98.78
Native American	0.21	0.39	54.90
Minority-owned	6.95	6.46	
Nonminority female	7.03	15.07	46.63 ***
DBE total	13.98	21.53	64.94 ***
All Contracting			
African American	1.18	2.50	47.33 ***
Hispanic	0.11	0.74	14.71 ***
Asian/Pacific Islander	0.28	0.65	43.20
Native American	1.27	0.91	
Minority-owned	2.84	4.79	59.32 ***
Nonminority female	10.11	15.74	64.25 ***
DBE total	12.96	20.54	63.10 ***

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 10% level or better (90% confidence). "**" indicates the disparity is significant 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 7.7. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Paid) (All Funds)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	1.00	2.57	38.89 ***
Hispanic	0.09	0.69	12.68 ***
Asian/Pacific Islander	0.12	0.33	36.84
Native American	1.35	0.98	
Minority-owned	2.55	4.56	56.04 ***
Nonminority female	10.73	15.80	67.88 ***
DBE total	13.28	20.36	65.23 ***
Consulting			
African American	3.97	2.37	
Hispanic	0.00	1.05	0.19 ***
Asian/Pacific Islander	2.40	2.65	90.76
Native American	0.19	0.39	49.72
Minority-owned	6.57	6.46	
Nonminority female	6.76	15.06	44.91 ***
DBE total	13.33	21.52	61.96 ***
All Contracting			
African American	1.17	2.61	44.91 ***
Hispanic	0.08	0.93	8.77 ***
Asian/Pacific Islander	0.26	1.23	20.81 ***
Native American	1.28	0.47	
Minority-owned	2.79	5.24	53.25 ***
Nonminority female	10.49	18.18	57.73 ***
DBE total	13.28	23.42	56.73 ***

Source and Notes: See Table 7.6.

Table 7.8. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Awarded) (Federally-Assisted Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	1.02	2.53	40.44 ***
Hispanic	0.12	0.69	17.52 ***
Asian/Pacific Islander	0.13	0.34	37.46
Native American	1.38	0.98	
Minority-owned	2.65	4.53	58.45 ***
Nonminority female	10.52	15.87	66.26 ***
DBE total	13.17	20.41	64.52 ***
Consulting			
African American	5.03	2.37	
Hispanic	0.00	1.05	0.00 ***
Asian/Pacific Islander	3.41	2.64	
Native American	0.31	0.40	77.26
Minority-owned	8.75	6.46	
Nonminority female	6.41	15.08	42.46 ***
DBE total	15.16	21.54	70.37 ***
All Contracting			
African American	1.22	2.51	48.42 ***
Hispanic	0.11	0.73	15.79 ***
Asian/Pacific Islander	0.28	0.58	49.10
Native American	1.33	0.92	
Minority-owned	2.94	4.73	62.18 **
Nonminority female	10.32	15.77	65.42 ***
DBE total	13.26	20.51	64.67 ***

Source and Notes: See Table 7.6.

Table 7.9. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Paid) (Federally-Assisted Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	1.05	2.58	40.57 ***
Hispanic	0.09	0.69	13.22 ***
Asian/Pacific Islander	0.13	0.33	38.25
Native American	1.39	0.97	
Minority-owned	2.65	4.56	58.05 ***
Nonminority female	10.96	15.80	69.33 ***
DBE total	13.61	20.37	66.80 ***
Consulting			
African American	4.74	2.37	
Hispanic	0.00	1.05	0.00 ***
Asian/Pacific Islander	2.99	2.64	
Native American	0.27	0.39	68.03
Minority-owned	7.99	6.46	
Nonminority female	5.76	15.06	38.23 ***
DBE total	13.75	21.52	63.90 ***
All Contracting			
African American			
Hispanic	1.21	2.54	47.72 ***
Asian/Pacific Islander	0.09	0.73	11.88 ***
Native American	0.25	0.62	41.33
Minority-owned	1.34	0.91	
Nonminority female	2.89	4.79	60.29 ***
DBE total	10.72	15.70	68.31 ***

Source and Notes: See Table 7.6.

Table 7.10. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Awarded) (Federally-Assisted Contracts) (MoDOT Directly-Let Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	0.81	2.53	32.05 ***
Hispanic	0.07	0.69	10.60 ***
Asian/Pacific Islander	0.09	0.34	25.45
Native American	1.30	0.98	
Minority-owned	2.27	4.53	50.02 ***
Nonminority female	10.54	15.87	66.43 ***
DBE total	12.81	20.41	62.78 ***
Consulting			
African American	5.08	2.37	
Hispanic	0.00	1.05	0.00 ***
Asian/Pacific Islander	3.64	2.64	
Native American	0.35	0.40	89.34
Minority-owned	9.08	6.46	
Nonminority female	5.61	15.08	37.22 ***
DBE total	14.69	21.54	68.20 ***
All Contracting			
African American	1.00	2.51	39.71 ***
Hispanic	0.07	0.73	9.60 ***
Asian/Pacific Islander	0.24	0.58	41.59
Native American	1.26	0.92	
Minority-owned	2.57	4.73	54.18 ***
Nonminority female	10.33	15.77	65.48 ***
DBE total	12.89	20.51	62.87 ***

Source and Notes: See Table 7.6.

As indicated above, Tables 7.10 and 7.11 show utilization, availability, and disparity results for federally-assisted contracts that were let by MoDOT directly. The results are qualitatively similar whether award dollars or paid dollars are used as the measure of utilization, so we will focus our discussion on the results in Table 7.11. For construction, Table 7.11 shows that overall DBE utilization was 13.35 percent during the study period while estimated DBE availability was 20.37 percent. This yields an adverse disparity ratio of 65.56, which is both large and statistically significant. Large and statistically significant disparity ratios were also observed in construction for African Americans, Hispanics, minorities as a group, and nonminority women. The disparity ratio for Asian/Pacific Islanders was large and adverse, but was not statistically significant. Among DBEs, nonminority women accounted for the majority of overall utilization (11.09 percent out of a total of 13.35 percent). After nonminority women, utilization was highest for Native Americans, followed by African Americans, Asians/Pacific Islanders, and Hispanics.

Table 7.11. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Paid) (Federally-Assisted Contracts) (MoDOT Directly-Let Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	0.82	2.58	31.79 ***
Hispanic	0.06	0.69	9.07 ***
Asian/Pacific Islander	0.08	0.33	25.55
Native American	1.30	0.97	
Minority-owned	2.27	4.56	49.67 ***
Nonminority female	11.09	15.80	70.15 ***
DBE total	13.35	20.37	65.56 ***
Consulting			
African American	4.68	2.37	
Hispanic	0.00	1.05	0.00 ***
Asian/Pacific Islander	3.16	2.64	
Native American	0.30	0.39	77.02
Minority-owned	8.15	6.46	
Nonminority female	4.91	15.06	32.58 ***
DBE total	13.05	21.52	60.66 ***
All Contracting			
African American	0.98	2.54	38.45 ***
Hispanic	0.06	0.73	8.19 ***
Asian/Pacific Islander	0.21	0.62	33.96 *
Native American	1.26	0.91	
Minority-owned	2.51	4.79	52.28 ***
Nonminority female	10.83	15.70	69.03 ***
DBE total	13.34	20.49	65.11 ***

Source and Notes: See Table 7.6.

Turning to consulting, Table 7.11 shows that overall DBE utilization was 13.05 percent during the study period while estimated DBE availability was 21.52 percent. This yields an adverse disparity ratio of 60.66, which is both large and statistically significant. Large and statistically significant disparity ratios were also observed in consulting for Hispanics and nonminority women. After nonminority women, utilization was highest for African Americans, followed by Asians/Pacific Islanders, Native Americans, and Hispanics.

Table 7.12. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Awarded) (Federally-Assisted Contracts) (Subrecipients Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	2.46	2.53	97.08
Hispanic	0.44	0.69	64.23
Asian/Pacific Islander	0.40	0.34	
Native American	1.94	0.98	
Minority-owned	5.23	4.53	
Nonminority female	10.33	15.87	65.10 ***
DBE total	15.57	20.41	76.27 **
Consulting			
African American	4.84	2.37	
Hispanic	0.00	1.05	0.00 ***
Asian/Pacific Islander	2.59	2.64	97.95
Native American	0.13	0.40	32.73
Minority-owned	7.56	6.46	
Nonminority female	9.32	15.08	61.80 ***
DBE total	16.88	21.54	78.36 **
All Contracting			
African American	2.64	2.51	
Hispanic	0.41	0.73	56.11
Asian/Pacific Islander	0.57	0.58	97.98
Native American	1.80	0.92	
Minority-owned	5.41	4.73	
Nonminority female	10.26	15.77	65.01 ***
DBE total	15.67	20.51	76.39 **

Source and Notes: See Table 7.6.

Tables 7.12 and 7.13 show utilization, availability, and disparity results for federally-assisted contracts that were let by MoDOT subrecipients. Once again, the results are qualitatively similar whether award dollars or paid dollars are used as the measure of utilization, so we will focus our discussion on the results in Table 7.13. For construction, Table 7.13 shows that overall DBE utilization was 15.31 percent during the study period while estimated DBE availability was 20.37 percent. This yields an adverse disparity ratio of 75.19, which is both large and statistically significant. A large and statistically significant disparity ratio was also observed in construction for nonminority women. The disparity ratio for Hispanics was large and adverse, but was not statistically significant. Among DBEs, nonminority women accounted for the majority of overall utilization (10.08 percent out of a total of 15.31 percent). After nonminority women, utilization was highest for African Americans, followed by Native Americans, Asians/Pacific Islanders, and Hispanics.

Table 7.13. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Paid) (Federally-Assisted Contracts) (Subrecipients Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	2.58	2.58	
Hispanic	0.28	0.69	41.28
Asian/Pacific Islander	0.41	0.33	
Native American	1.97	0.97	
Minority-owned	5.24	4.56	
Nonminority female	10.08	15.80	63.76 ***
DBE total	15.31	20.37	75.19 **
Consulting			
African American	4.94	2.37	
Hispanic	0.00	1.05	0.00 ***
Asian/Pacific Islander	2.35	2.64	88.97
Native American	0.14	0.39	35.56
Minority-owned	7.43	6.46	
Nonminority female	8.83	15.06	58.65 ***
DBE total	16.27	21.52	75.59 **
All Contracting			
African American	2.75	2.54	
Hispanic	0.26	0.73	36.00
Asian/Pacific Islander	0.55	0.62	89.52
Native American	1.83	0.91	
Minority-owned	5.40	4.79	
Nonminority female	9.99	15.70	63.62 ***
DBE total	15.38	20.49	75.08 **

Source and Notes: See Table 7.6.

Turning to consulting, Table 7.13 shows that overall DBE utilization was 16.27 percent during the study period while estimated DBE availability was 21.52 percent. This yields an adverse disparity ratio of 75.59, which is both large and statistically significant. Large and statistically significant disparity ratios were also observed in consulting for Hispanics and nonminority women. The disparity ratio for Native Americans was large and adverse, but was not statistically significant. After nonminority women, utilization was highest for African Americans, followed by Asians/Pacific Islanders, Native Americans, and Hispanics.

Table 7.14. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Awarded) (State-Funded Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	0.00	2.31	0.12 ***
Hispanic	0.00	0.60	0.00 ***
Asian/Pacific Islander	0.00	0.26	0.00 ***
Native American	0.56	1.25	44.59
Minority-owned	0.56	4.41	12.64 ***
Nonminority female	6.22	15.79	39.39 ***
DBE total	6.78	20.20	33.55 ***
Consulting			
African American	2.04	2.38	85.64
Hispanic	0.03	1.05	2.52 ***
Asian/Pacific Islander	0.79	2.67	29.55 *
Native American	0.00	0.37	0.33 ***
Minority-owned	2.86	6.48	44.11 *
Nonminority female	8.45	15.00	56.31 **
DBE total	11.30	21.48	52.63 ***
All Contracting			
African American	0.67	2.35	28.36 *
Hispanic	0.01	0.85	1.01 ***
Asian/Pacific Islander	0.26	1.60	16.10 **
Native American	0.37	0.76	49.40
Minority-owned	1.31	5.56	23.51 ***
Nonminority female	6.95	15.35	45.24 ***
DBE total	8.25	20.91	39.46 ***

Source and Notes: See Table 7.6.

Tables 7.14 and 7.15 show utilization, availability, and disparity results for state-funded contracts. As with the previous tables, the results are qualitatively similar whether award dollars or paid dollars are used as the measure of utilization, so we will focus our discussion on the results in Table 7.15. For construction, Table 7.15 shows that overall DBE utilization was 6.49 percent during the study period while estimated DBE availability was 20.19 percent. This yields an adverse disparity ratio of 32.16, which is both large and statistically significant. Large and statistically significant disparity ratios were also observed in construction for African Americans, Hispanics, Asians/Pacific Islanders, minorities as a group, and nonminority women. The disparity ratio for Native Americans was large and adverse, but was not statistically significant. Among DBEs, nonminority women accounted for almost all of overall utilization (5.93 percent out of a total of 6.49 percent). Native American utilization accounted for the other 0.56 percent. There was no utilization among African Americans, Asians/Pacific Islanders, or Hispanics.

Table 7.15. Utilization, Availability, and Disparity Results for MoDOT Contracting, Overall and by Contracting Category (Dollars Paid) (State-Funded Contracts)

Contracting Category/DBE Type	Utilization	Availability	Disparity Ratio
Construction			
African American	0.00	2.31	0.14 ***
Hispanic	0.00	0.60	0.00 ***
Asian/Pacific Islander	0.00	0.25	0.00 ***
Native American	0.56	1.26	44.20
Minority-owned	0.56	4.42	12.68 ***
Nonminority female	5.93	15.78	37.61 ***
DBE total	6.49	20.19	32.16 ***
Consulting			
African American	2.05	2.38	86.11
Hispanic	0.01	1.05	0.68 ***
Asian/Pacific Islander	0.93	2.66	35.14
Native American	0.00	0.37	0.40 ***
Minority-owned	2.99	6.46	46.34 *
Nonminority female	9.29	15.02	61.81 *
DBE total	12.28	21.48	57.16 **
All Contracting			
African American	0.58	2.54	22.95 **
Hispanic	0.00	0.73	0.27 ***
Asian/Pacific Islander	0.26	0.62	42.83
Native American	0.40	0.91	44.12
Minority-owned	1.25	4.79	26.04 ***
Nonminority female	6.88	15.70	43.85 ***
DBE total	8.13	20.49	39.68 ***

Source and Notes: See Table 7.6.

Turning to consulting, Table 7.15 shows that overall DBE utilization was 12.28 percent during the study period while estimated DBE availability was 21.48 percent. This yields an adverse disparity ratio of 57.16, which is both large and statistically significant. Large and statistically significant disparity ratios were also observed in consulting for Hispanics, Native Americans, minorities as a group, and nonminority women. The disparity ratio for Asians/Pacific Islanders was large and adverse, but was not statistically significant. After nonminority women, utilization was highest for African Americans, followed by Asians/Pacific Islanders, Hispanics, and Native Americans.

2. Detailed Industry Level Results

Utilization, availability, and disparity results comparable to those presented above in Tables 7.6 through 7.15 have also been produced according to detailed industry categories. In the interest of space, these tables are presented below in Appendix F.

D. Current Availability versus Expected Availability

Finally, Table 7.16 provides a comparison between current levels of DBE availability for the MoDOT 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 Table 4.21, by the disparity ratios documented in column (3) of Table 5.12. 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. For African Americans, Asians/Pacific Islanders, Native Americans, nonminority females, and DBEs as a group, expected DBE availability in MoDOT's market area exceeds current DBE availability by substantial margins.

Table 7.16. Current Availability and Expected Availability for MoDOT Construction and Consulting Contracting

Contracting Category/ DBE Type	Award Dollar Weights		Paid Dollar Weights	
	Current Availability	Expected Availability	Current Availability	Expected Availability
CONSTRUCTION				
African American	2.53	3.56	2.58	3.64
Hispanic	0.69	1.10	0.69	1.10
Asian/Pacific Islander	0.34	0.16	0.33	0.15
Native American	0.98	0.79	0.97	0.78
Minority	4.53	5.12	4.56	5.16
Nonminority female	15.87	23.35	15.80	23.25
DBE total	20.41	27.17	20.37	27.12
CONSULTING				
African American	2.37	3.34	2.37	3.34
Hispanic	1.05	1.67	1.05	1.67
Asian/Pacific Islander	2.64	1.20	2.64	1.20
Native American	0.40	0.32	0.39	0.31
Minority	6.46	7.31	6.46	7.31
Nonminority female	15.08	22.19	15.06	22.16
DBE total	21.54	28.67	21.52	28.65

Source: See Tables 4.10 and 5.12.

VIII. Anecdotal Evidence of Disparities in MoDOT's Market Area

A. Introduction

We have presented a variety of economic and statistical findings above that are consistent with, and indicative of, the presence of business discrimination against minorities and women in the geographic and product markets that are relevant to MoDOT'S construction and consulting contracting activities. Chapters V and VI, in particular, have documented large and statistically significant adverse disparities in MoDOT's relevant markets impacting minority and female entrepreneurs. In many instances, 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 anecdotal evidence of disparities in MoDOT's market area. First, we conducted a large scale survey of business establishments in the market area—both DBE and non-DBE—and asked owners directly about their experiences, if any, with contemporary business-related acts of discrimination. We find that DBEs in MoDOT's markets report suffering business-related discrimination in large numbers and with statistically significantly greater frequency than non-DBEs (see Tables 8.3 and 8.4). These differences remain statistically significant when firm size and owner characteristics are held constant (see Tables 8.5 and 8.6). 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 often are not hired—or even solicited—by these prime contractors to work on projects without DBE goals (see Tables 8.8 and 8.9). The relative lack of DBE hiring and, even more tellingly, the relative lack of solicitation of DBEs in the absence of affirmative efforts by MoDOT and other public entities in the MoDOT market area shows that business discrimination continues to fetter DBE business opportunities in MoDOT's relevant markets. We conclude that the statistical evidence presented in this report is consistent with these anecdotal accounts of contemporary business discrimination.

The remainder of this Chapter is organized as follows. We first discuss the mail survey results in Section B. In Section B.1, we discuss the survey questionnaire, sample frame, and response rate. Section B.2 presents evidence on willingness of firms to do business with the public sector. Section B.3 presents the key findings from the DBE and non-DBE respondents concerning disparate treatment. Section B.4 presents the key findings concerning the impact of the regular business environment on DBEs' ability to conduct their businesses. Section B.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 B.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 C describes the results of the business experience group interviews. Responses are grouped under the headings of the most common cited barriers and issues facing businesses in MoDOT's contracting market area.

B. Business Experience Surveys

1. Survey Questionnaire, Sample, and Responses

The survey questionnaire 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 MoDOT'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.[317] Of 9,547 businesses that received the questionnaire,[318] 1,241 (13.0 percent) provided usable responses.[319] The distribution of total responses according to the race and gender of the business owner, by major contracting category, appears in Table 8.1.

[317] *See* Chapter III for a discussion of how the product and geographic markets were defined. See Chapter IV for discussion of how the Master DBE Directory and the Baseline Business Universe were assembled.

[318] These figures exclude surveys that were returned undelivered or were otherwise undeliverable.

[319] The total number of valid responses to any particular survey question, however, was sometimes lower than this due to item non-response.

Table 8.1. Race, Gender and Contracting Category of Mail Survey Respondents

Group	Construction	Consulting	Services	Commodities	Total
African American	23	6	23	5	57
Hispanic	9	3	5	3	20
Asian/Pacific Islander	2	6	5	3	16
Native American	14	4	6	2	26
Minorities with unknown Race/Ethnicity	0	0	0	0	0
Nonminority Women	138	44	117	31	330
Total DBE	186	63	156	44	449
Nonminority Men	391	138	193	70	792
Total	577	201	349	114	1,241

Source: NERA MoDOT 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 8.2, there is an observable linkage between the firms responding to our mail survey and the public sector of the Missouri area 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 MoDOT 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 both construction and consulting. Overall, more than 50 percent of non-DBEs and almost 60 percent of DBEs have worked or attempted to work for MoDOT or some other public entity in the market area in the previous five years.

Table 8.2. 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 5 Years	African American	Hispanic	Asian/ Pacific Islander	Native American	Total Minority	Non-minority Female	Total DBEs	Non-minority Male
ALL INDUSTRIES								
With MoDOT	49.1%	31.6%	6.3%	46.2%	39.8%	30.6%	33.0%	30.0%
	(57)	(19)	(16)	(26)	(118)	(327)	(445)	(784)
With Other Public Entity in Market Area	67.3%	47.4%	37.5%	53.8%	56.9%	55.4%	55.8%	47.2%
	(55)	(19)	(16)	(26)	(116)	(327)	(443)	(775)
With any Public Entity in Market Area	70.9%	57.9%	37.5%	57.7%	61.2%	57.5%	58.5%	50.6%
	(55)	(19)	(16)	(26)	(116)	(327)	(443)	(776)
CONSTRUCTION								
With MoDOT	43.5%	37.5%	0.0%	57.1%	44.7%	32.8%	35.9%	30.6%
	(23)	(8)	(2)	(14)	(47)	(137)	(184)	(386)
With Other Public Entity in Market Area	56.5%	62.5%	0.0%	64.3%	57.4%	56.5%	56.8%	48.2%
	(23)	(8)	(2)	(14)	(47)	(138)	(185)	(384)
With any Public Entity in Market Area	60.9%	75.0%	0.0%	71.4%	63.8%	58.7%	60.0%	51.7%
	(23)	(8)	(2)	(14)	(47)	(138)	(185)	(383)
CONSULTING								
With MoDOT	83.3%	33.3%	0.0%	50.0%	42.1%	47.6%	45.9%	39.9%
	(6)	(3)	(6)	(4)	(19)	(42)	(61)	(138)
With Other Public Entity in Market Area	100.0%	66.7%	66.7%	50.0%	73.7%	72.1%	72.6%	66.9%
	(6)	(3)	(6)	(4)	(19)	(43)	(62)	(136)
With any Public Entity in Market Area	100.0%	66.7%	66.7%	50.0%	73.7%	72.1%	72.6%	69.3%
	(6)	(3)	(6)	(4)	(19)	(43)	(62)	(137)
OTHER SERVICES								
With MoDOT	43.5%	20.0%	20.0%	33.3%	35.9%	16.2%	21.2%	14.7%
	(23)	(5)	(5)	(6)	(39)	(117)	(156)	(190)
With Other Public Entity in Market Area	71.4%	40.0%	20.0%	33.3%	54.1%	44.0%	46.4%	27.0%
	(21)	(5)	(5)	(6)	(37)	(116)	(153)	(185)
With any Public Entity in Market Area	76.2%	40.0%	20.0%	33.3%	56.8%	44.8%	47.7%	30.6%
	(21)	(5)	(5)	(6)	(37)	(116)	(153)	(186)
COMMODITIES								
With MoDOT	60.0%	33.3%	0.0%	0.0%	30.8%	51.6%	45.5%	48.6%
	(5)	(3)	(3)	(2)	(13)	(31)	(44)	(70)
With Other Public Entity in Market Area	60.0%	0.0%	33.3%	50.0%	38.5%	70.0%	60.5%	57.1%
	(5)	(3)	(3)	(2)	(13)	(30)	(43)	(70)
With any Public Entity in Market Area	60.0%	33.3%	33.3%	50.0%	46.2%	80.0%	69.8%	61.4%
	(5)	(3)	(3)	(2)	(13)	(30)	(43)	(70)

Source: NERA MoDOT 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 8.3, more than 43 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 minorities and women than for nonminority males, casting doubt on claims of widespread "reverse discrimination." On average, reports were highest among African Americans, with an overall rate of more than 80 percent. The average disparate treatment incidence rate for Hispanics, Asians/Pacific Islanders, and Native Americans was approximately 50 percent, 23 percent, and 41 percent, respectively. For nonminority women, the disparate treatment incidence rate was 37 percent. By comparison, the reported rate for nonminority males was 28 percent.[320]

The balance of Table 8.3 shows results for each of 14 distinct types of disparate treatment that we asked about in the survey. In every category the ratio of the reported amount of disparate treatment between DBEs and non-DBEs is large. In most categories this difference is statistically significant as well. In all categories the incidence of disparate treatment was at least 40 percent greater for DBEs than for non-DBEs in all cases. In some categories it was substantially larger than this. In applying for commercial loans, for example, DBEs reported disparate treatment six times more frequently than nonminority males. In applying for surety bonds it was almost four times more frequent. In applying for commercial insurance it was more than four times more frequent. In obtaining price quotes from suppliers or subcontractors it was almost four times more frequent. In functioning without hindrance or harassment on the work site it was almost three times more frequent.

Evidence of the impact of public sector DBE programs is seen in that, although they are still large in an absolute sense, the smallest relative differences between DBEs and non-DBEs appear in the categories of working or attempting to work on public sector prime contracts and public sector subcontracts.

[320] Similar patterns were observed when the results were disaggregated by industry sector.

Table 8.3. 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/ Pacific	Native American	Total Minority	Non-minority Female	Total DBE	Non-minority Male
Applying for commercial loans	**60.0%**	**21.4%**	12.5%	**31.6%**	**42.0%**	**11.5%**	**20.3%**	**3.4%**
	(40)	**(14)**	(8)	**(19)**	**(81)**	**(200)**	**(281)**	**(476)**
Applying for surety bonds	**29.6%**	***16.7%***	0.0%	**16.7%**	**20.6%**	**6.8%**	**10.7%**	**3.5%**
	(27)	***(12)***	(6)	**(18)**	**(63)**	**(161)**	**(224)**	**(402)**
Applying for commercial or professional insurance	**26.8%**	**12.5%**	0.0%	19.0%	**19.1%**	3.6%	**7.7%**	**1.8%**
	(41)	**(16)**	(11)	(21)	**(89)**	(247)	**(336)**	**(543)**
Hiring workers from union hiring halls	**23.1%**	8.3%	0.0%	13.3%	**15.8%**	4.5%	8.3%	**4.9%**
	(26)	(12)	(4)	(15)	**(57)**	(111)	(168)	**(304)**
Obtaining price quotes from suppliers or subcontractors	**40.0%**	**27.8%**	0.0%	9.5%	**24.7%**	**11.7%**	**15.3%**	**4.0%**
	(35)	**(18)**	(11)	(21)	**(85)**	**(223)**	**(308)**	**(521)**
Working or attempting to obtain work on public sector prime contracts	**51.2%**	***35.7%***	0.0%	26.3%	**38.8%**	17.6%	**23.8%**	**16.8%**
	(41)	***(14)***	(6)	(19)	**(80)**	(193)	**(273)**	**(457)**
Working or attempting to obtain work on public sector subcontracts	**54.5%**	**37.5%**	10.0%	20.0%	**38.9%**	18.7%	**25.0%**	**17.9%**
	(44)	**(16)**	(10)	(20)	**(90)**	(198)	**(288)**	**(476)**
Working or attempting to obtain work on private sector prime contracts	**61.0%**	21.4%	0.0%	**21.1%**	**37.2%**	**14.8%**	**21.4%**	**8.8%**
	(41)	(14)	(12)	**(19)**	**(86)**	**(209)**	**(295)**	**(513)**
Working or attempting to obtain work on private sector subcontracts	**58.5%**	**25.0%**	0.0%	14.3%	**34.4%**	**16.9%**	**22.2%**	**8.5%**
	(41)	**(16)**	(12)	(21)	**(90)**	**(207)**	**(297)**	**(515)**
Receiving timely payment for work performed	**59.0%**	**35.3%**	12.5%	**40.0%**	**45.2%**	**20.7%**	**27.0%**	**12.9%**
	(39)	**(17)**	(8)	**(20)**	**(84)**	**(246)**	**(330)**	**(566)**
Functioning without hindrance or harassment on the work site	**44.4%**	**23.5%**	0.0%	**19.0%**	**30.0%**	**10.2%**	**15.4%**	**5.5%**
	(36)	**(17)**	(6)	**(21)**	**(80)**	**(226)**	**(306)**	**(510)**
Joining or dealing with construction trade associations	**38.7%**	***18.8%***	0.0%	**25.0%**	**28.4%**	8.5%	**13.9%**	**5.4%**
	(31)	***(16)***	(4)	**(16)**	**(67)**	(177)	**(244)**	**(423)**
Having to do inappropriate or extra work not required of comparable non-DBEs	**40.0%**	**23.5%**	10.0%	5.3%	**24.7%**	**12.7%**	**15.9%**	**7.5%**
	(35)	**(17)**	(10)	(19)	**(81)**	**(228)**	**(309)**	**(505)**
Double standards not required of comparable non-DBEs	**45.0%**	17.6%	10.0%	9.5%	**27.3%**	11.3%	**15.7%**	**8.0%**
	(40)	(17)	(10)	(21)	**(88)**	(230)	**(318)**	**(514)**
In any one of the business dealings listed above	**80.4%**	***50.0%***	23.1%	40.9%	**59.6%**	**37.1%**	**43.2%**	**27.7%**
	(51)	***(18)***	(13)	(22)	**(104)**	**(283)**	**(387)**	**(632)**

Source: See Table 8.2.

Notes: 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 8.4 represents the same disparate treatment information as in Table 8.3, but with the frequency percentages replaced by relative rankings. That is, the 14 kinds of disparate treatment are ranked by each group according to the frequency with which disparate treatment was reported, with "1" representing the most frequent and "14" representing the least frequent.[321] The most frequently reported problem overall for DBEs—as opposed to the one with the most relative difference from non-DBEs—was applying for commercial loans. The next four most frequently reported, in descending order of frequency, were applying for surety bonds, applying for commercial insurance, and obtaining price quotes from suppliers.

Some courts and other observers have asserted that findings such as those in Table 8.3 and 8.4 tell us nothing about discrimination against DBEs since, even though they are current and come directly from the businesses reporting disparate treatment, even though they are restricted to the relevant geographic and product markets, even though they are disaggregated by contracting category and by race and gender, they still do not compare firms of similar size, qualifications, or experience. We have argued elsewhere against such flawed logic (and economics) since size, qualifications, and experience are *precisely* the factors that are adversely impacted by discrimination (Wainwright and Holt, 2010, 65-67; Wainwright, 2000, 86-87). 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 8.5 show that even when levels of size, qualifications, and experience are held constant across firms, measures of disparate treatment of African American-, Hispanic-, Asian/Pacific Islander-, nonminority women-owned businesses, minorities as a group, and DBEs as a group, are still large, adverse, and statistically significant.

[321] In the case of ties, not all 14 ranks will be present.

Table 8.4. 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/ Pacific Islander	Native American	Total Minority	Non-minority Female	Total DBEs
Applying for commercial loans	3	3	1	1	1	1	1
Applying for surety bonds	5	1	2	6	3	2	2
Applying for commercial or professional insurance	6	2	3	3	4	3	3
Hiring workers from union hiring halls	4	5	3	9	6	4	4
Obtaining price quotes from suppliers or subs	1	7	3	5	5	5	5
Working or attempting to obtain work on public sector prime contracts	2	7	1	2	2	8	6
Working or attempting to obtain work on public sector subcontracts	9	6	2	12	11	6	7
Working or attempting to obtain work on private sector prime contracts	7	9	2	11	9	9	8
Working or attempting to obtain work on private sector subcontracts	8	6	3	7	7	10	9
Receiving timely payment for work performed	9	4	3	11	10	7	10
Functioning without hindrance or harassment on the work site	10	8	3	4	8	11	11
Joining or dealing with trade associations	11	10	3	8	12	12	12
Having to do extra work not required of others	13	12	3	10	14	13	13
Having to meet quality or performance standards not required of others	12	11	3	7	13	14	14

Source: See Table 8.2.

In Table 8.5, we report the results from a series of Probit regressions using the mail survey data on disparate treatment.[322] 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 8.5 (in which the regression model contains only DBE status and contracting category indicators), the estimated coefficient of 0.166 on the DBE indicator indicates that the likelihood of experiencing disparate treatment for DBE firms is 16.6 percentage points higher than that for non-DBE firms.[323] This difference is statistically significant within a 99 percent confidence interval or better. Column (2) of Table 8.5 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 13.6 percentage points more likely than non-DBE firms to experience disparate treatment. This difference is also statistically significant within a 99 percent confidence interval. Firm size and other characteristics account for little of the disparate treatment reported by DBEs in the MoDOT market area.

The exercise is repeated in columns (3) and (4). The only difference from the earlier regressions is that the DBE indicator is now 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 MoDOT's market area are 33.2 percentage points more likely to experience disparate treatment than non-DBE firms. When controls are added in column (4), this difference decreases slightly to 31.9 percentage points, indicating that disparate treatment is occurring even when accounting for other "capacity"-type factors. Nonminority female-owned firms are 10.8 and 7.5 percentage points more likely to experience disparate treatment, respectively, and these differences are statistically significant as well.

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 53.1 percentage points in column (5), falling to 52.5 percentage points once controls are added. For Hispanic-owned firms, the differentials are 23.4 and 19.7 percentage points, respectively. For Asian/Pacific Islander-owned firms, the differentials are 1.9 and 0.3 percentage points, respectively. For Native American-owned firms, the differentials were 13.3 and 13.4 percentage points, respectively.[324]

[322] *See* Chapter V for a description of Probit regression.

[323] This estimate largely replicates the raw difference in disparate treatment rates between DBE and non-DBE firms reported in the last row of Table 8.3. The raw differential observed there (43.2% – 27.7% = 15.5%) differs slightly from the 16.6% differential reported here since the regression specification also controls for industry category.

[324] The results for Asians/Pacific Islanders and Native Americans were not statistically significant.

Table 8.5. Prevalence of Disparate Treatment Facing DBEs

	(1)	(2)	(3)	(4)	(5)	(6)
DBE	0.166 (5.33)	0.136 (4.02)				
Minority			0.332 (6.37)	0.319 (5.63)		
Nonminority Female			0.108 (3.11)	0.075 (2.01)	0.109 (3.13)	0.077 (2.07)
African American					0.531 (7.15)	0.525 (6.53)
Hispanic					0.234 (2.01)	0.197 (1.49)
Asian/Pacific Islander					(0.019) (-0.13)	(0.003) (-0.02)
Native American					0.133 (1.27)	0.134 (1.27)
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	1019.00	945.00	1019.00	945.00	1019.00	945.00
Pseudo R^2	0.03	0.05	0.04	0.06	0.05	0.08
Chi^2	34.05	57.90	49.55	74.17	70.95	92.71
Log likelihood	(633.19)	(575.96)	(625.44)	(567.83)	(614.74)	(558.56)

Source: See Table 8.2.

Notes: Reported estimates are derivatives from Probit models, t-statistics are in parentheses. A t-statistic of 2.58 (1.96) (1.64) or larger indicates that the result is significant within a 99 (95) (90) percent confidence interval.

Table 8.6. Prevalence of Disparate Treatment Facing DBEs, by Type of Business Dealing

Business Dealings	African American	Hispanic	Asian/ Pacific Islander	Native American	Total Minority	Non-minority Female	Total DBEs
Applying for commercial loans	**63.5%**	**29.3%**	16.8%	**32.4%**	**42.7%**	**8.0%**	**14.8%**
	(8.07)	**(2.78)**	(1.25)	**(3.90)**	**(8.20)**	**(3.07)**	**(6.06)**
Applying for surety bonds	**29.8%**	6.6%	0.0%	***12.0%***	**15.6%**	2.1%	**5.0%**
	(3.91)	(0.81)	(0.00)	***(1.87)***	**(3.67)**	(0.92)	**(2.36)**
Applying for commercial or professional insurance	**29.2%**	5.6%	0.0%	**20.4%**	**17.4%**	1.8%	**4.7%**
	(5.11)	(0.94)	(0.00)	**(3.33)**	**(5.04)**	(1.20)	**(3.21)**
Hiring workers from union hiring halls	**22.8%**	0.0%	0.0%	10.6%	**9.6%**	-1.9%	1.7%
	(3.17)	(0.00)	(0.00)	(1.48)	**(2.53)**	(-0.87)	(0.80)
Obtaining price quotes from suppliers or subcontractors	**42.4%**	**27.7%**	0.0%	8.7%	**23.2%**	**6.5%**	**9.2%**
	(5.84)	**(3.02)**	(0.00)	(1.29)	**(5.42)**	**(2.81)**	**(4.47)**
Working or attempting to obtain work on public sector prime contracts	**41.7%**	***23.0%***	0.0%	16.2%	**26.0%**	-0.6%	***6.3%***
	(4.98)	***(1.77)***	(0.00)	(1.56)	**(4.46)**	(-0.17)	***(1.91)***
Working or attempting to obtain work on public sector subcontracts	**47.1%**	14.9%	-7.8%	6.7%	**24.3%**	-0.7%	***6.3%***
	(5.65)	(1.28)	(-0.62)	(0.69)	**(4.40)**	(-0.20)	***(1.94)***
Working or attempting to obtain work on private sector prime contract	**55.2%**	11.1%	0.0%	***14.3%***	**27.8%**	***5.4%***	**10.4%**
	(6.83)	(0.99)	(0.00)	***(1.66)***	**(5.52)**	***(1.82)***	**(3.91)**
Working or attempting to obtain work on private sector subcontracts	**56.8%**	17.0%	0.0%	9.9%	**27.7%**	**8.3%**	**12.3%**
	(6.98)	(1.57)	(0.00)	(1.16)	**(5.52)**	**(2.72)**	**(4.55)**
Receiving timely payment for work performed	**49.2%**	***19.2%***	-0.7%	**25.0%**	**32.2%**	***5.9%***	**11.8%**
	(6.11)	***(1.70)***	(-0.05)	**(2.59)**	**(5.93)**	***(1.83)***	**(4.04)**
Functioning without hindrance or harassment on the work site	**44.6%**	**17.2%**	0.0%	**20.0%**	**27.1%**	***4.7%***	**9.0%**
	(5.97)	**(1.97)**	(0.00)	**(2.57)**	**(5.82)**	***(1.94)***	**(4.06)**
Joining or dealing with construction trade associations	**38.1%**	10.2%	0.0%	**22.2%**	**23.4%**	2.3%	**7.1%**
	(4.99)	(1.17)	(0.00)	**(2.59)**	**(4.84)**	(0.88)	**(2.97)**
Having to do inappropriate or extra work not required of comparable non-DBEs	**38.4%**	15.0%	7.4%	-2.4%	**18.9%**	**5.4%**	**7.8%**
	(4.98)	(1.57)	(0.63)	(-0.33)	**(3.99)**	**(2.04)**	**(3.22)**
Having to meet quality, inspection, or performance standards not required of comparable non-DBEs	**36.4%**	-1.5%	3.7%	3.3%	**16.8%**	2.6%	**5.7%**
	(5.15)	(-0.18)	(0.36)	(0.46)	**(3.86)**	(1.02)	**(2.47)**
In any one of the business dealings listed above	**52.5%**	19.7%	-0.3%	13.4%	**31.9%**	**7.5%**	**13.6%**
	(6.53)	(1.49)	(-0.02)	(1.27)	**(5.63)**	**(2.01)**	**(4.02)**

Source: See Table 8.2.

Notes: Reported estimates are derivatives from Probit models with specification such as in Table 8.5, column (2). The t-statistics are in parentheses. A t-statistic of 1.96 (1.64) or larger indicates 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***.

The regression models reported in Table 8.5 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 8.3.[325] We re-estimated the regression model reported in Column (2) of Table 8.5 separately using as the dependent variable, in turn, each of the 14 types of business dealings and report those results in Table 8.6. As Table 8.6 shows, African American-owned firms in particular experience a wide variety of disparate treatment compared to non-DBEs. In 14 of 14 categories the differences for African American-owned firms are both large and statistically significant. For Hispanic-owned firms, this is true in 5 of 14 cases. For Native American-owned firms, this is true in 7 of 14 cases. For minorities as a group this is true in 14 out 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 14 cases.

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 8.7 makes clear, substantial percentages of both DBEs and non-DBEs report that certain factors, such as "Large project sizes," "Obtaining working capital," and "Late Notice of Bid/Proposal Deadlines," make it harder or impossible for firms to obtain contracts. Among non-DBEs, for example, 39 percent reported that obtaining large project sizes made it harder or impossible for them to win contracts, 29 percent reported that obtaining working capital made it harder or impossible for them to win contracts, and 43 percent reported that late notice of bid/proposal deadlines made it harder or impossible for them to win contracts. The figures for DBEs in these three categories, however, at 53, 45, and 54 percent, respectively, are much higher than for non-DBEs. Indeed, as Table 8.7 shows, DBEs reported significantly more difficulty in eight of the nine factors about which they were polled.

[325] 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 8.5 and 8.6.

Table 8.7. 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/ Pacific Islander	Native American	Total Minority	Non-minority Female	Total DBEs	Non-DBEs
Bonding Requirements	70.4% (27)	75.0% (12)	50.0% (4)	78.6% (14)	**71.9% (57)**	38.9% (144)	**48.3% (201)**	**34.8% (348)**
Insurance Requirements	22.2% (36)	18.8% (16)	11.1% (9)	45.0% (20)	**25.9% (81)**	22.4% (205)	**23.4% (286)**	**16.5% (486)**
Previous Experience Requirements	26.3% (38)	13.3% (15)	22.2% (9)	21.1% (19)	**22.2% (81)**	14.7% (204)	**16.8% (285)**	**13.2% (493)**
Cost of Bidding or Proposing	37.8% (37)	37.5% (16)	14.3% (7)	35.0% (20)	**35.0% (80)**	35.8% (204)	**35.6% (284)**	**25.4% (477)**
Large Project Sizes	51.4% (35)	46.7% (15)	50.0% (6)	84.2% (19)	**58.7% (75)**	50.3% (187)	**52.7% (262)**	**38.6% (464)**
Price of Supplies or Materials	31.3% (32)	31.3% (16)	33.3% (6)	61.1% (18)	**38.9% (72)**	42.9% (196)	**41.8% (268)**	**31.3% (450)**
Obtaining Working Capital	68.6% (35)	60.0% (15)	33.3% (6)	68.8% (16)	**63.9% (72)**	38.2% (191)	**45.2% (263)**	**29.1% (443)**
Late Notice of Bid/Proposal Deadlines	71.4% (35)	46.7% (15)	66.7% (6)	61.1% (18)	**63.5% (74)**	49.7% (193)	**53.6% (267)**	**43.1% (434)**
Prior Dealings with Owner	9.4% (32)	6.3% (16)	28.6% (7)	10.5% (19)	**10.8% (74)**	3.6% (197)	**5.5% (271)**	**5.6% (482)**

Source: See Table 8.2.

Notes: Total number of valid responses in parentheses. Figures in **boldface** type are adverse and 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 adverse and significant within a 90% confidence interval.

To control for firm and owner characteristics, we used a regression technique known as ordered Probit.[326] 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.

Table 8.8 reports the sign and statistical significance from the ordered Probit analysis. We find that when observable firm characteristics are controlled for, all nine of the factors we inquired about prove to be greater difficulties for DBEs than for non-DBEs (as indicated by the "+" sign), even when "capacity"-type factors such as employment size, revenue size, years in business, and owner education are held constant. In particular, the disparities for bonding requirements, insurance requirements, cost of bidding or proposing, large project size, prices of materials or supplies, obtaining working capital, and late notice of bid/proposal deadlines, are all statistically significant with respect to non-DBEs.

Table 8.8. Firms Indicating that Specific Factors in the Business Environment Make It Harder or Impossible to Obtain Contracts, Regression Results

Business Environment	DBEs
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 8.2.

Notes: 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.

[326] For a textbook discussion of ordered Probit, see, for example, Greene (1997).

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 8.9 shows, 76 percent of African American-owned firms, 41 percent of Hispanic-owned firms, 82 percent of Asian/Pacific Islander-owned firms, 70 percent of Native American-owned firms, and 33 percent of nonminority female-owned firms responded that this seldom or never occurs. Similar results were observed in each major contracting 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.[327] 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 solicited for non-goals work.[328]

Table 8.9. Percent of DBEs Indicating that Prime Contractors Who Use Them as Subcontractors on Projects with Goals Seldom or Never *Hire* Them on Projects without Such Goals

DBE Group	All Industries	Construction	Consulting	Services	Commodities
African American	75.6% (45)	57.9% (19)	100.0% (6)	81.3% (16)	100.0% (4)
Hispanic	41.2% (17)	12.5% (8)	33.3% (3)	100.0% (4)	50.0% (2)
Asian/Pacific Islander	81.8% (11)	100.0% (2)	100.0% (3)	66.7% (3)	66.7% (3)
Native American	70.0% (20)	63.6% (11)	100.0% (4)	75.0% (4)	0.0% (1)
Total Minority	68.8% (93)	52.5% (40)	87.5% (16)	81.5% (27)	70.0% (10)
Nonminority Female	32.7% (391)	59.4% (96)	58.8% (34)	62.3% (61)	6.5% (200)
Total DBE	39.7% (484)	57.4% (136)	68.0% (50)	68.2% (88)	9.5% (210)

Source and Note: See Table 8.2.

[327] *Builders Association of Greater Chicago v. Authority of Chicago*, 298 F.Supp.2d 725, 737 (N.D. Ill. 2003).

[328] *Id.*

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 requirements?" Responses to this question are tabulated in Table 8.10, which shows the same pattern as in Table 8.9. In Table 8.10, 64 percent of African American-owned firms, 35 percent of Hispanic-owned firms, 75 percent of Asian/Pacific Islander-owned firms, 74 percent of Native American-owned firms, and 63 percent of nonminority female-owned firms responded that this seldom or never occurs. Similar results were also observed in each major contracting category.

Table 8.10. Percent of DBEs Indicating that Prime Contractors Who Use Them as Subcontractors on Projects with Goals Seldom or Never *Solicit* Them on Projects without Such Goals

DBE Group	All Industries	Construction	Consulting	Services	Commodities
African American	63.6% (44)	43.8% (16)	83.3% (6)	66.7% (18)	100.0% (4)
Hispanic	35.3% (17)	25.0% (8)	33.3% (3)	50.0% (4)	50.0% (2)
Asian/Pacific Islander	75.0% (12)	100.0% (2)	66.7% (3)	75.0% (4)	66.7% (3)
Native American	73.7% (19)	80.0% (10)	50.0% (4)	100.0% (4)	0.0% (1)
Total Minority	62.0% (92)	52.8% (36)	62.5% (16)	70.0% (30)	70.0% (10)
Nonminority Female	63.2% (212)	62.9% (97)	64.7% (34)	60.0% (60)	71.4% (21)
Total DBE	62.8% (304)	60.2% (133)	64.0% (50)	63.3% (90)	71.0% (31)

Source and Note: See Table 8.2.

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 1,230 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 448 firms, for a raw response rate of 36.4 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 increased to 45.5 percent.

Of the firms with which we completed interviews, 5.4 percent were minority-owned, statistically significantly lower than the compared with a rate of 9.3 percent in the mail survey. The percentage of women-owned firms was 26.9 percent, compared to 29.9 percent in the mail survey. The difference for minority-owned firms is statistically significant, that for women-owned firms is not..

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 late notice of bid/proposal deadlines 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 a greater general interest in the questions being asked. Among survey respondents, only 24.7 percent indicated that the question about late notice of bid/proposal deadlines was "not applicable." Among non-respondents, the figure was 69.9 percent. Approximately 56.8 percent of survey respondents indicated that discrimination in applying for commercial loans never occurred, compared to 84.1 percent among non-respondents. Approximately 57.8 percent of survey respondents indicated that discrimination in working or attempting to work on private sector prime contracts never occurred, compared to 88.1 percent among non-respondents. This phenomenon was apparent regardless of whether the firm was minority-owned, women-owned, or nonminority male-owned.

Among those firms to which the question was applicable, 54.4 percent of DBE firms who did not respond to the mail survey indicated that late notice of bid/proposal deadlines made it harder or impossible to obtain contract awards. Among those who did respond to the survey, the figure was 53.6 percent. This difference is not statistically significant. The comparable figures for non-DBE firms were 43.7 percent and 43.1 percent, respectively.[329] This difference, as well, is not

[329] The percentages reported in this section may differ slightly from comparable figures reported elsewhere in Chapter VIII, since minorities of unknown race or ethnicity were excluded from the tallies in the mail survey.

statistically significant. This result implies that the estimate of adverse disparity for DBE firms with regard to late notice of bid/proposal deadlines that was reported from the mail survey (*see* Tables 8.7 and 8.8) is representative of that in the universe as a whole, since the ratio of DBE firms to non-DBE firms reporting difficulty in this regard is virtually equivalent between respondents and non-respondents.

Among those firms to which the question was applicable, 2.7 percent of DBE-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 20.3 percent. The comparable figures for non-DBE firms were 1.1 percent and 3.4 percent, respectively. Both differences are statistically significant. Among respondents as well as non-respondents, DBE firms reported a much greater degree of disparate impact than non-DBEs. The disparity was greater among respondents than non-respondents, however, indicating that the corresponding disparities reported above in this Chapter may be somewhat larger than in the general population of businesses.

Among those firms to which the question was applicable, 4.9 percent of DBE-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 21.4 percent. The comparable figures for non-DBE firms were 1.7 percent and 8.8 percent, respectively. Both differences are statistically significant. Again, in the case of both respondents and non-respondents, DBE firms reported a greater degree of disparate impact than non-DBEs. The disparity was slightly larger among non-respondents than respondents, indicating that the corresponding disparities reported above in this Chapter may be somewhat conservatively estimated.

The 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, in other cases they may be somewhat smaller. 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.

7. Conclusion

Consistent with other evidence reported in this Study, the survey information strongly suggests that DBEs continue to suffer discriminatory barriers to full and fair access to public and private sector contracts. This evidence includes discrimination in access to commercial loans; surety bonds, and insurance; discrimination in hiring workers from union hiring halls; discrimination in obtaining pricing from suppliers or subcontractors; harassment and hindrance at the work site; and difficulties in receiving fair treatment in obtaining public and private sector contracts. Further, there is strong evidence that non-DBE firms refuse to hire or even solicit DBEs in the absence of affirmative goals. While, standing alone, this is not definitive proof that MoDOT has a compelling interest in implementing race- and gender-conscious remedies for these

impediments, when considered together with the business interview results and the numerous pieces of statistical evidence assembled in this report, these survey results provide evidence that the courts have found to be highly probative of whether an agency like MoDOT is a passive participant in a discriminatory market area without affirmative interventions.

C. Business Owner Interviews

To explore additional anecdotal evidence of possible discrimination against minorities and women in the Department's market area, we conducted 11 group interviews. We met with 121 business owners from a broad cross section of the industries from which the Department purchases construction services and goods and construction-related professional services. Firms ranged in size from large national businesses to decades-old family-owned firms to new start-ups. Owners' backgrounds included individuals with decades of 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 MoDOT, with other public agencies and in the private sector.

This effort gathered individual perspectives to augment the statistical information from the business experience surveys. In general, interviewees' individual experiences mirrored the responses to the business experience surveys. We also elicited recommendations for improvements to MoDOT's current DBE program.

The following are summaries of the issues discussed. Quotations are indented, and are representative of the views expressed by many participants.

1. Negative Perceptions of Competence

Minorities and women repeatedly discussed their struggles with negative perceptions and attitudes of their capabilities in the construction industry. Many owners reported that while some progress has been made in integrating their firms into public and private sector contracting activities in MoDOT's market area through affirmative action contracting programs, many barriers remain. Perhaps the most subtle and difficult to address is that of perceptions and stereotypes. These stereotypes 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.

> The perception is "we hire these minority and women owned firms to do a piece of our work, and what we get is not quality material. We have to redo it anyway."

Women in particular related the continuing effects of stereotypes about gender roles and sexist behavior from male colleagues and clients.

> May I speak to the owner?… When will he be in?
>
> I get that every time.… Then they hang up.

> I need to speak to the owner. I am the owner. You don't know what you're talking about. Yes, I do.
>
> It's "exciting" when you say, I own a backhoe and I know how to turn the key on. I know how to run it.
>
> [General contractors don't take my credentials seriously] mainly because I'm a woman.… "You can't be in any sort of [construction trade because] you wear a dress to work."
>
> If I'm not very much like you or very much like him, there's a little bit of mistrust.
>
> But do I want to work for those kind of people?… If we're honest, it happens all the time. I was up in Arkansas touring a facility where I was getting ready to do some work. And the maintenance, the main facility maintenance gentleman came up to meet me. And he said, well you're not what we, what I normally think of as an architect. You don't look like an architect. And I said, yea I know, I'm short. And went on. They laughed and, but I knew what he was saying.… I have had many instances where people just don't believe that I'm an, I can be an architect because I'm female. But I guess I try and hope to very quickly win them over. But you can't always.
>
> I … met with the CEO and I was recommended to him because we did get some renovation. And I shook his hand, first time I met him. He said, so where's the architect? That would be me. And I own the company too.… If they'll talk to me for longer than 30 seconds, they understand that I'm educated and that I know what I'm talking about.… My clientele is mostly old white males. They will immediately go to [name], my husband, and talk, well what do you think about this new you know, [piece of equipment] and blah. And he's like, I don't know. … You need to talk to her. Why would I need to talk with her? Well, because she's the owner and the architect.… I get that all the time but then as soon as I go, yes I am and let's move on, it's not an issue anymore [I hope].
>
> They think the woman's going to automatically be stupid.

A man agreed.

> [Construction is] a very male dominated business.

Some interviewees reported that there is a stigma amongst prime contractors to being a minority- or woman-owned firm.

> [We often] don't bring up our MBE status at all. Don't even mention it because that is actually, that's a slap against us.
>
> It's not on my cards.
>
> It's not on my cards either.

2. Exclusion from Industry Networks

Many minorities and women recounted their exclusion from the industry networks necessary for success. Relationships are key to obtaining work as subcontractors.

> It's hard to get in the club.
>
> A lot of companies won't even look at me or use me as a subcontractor because I am not DBE certified or I'm not. That's the first question they ask?… Then we can't use you. But they'll use other firms that are not women owned or trying for DBE certification that are the old boys club that they've been using forever and ever. But it's okay to use them….
>
> Because minorities and women don't tend to have the same social networks, [real-time feedback about performance] always does not happen. It should happen in the normal course of business but what tends to happen is on the golf course, in church, people get, you know, heads up on problems and MBEs, WBEs, tend not to.
>
> I've seen some instances where I don't get a fair shake because I don't take them golfing and take them out drinking and to the titty club.
>
> The history of the construction industry is that these companies have been passed down from generation to generation, at least two or three generations. That is not true of the minority companies, and when you get to the white side of it, the white females are usually family, or distant relatives, or somebody that they are familiar with, so it's sharing information. As soon as you enter the Black phase of this you get into a prejudice situation.
>
> The only way that I'm really able to operate is through the, I'm certified as a MBE and a WBE through the State of Missouri.… Some people, some companies have refused to work with me and I believe it is because of my race.… The transportation industry is primarily a Caucasian male dominated area.… [A referral] called me and as soon as he heard my voice on the phone [and surmised I am Black], all of sudden he said, oh I got, I'm busy, I got to do this. I'll call you back tomorrow. And I never heard from him again.
>
> I have the same issues being a Caucasian woman. I definitely know that I have been discriminated against on many, many occasions over thirty years.… The good old boy network is alive and well.… They buy strippers. I bring food. So, it's like I can't keep up with that, you know, I won't do that and I can't do that.

3. Obtaining Work on an Equal Basis

There was near universal agreement that the DBE Program remains necessary to reduce barriers to equal contracting opportunities.

> The goals I would say are imperative. Without the goals I don't think that I would probably have that opportunity.… [Contractors do not solicit her on contracts without goals, so] the goals have definitely, definitely, you know, been helpful to us.
>
> Being a woman in the construction business, especially in the trucking business, [is hard], [but] you've established your relationship and it's not as difficult. But to get someone new unless there's a goal for this amount [it will be hard].… It's a little more difficult [being a women-owned firm].
>
> If you are a DBE, you get these extra other contracts you're not seeing [if you are not certified].
>
> I have experienced [discrimination as a Black male] but it really hasn't held me back because, I mean, there's so many people out there that don't care. They, you know, they want someone to provide them with a good service…. When I run into it, I just go another way.

A few disagreed.

> I think they should do away with the DBE, MBE crap and just tell people look, if you're at this size of company, you are qualified to do this type of work, this amount of money. And if you are this size of company, if it is this, another size of money you are what, and then don't allow people to go back and forth.
>
> It doesn't do any good [because prices are so low due to the recession]. That's what I'm saying.

DBEs reported that while it is easier to obtain subcontracts than prime contracts on public projects because of affirmative action goals, it is still difficult to get work and receive fair treatment. Many believed that majority prime contractors use them only if forced to do so. Several MBEs reported that firms that use them on projects with affirmative action goals do not even solicit them when good faith efforts are not required.

> [Primes say] we're using you because we have to.
>
> They're only going to use you when they have to.… [While no business wants to share its work,] when two guys have kind of grown up in the same neck of the woods [they will work together] and now, you know, it's a good old boy thing.
>
> If a goal is set [on a professional services contract, the prime firms says] I will call you, but since I don't have to name you right now as a part of my team, I will not name you as a part of my team.
>
> There's no goals on this so I don't need you.

> If they don't have a goal on the job they're not going to use you.… These general contractors, prime contractors, who got started back, way back when, when it was easier for them to get into it. Now, they look at you as well, if it wasn't for the government you wouldn't [be here].
>
> [Even though] we just finished a job together and we just worked well together… [if] there's no goal [the general contractor says], I don't need you [even though the prime firm will hire a subconsultant for that scope of work].
>
> Without a goal, there is no work for a DBE contractor.

Some white women had obtained work on non-goals projects as a result of the goals program.

> I do have two clients that treat me like [less than partners, relegating me to less interesting work]. You get to the seven percent [DBE goal] and then you're done whether the work is done or not. And I'm at a point now where those clients, I won't say their names, but I can turn down their work if I have to.… But the other clients that I've developed relationships with, they'll develop their piece over and they'll say, here [name], we want you to do this piece. Yea, that's great that it's over the whatever percent. We know we can toss this over the fence and you will take care of it.
>
> With those persons with whom we have developed relationships and they understand what our capability's in, the level of experience is, we've in many cases transcended some of that desire to cap our participation at seven or eight percent.
>
> How I sell to people is, I'm an engineer with 26 years' experience, I can do this better than your engineers at two years' experience.
>
> I think my business would go down for a while [if the DBE program was eliminated].… But I'm always planning on that happening and … developing relationships. But yea, there's some people that would quit hiring me. But I try to get them to hire me because of my experience and qualifications, not because I'm a W[BE].

Obtaining work as a prime contractor was especially difficult to achieve.

> Much of [the barriers to obtaining work as prime firms] has to do with attitudes on the part of MoDOT. And then also some of the traditional larger prime consultants … look at people like us in the room and they say, well you're supposed to be a subconsultant. Okay? And it's like they can't see you for the most part as a prime.… Even though you may have all of the right stuff, the right experience, the right people, etc., etc. That's a real tough nut to crack because so many people, when you walk in the door and they see my [Black] face they say, subconsultant. That's an immediate response.
>
> You do have some people that just, they see you as a subconsultant, a kind of a necessary evil. And for the most part, we shy away from relationships with, with folk like that except in difficult times like these where you chase anything that moves.

> The problem that I see is that we get relegated to the smaller projects because we're MBE, WBE, DBEs and we couldn't possibly ever handle another big project. Where I've got private industry clients we work for all over the country and we're doing, you know, millions of dollars of work with annually yet when it comes to more local stuff, we're, we're a WBE so, you know, we can only handle this piece of it. We couldn't possibly prime this project.

4. Jobsite Harassment

Women and minorities still reported outright harassment on the basis of gender or race.

> I don't know how many times when I started out I was told as a nigger I was taking a good white man's job with a family and how could you do that, and if it wasn't for the government to give you this job you wouldn't be here. And, let me see, what's another one? There's a difference between a nigger and a black man. I mean, I've heard a lot of stuff. Go back to Africa where you come from. But you know, back then I'd grin and bear it and keep going. And after a few years that people started to see what I could do as an operator and get the work done and be productive. And a lot of things kind of subsided but you knew it was still there because the average black guy or whatever came out there from the city. You know, they'd throw that crap on him, the first thing he'd do is throw some blows and well, who was gone the next day? He was. That's just the nature of what you got out here. And now having been out here for so long and doing my own thing now, a lot of those same very people are now in position at these general contracting companies. So, in my mind nothing has really changed. Just it's not as talked about and they can't be as vocal as they used to be back then.…They're more careful [these days how they insult you].

A white owner agreed that racist attitudes still exist.

> I've heard [racist comments as a white person] … from other people in my industry and I, I find it highly offensive…. [For example,] "I'm glad to see that there are none of the brothers working out here."… I catch people that I know very well saying these things.

Women in particular still experienced sexist behaviors, comments and intimidation.

> There's still a little bit of harassment on the job sites I've seen with some of my women. When I would put them out on jobs there was still some harassment. Not as much [as when I started over 30 years ago]. They would just make it harder for them to do their work.… They're just in your way [physically].… And so I get out there and then I start throwing boards and then it ends.… It's so much better now. [But] it's an undercurrent. It's still there. They're just going to make it harder for you.… The way we get around it is usually we have the big guy go stand behind her. And they put their hands on their hips and that's the end of it. And then we go on about the business.
>
> [A man agreed.] Their truck's in the way and they're going to take their time getting out there to move their trucks so that you can back up to the dock and unload her material.

> I have one supervisor and even getting material on the job [is subject to intimidation], until I find out about it. And then I'm the big guy with the hands on the hip.… It just takes time. Extra money … [to] get it all worked out.… Everything across the board is now so competitive and there's not very much margin in it that it's just got to go [quickly].… When [the women on the job site] finally cannot handle it or they feel like they've, you know, done everything they can on the job I don't go to their project manager, I go to the owner… [and] then we meet out on the job if that's necessary.
>
> I am careful about who I go to lunch and dinner with.… If someone invites me to lunch or dinner I'll say, can my husband come along? Granted now I'll pay for his dinner.… I don't want to be misconstrued.
>
> The first time I go to a job site with a contractor I've not worked with before, I'm in a dress or I'm in heels or something, and I'm running around on the job site and, of course, I, you know, I stick out like a sore thumb. And I'll get the catcalls or whatever.… Sweetie and all that.… What's a cute thing like you doing around here? But then as soon as I say, well I'm your boss, let me see your log for today. They're like, okay.
>
> I've been called names.… [I'm a woman] in the construction industry in Missouri.

5. Obtaining Loans, Surety Bonds and Insurance

Access to business capital, bonding and insurance on an equal basis remains a barrier for some DBEs, especially those owned by females.

> When we first went to the first bonding agency [about four years ago] they said, I know you two women are sitting in front of me but do you really own a hundred percent of it? Because we feel much better if there's a man sitting there.… We ended up doing is just using our relationships that we had with current bankers and, and getting some male bankers involved to come in and meet with bonding companies with us to assure people that we were a reputable business and that we were strong.
>
> Financing is still a big problem for women and minority [firms].… First of all, construction is down on [the lenders'] list. They don't want to, they do not want to loan to construction. Secondly, if you're minority or a woman you're in that, you're in another pool. That's two strikes against you so you're just trying to, to climb and climb and it's very hard to do that.
>
> I'm finding the general contractors are requiring more insurance from my company so it comes off of their bottom line. They have to pay for less insurance and I feel like that's so unethical.… They think they can get away with it with a minority or a woman owned [firm].
>
> [Insurance requirements vastly greater than the contract price] is something that [the agencies are] doing to everyone but if they truly want to encourage a DBE then … they

need to cut back on that stuff. They need to reevaluate what they want if they want a DBE to play in the game

6. 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 MoDOT and private sector construction and construction-related prime contracts and subcontracts. This evidence includes perceptions of minority and women incompetence; exclusion from industry networks; difficulties obtaining work on an equal basis; jobsite harassment; and discrimination in access to business capital, surety bonds, and insurance. While not definitive proof that the Department needs to continue to implement 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 business owner mail survey results and the numerous pieces of statistical evidence assembled, the courts have found to be highly probative of whether MoDOT would be a passive participant in a discriminatory market area without affirmative interventions and whether race-conscious remedies are necessary to address that discrimination.

IX. MoDOT's Disadvantaged Business Enterprise Program for Federally-Assisted Contracts: Overview and Feedback Interviews

This Chapter describes MoDOT's Disadvantaged Business Enterprise Program for federal-aid contracts,[330] followed by a summary of business owner experiences with the Program's policies and procedures and their recommendations for improvements.

A. Disadvantaged Business Enterprise Program Overview

1. Program Elements

As a recipient of US Department of Transportation funds, MoDOT is required as a condition of receipt to implement a Disadvantaged Business Enterprise (DBE) program in compliance with 49 C.F.R. Part 26.[331] In brief summary, MoDOT must:

- Keep and report various data to USDOT, including the utilization of DBEs on its federal-aid contracts and create a bidders list of all firms bidding to MoDOT as prime contractors and firms bidding to those prime contractors as subcontractors.[332]
- Adopt a non-discrimination policy statement.[333]
- Appoint a DBE Liaison Officer, with substantial responsibilities and direct reporting to the chief executive office of the agency.[334]
- Make efforts to utilize DBE financial institutions.[335]
- Adopt prompt payment mechanism for its prime contractors and for the prompt payment of subcontractors by prime contractors.[336]
- Create and maintain a DBE directory.[337]
- Address possible overconcentration of DBEs in certain types of work.[338]

[330] MoDOT does not implement any race-conscious measures on its state-funded contracts.

[331] 49 C.F.R. §§ 26.3 and 26.21.

[332] *Id.* at § 26.11.

[333] *Id* .at § 26.23.

[334] *Id.* at § 26.25.

[335] *Id.* at § 26.27.

[336] *Id.* at § 26.29.

[337] *Id.* at § 26.31.

- Monitor the performance of its subrecipients.[339]
- Include elements to assist small businesses, such as unbundling contracts.[340]
- Set overall goals for annual utilization of DBEs in its federal-aid contracts.[341]
- Utilize contract goals to the extent necessary to meet the overall goal.[342]
- Follow good faith efforts procedures as established in the regulations when a bidder cannot meet a contract goal.[343]
- Count DBE participation as provided in the regulations.[344]
- Participate in the Unified Certification Program for the State of Missouri and apply Part 26's certification criteria and processes.[345]
- Take necessary enforcement actions against firms participating in the DBE Program.[346]
- Comply with the regulation governing information, confidentiality, cooperation, intimidation and retaliation.[347]

2. Program Administration

a. Outreach and Communication

MoDOT conducts extensive outreach to DBEs and other firms about the Department's operations in general and the DBE Program in particular. For example, it conducts information workshops on "How to Succeed at MoDOT;" sessions on major projects, such as the I-64, KCicon and Mississippi River Bridge projects; compliance with prevailing wage standards; certification workshops; "Safe and Sound Design Build" seminars; Unified Certification

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[338] *Id.* at § 26.33.

[339] *Id.* at § 26.37.

[340] *Id.* at § 26.39.

[341] *Id.* at § 26.45.

[342] *Id.* at § 26.51.

[343] *Id.* at § 26.53 and Appendix A.

[344] *Id.* at § 26.55.

[345] *Id.* at §§ 26.61-26.91 and Appendix E.

[346] *Id.* at § 26.107.

[347] *Id.* at § 26.109.

Program community outreach updates; and other topics. It also participates in the St. Louis Small Business Monthly's Business Expo and National Small Business Expo. Staff is very active in several professional organizations, including the American Association of State Highway Transportation Officials (AASHTO); the Conference of Minority Transportation Officials (COMTO); the Associated General Contractors; the Mid-American Minority Development Council; Minority Enterprise Development Week; and other groups.

b. Staff

The External Civil Rights Division is responsible for Program administration and currently has 13 employees. These include the Director; Senior Civil Rights Specialists with responsibilities divided by MoDOT's office locations (Central, St. Louis and Kansas City); Senior Administrative Technicians; an Executive Assistant; and a Senior Office Assistant.

Over the last several years, MoDOT staff has regularly attended the following training opportunities:

- AASHTO Civil Rights Conference
- COMTO National Conference
- American Contract Compliance Association
- Midwest Transportation Conferences
- AASHTO National Fraud Awareness Conference
- Annual EEO Conference hosted by MoDOT's External Civil Rights Division
- Other in-state trainings on DBE related topics, contract compliance, On-the-Job Training, Title VI of the 1964 Civil Rights Act, etc.

c. Compliance Procedures, Forms and Reviews

MoDOT has developed detailed and sophisticated manuals, procedures and forms to ensure that the Program is administered correctly. These include:

- A Resource Manual to assist contractors and subcontractors with the requirements of MoDOT's federal-aid contracts. This 75 page document provides the governing legal authorities and regulations; general requirements; equal employment opportunity and affirmative action requirements; wage rates and payrolls; data reports and subcontractor lists; sample contract compliance forms; information on training and special provisions; recruitment sources; trainee forms; and other sample policies and forms.

- Commercially useful function site visits procedures and documentation.
- Forms describing and documenting the submittal of DBE utilization and other information.
- Detailed handouts with instructions and explanations regarding the Program's standards and procedures.
- Guidance to MoDOT staff on setting DBE contract goals.
- Evaluating a bidder's good faith efforts to meet the contract goal.
- Forms to establish compliance with the trucking regulations, including commercially useful function determinations and wage rates requirements.

d. Bidding Assistance

MoDOT requires contractors to submit bids electronically for construction projects on the monthly MoDOT letting schedule. The electronic bidding is through a provider, Bid Express. In the Bid Express system, there is a Small Business Network application. The Small Business Network facilitates the interaction between prime contractors and subcontractors. It allows the prime and subcontractors to exchange subquotes and communicate about projects.

The Small Business Network allows prime contractors to:

- Access a business center in Bid Express that can help meet DBE goals.
- Post an unlimited number of solicitations for items to quote.
- Create and post an electronic notice that lists the items to be quoted, and send an alert e-mail about the post.
- View all outstanding sub-quote requests at a glance.
- Easily locate pre-qualified and certified DBEs and small businesses.
- Advertise to DBEs and small businesses more efficiently and cost effectively.
- Take a step to demonstrate good faith effort in reaching DBEs.
- Quickly obtain and analyze bid tab data from past bids, including the high, average and low prices of items. These data can be viewed by item, by proposal or by contractor to give a clear picture of recent bids for that item.

The Small Business Network allows DBEs to:

- View and respond to sub-quote requests from prime contractors.
- Use a key word search function to find bidding opportunities in seconds.
- Create an electronic quote form that lists the items the DBE wants to quote, and e-mail it to a prime.
- Look up plan holders and eligible bidders for each proposal so the DBE can send quotes directly to bidders.
- View Bid Tab Analysis data from past bids, including the high, average and low prices of items, by proposal or by contractor to get a clear picture of recent bids for that item.
- View important notices.

e. Supportive Services for DBEs

MoDOT administers several programs to support the growth and development of DBEs. These include the DBE Business Coaching Program, the Mentor-Protégé Program, and the DBE Supportive Services NAICS Expansion Initiative.

i. DBE Business Coaching Program

This Program provides assistance to DBEs to enhance their ability to work on MoDOT projects. The firm's owner is eligible for up to two hours of coaching in the following categories:

- Accounting;
- Bidding;
- Bonding;
- Business law;
- Business plans;
- Collaboration/teaming;
- Estimating;
- Financial information;
- Information technology;

- Marketing;
- Project Management; and
- Safety.

The owner agrees to participate in a follow up survey within 6 months to assess the impact of the assistance on his or her business.

ii. Mentor-Protégé Program

In 2010, MoDOT implemented a new Mentor-Protégé Program. This initiative meets the guidelines of Appendix D to Part 26, regarding the development of mentor-protégé programs. The objective is to provide advice, assistance and training to the DBE protégé that will improve that firm's management and operating skills, as well as assist prime contractors to obtain DBE participation and meet DBE goals. The Program focuses on the development of mutually beneficial business relationships between prime contractors and DBEs and helping DBEs to become prime contractors.

The Mentor/Protégé relationship is based on the written Mentor/Protégé Development Plan approved by the Mentor/Protégé Oversight Committee. Each party must complete the application forms, and as a team, have its Mentor/Protégé Development Plan approved by the MoDOT Mentor Protégé Oversight Committee.

The Plan must clearly set forth the objectives of the parties and their respective roles, the duration of the arrangement, and the services and resources to be provided by the mentor to the Protégé. The Plan must include measurable benchmarks to be reached by the Protégé at successive stages of the Plan and training to be provided by the Mentor to the Protégé. The Plan is limited to 36 months.

To be eligible as a Mentor, the firm must:

- Have at least 7 years of experience as a contractor (preferably, but not necessarily, as a prime contractor) on MoDOT highway construction contracts.
- Agree to devote a minimum of 15 hours per month to working with the Protégé.
- Be on MoDOT's approved contractors list.
- Specify the lead individual responsible for implementing the Development Plan.

To be eligible as a Protégé, the firm must:

- Be owned by a person with at least three years of experience in the highway construction industry, be a MoDOT or other UCP certified DBE, and remain an eligible DBE, in good standing, throughout the duration of Program participation.
- Be on MoDOT's approved contractors list.
- Specify the lead individual responsible for implementing the Development Plan.
- Agree to devote a minimum of 15 hours per month to working with the Mentor.

The Mentor's assistance may include:

- Business Planning
- Record Keeping
- Technical Assistance
- Capital Formation
- Financial Counseling
- Bonding
- Equipment Utilization
- Submitting Quotations
- Employee Management
- Working capital provided to the DBE Protégé by the mentor (demand notes are prohibited).
- Mentor-provided technical and management assistance, such as:
  - Project management
  - Construction techniques
  - Plan interpretation
  - Estimating
  - Cost accounting

- Equipment in limited instances, if a written lease or rental agreement covers the equipment, and/or skilled personnel and the personnel are on the payroll and under the direct supervision of the Protégé.

Any property, equipment, supplies or other services that are sold, rented, or donated to the Protégé must be detailed in the Development Plan and approved by MoDOT and should be further covered by bills of sale, lease agreements, etc. Any financial investment and security arrangements by the Mentor for the Protégé are subject to approval by MoDOT, and must not permit the Mentor to assume control of the Protégé. A Protégé must perform all administrative functions at a facility under their control. The Mentor may provide such facilities or locations to the Protégé on a limited term basis (for example, no longer than twelve months) if a separate written lease documenting the arrangement is executed.

Any Mentor resources utilized by the Protégé in the performance of contracts or subcontracts for the Mentor or another contractor must be separately identified, accounted for, and compensated directly by the Protégé to the Mentor. If the Plan provides for extensive use of the Mentor's resources by the Protégé, the arrangement will be closely scrutinized.

Mentor/Protégé relationships that include, when not in conflict with any relevant law, arrangements by mutual consent in which an independent third party (i.e., bank, accountant, etc.) provides assistance to the Protégé may be permitted.

The Plan may set a specific fee schedule to cover the direct and indirect costs for services provided by the Mentor for specific training and assistance to the Protégé. Services provided by the Mentor may be eligible for reimbursement by MoDOT, subject to limit and approval by MoDOT.

To be eligible for reimbursement, the Mentor's services and costs must be directly attributable and properly allowable to specific individual contracts. MoDOT may establish a line item for the Mentor to quote the portion of the fee schedule expected to be provided during the life of the Plan. The amount claimed shall be verified by MoDOT and paid on an incremental basis representing the time the Protégé is working on the contract. The total individual contract figures accumulated over the life of the agreement shall not exceed the amount stipulated in the original Plan.

The Plan must contain a provision that it may be terminated by mutual consent or by MoDOT if:

- The Protégé no longer meets the eligibility standards for certification as a DBE;
- Either party desires to be removed from the relationship;
- Either party has failed or is unable to meet its obligations under the Plan;
- The Protégé is not progressing or is not likely to progress in accordance with the Plan;

- The Protégé has reached a satisfactory level of self-sufficiency to compete without resort to the Plan; or

- The Plan or provisions thereof are contrary to the requirements of federal, state, or local law or regulation, or otherwise inimical to public policy.

The Program is supervised by the Oversight Committee, which consists of MoDOT staff plus others recommended by the External Civil Rights Director, as well as an advisory FHWA ex-officio representative. The Committee will annually evaluate the Mentor-Protégé relationship, including the following criteria:

- Satisfactory progress toward the Plan's goals;

- Improved competency of the Protégé in specific aspects of highway contracting;

- Decreased reliance on the Mentor by the Protégé for equipment, personnel, capital, etc.;

- The Protégé's increased capital and/or financial/bonding capacity;

- Increased numbers of projects performed by the Protégé with contractors other than the Mentor; and

- Bids submitted by Protégé as a prime contractor.

The Committee shall require the parties to submit Quarterly Progress Reports indicating their progress toward each of the Plan's stated goals. Success will be measured by the milestones outlined in the Plan. Quarterly Progress Reports will include review of measurable progress on the following:

- Identification of specific assistance provided by the Mentor to the Protégé during that quarter;

- Initiatives accomplished as outlined in the Plan;

- Milestones reached to date, as well as any tasks that are behind schedule and the reasons for the delay;

- A list of regularly scheduled Mentor/Protégé meetings and outcomes; and

- A list of targets set for improvement.

Reasonable progress will be expected, though this will vary according to each Plan. If at any time the Committee determines that the Program guidelines or the spirit thereof are not being

adhered to by the parties, or that satisfactory progress is not being made, the Committee may invalidate the Plan and/or any individual participant's enrollment in the Program.

iii. Pilot DBE Supportive Services North American Industry Classification System (NAICS) Expansion Initiative

Part 26 requires that prime contractors may only obtain credit towards meeting the contract goal only for the scope of work by NAICS (or other) code in which the DBE is certified.

To assist DBEs to expand, grow and develop their businesses, MoDOT has established a pilot "DBE Supportive Services NAICS Expansion Program," which allows DBEs to perform work outside of their DBE certification codes but within their abilities to gain experience, expertise, and foster skills necessary for certification expansion.

If a DBE performs the additional scope of work successfully on several contracts, the Missouri Regional Certification Committee (MRCC) members, which include the Missouri Department of Transportation, St. Louis Lambert, the City of Kansas City, the Kansas City Transportation Authority and St. Louis METRO, will review and upgrade the DBE's certification to add the additional code(s).

Until the new code is approved by the MRCC, DBE participation in that scope of work cannot be counted. However, if the DBE goal is not met, MoDOT will count the additional participation by the DBE in the proposed new code as evidence of the prime contractor's good faith efforts and no liquidated damages will be assessed for failure to meet the contract goal.

B. Business Owner Interviews

To gather anecdotal evidence of the effectiveness of MoDOT's DBE policies and procedures in leveling the playing field for all firms on federal-aid contracts, we interviewed 121 firm owners or representatives. The following are summaries of the issues discussed. Quotations are indented and are representative of the views expressed by multiple participants. Highly repetitive or idiosyncratic comments were not included.

1. Perceptions of the Program's Overall Effectiveness

As discussed in Chapter VIII, the great majority of minorities and women reported that the DBE Program remains critical to ensure their full and fair access to MoDOT's contracts. Being certified created opportunities that otherwise would not have been open to them. DBE requirements were seen as vital to the continuing viability of their companies.

> Without a program and without some urging that is backed by legislation that folks like us would have little if any participation in the State's business.

> I immediately got a job hauling rock two days after [I was certified].

> I think it absolutely is an advantage to be DBE certified. I mean I don't think anybody, anyone would say that it wasn't an advantage

A few non-DBEs stated that the entire Program should be eliminated.

> [The DBE program] has nothing to do with construction. This has to do with social engineering that the government has decided was relevant.… We have spent an ocean of money as a nation trying to do this social engineering and gone nowhere. Whatever we're doing isn't working.

> [Discrimination is no longer a problem because] I guarantee you I want to hire the person that can do the job the best for the least amount of money. I don't care if you're black, I don't care if you're white. I don't care if you're a woman or a man, Asian, I don't care. Follow the money; you'll find the answer. I'm out for the most money.

> [The Program] allows those DBE businesses to charge more for the same types of services and still get the job. And I just think that that is unfair.

> Whoever can do the job the best at the least price should get the job regardless of their race, their sex, their anything. I think that it's reverse discrimination sometimes.

> Whoever gets out and works the hardest and beats the bushes to get the work. I mean everybody bids on a level playing field.

> The City of St. Louis is 60 percent black now. So who's the minority now?… I think things have changed from when this program was initiated.… The program from what I'm seeing is just causing the State of Missouri taxpayers to have to pay more money.… That's not free enterprise.

One white woman certified DBE agreed that the Program should be eliminated.

> I am a legitimate DBE.… I think the goals are too high. The bad ones need to be weeded out. Although it's helpful to me … the tables have turned now. It's being jammed down our throats.

Some DBEs and non-DBEs reported that the use of illegitimate or "front" firms had declined significantly.

> On the consulting side, the ones I've dealt with they seem to be [legitimate]

> We have not experienced [front DBEs].… Twenty years ago, yes. Not so much anymore.

Others disagreed.

> A lot of times these DBEs [owned by white women] are not really disadvantaged type people. They're just regular contractors. But their wife, their daughter or somebody like that might be designated as the owner or whatever. You know, they can go out and compete under normal circumstances.

Some general contractors pointed out that it is not in their interest to raise questions about the legitimacy of a DBE.

> We don't question [firms' legitimacy] because we don't want to lose them.

Several prime contractors stated that DBEs need to be patient about how long it takes to become successful and to take steps to actively move beyond their niche markets.

> The company I work for is a fourth generation and it's taken four generations to get as big as they are.

> I think you start out as a small [firm].… I've never done it personally, so I don't know. But the firms that I've seen do it go out and they start getting the small projects, usually private first and then they move into the public market and they get experience. And they just keep growing and getting bigger jobs.… You go hire the talent. So, if you're a rebar guy and you got that mastered, so you got money and so you've got some capital to work with. And you want to get in flatwork concrete. You go hire that estimator or project manager or superintendent, whatever the piece is that you feel like you need.

> I think part of the problem is that this whole system has created these little niche markets.… Our company started out building bridges. Maybe it was a small bridge and you get bigger. Where all these little niche markets that have come into play are, not saying you can't grow from there but … it's not like they're going to become a general contractor after being a rebar installer.

> Even before the economy turned, now the system kind of prompts the new DBE or the smaller DBE to stay in their niche.… [MoDOT has] less of an inclination to talk to DBEs about, can you expand into this area? It was really, you can do quite well because there's this percentage of the work in our contracts that can work its way through, you can be very competitive.…. So, the system does kind of let that DBE or, I don't want to say let, but it encourages them to stay, you know, a rebar tier. Because if you can be on four teams and continue to win the work, you can be a successful, nice little business.… When DBEs maybe tell you they're not growing, I think there's probably a follow-up question underneath that is, well, what are your goals?

> I know of several DBEs that have the attitude, well they have to use me and I don't really have to do anything.… They don't market themselves. They don't try to grow.

2. Access to Information about Upcoming Opportunities and Contract Specifications

DBEs reported that they regularly received information from MoDOT about upcoming bids.

> We're getting [timely] notification from MoDOT, you know, that whichever general contractor is looking for a DBE.
>
> Yea, [MoDOT's process is] okay

Some firms stated they get conflicting information depending upon who they talk to.

> If you talk to one you get one answer, and if you talk to another you get another answer. The interpretations are frightening.

A large non-DBE general contractor supported increased communication between MoDOT and the DBE community.

> Just adding communication. That's a win-win situation. [In addition to an overall working group for MoDOT], create the DBE group. Because I don't know that they exist. And allow them to have a voice with MoDOT before this mixed group comes together. Because I think it's kind of like, similar to Congress with the Black Caucus and all that. And I think it's important to do that because otherwise if you kind of throw them in the mix with the AGC [Associated General Contractors] and the ACEC [American Council of Engineering Companies] and, that can be a bit overwhelming.… Develop kind of multiple people's [voices].

3. Contract Size and Specifications

DBEs and non-DBEs agreed that "unbundling" contracts so that small firms can submit bids or proposals would increase opportunities.

> MoDOT could come up with design deals and manage projects that might be small enough for minority-owned firms to do or to make it attractive enough where they would have to solicit the participation of minority-owned firms.
>
> All the DOTs have changed [the way they do contracting].… You used to have a dirt package. They would build the dirt and the header, then you'd build a bridge. So, and now they've got it to where it's all mega jobs.

Small firms—DBEs and non-DBEs alike—reported that the Department prefers to work with large firms, regardless of qualifications.

> In the eyes of the agency, you're still a small guy or gal. It's a huge [mindset problem at MoDOT].

> If you're [a large engineering firm], you're going to get ten mistakes. If you are a smaller firm or mid-size, you get one.
>
> We have the capabilities of big firms but it's very hard to be recognized for that. And that's a challenge.

4. Meeting MBE Goals at Contract Award

The goal setting process and meeting contract goals elicited many comments. DBEs reported many obstacles to receiving fair treatment in seeking subcontracting work. Some believed that general contractors often do not act in good faith when seeking subcontracting bids.

> [General contractors are] using the attempts to get people to participate on a job of inappropriate subs [by soliciting firms for scopes outside their expertise] so that they can file for a waiver saying lack of participation.
>
> One thing that really annoys me most of all is people calling and want to use my certification for something other than what I'm certified for.
>
> It seems like by a stroke of luck or happenstance that if a goal is 13.9 percent, lo and behold, our contract amount, to the penny, comes out to be just that amount. It doesn't matter if there's $100,000 worth of scope, they will squeeze it in or try to squeeze it in to this, to meet this goal and not want to give anything beyond that.

Most prime contractors reported that while it was often difficult and burdensome, they were able to meet DBE contract goals. Some found it hard to find capable and qualified DBEs.

> [There is a question whether the DBE] subcontractor or the vendor can meet the requirements.
>
> It can actually hurt DBE companies if you're trying to get the percentage and you don't have it and then you start trying to get them to do work that's not really their work. And they end up sometimes getting in over their head or doing something they don't know how to do.… A lot of times you end up just trying to help them out. I mean, you just have to cut them slack and hope they can make it.
>
> There are [some good ones].… But I think it's the bad ones that just leave a horrible taste in your mouth … because you know that the only reason you gave them that work is because you had to have your DBE goal.… [MoDOT] could police it better to where they have good ones in there who do what they're supposed to do, who can get their stuff done. The generals shouldn't have to carry them and help them do their stuff.
>
> We can't use a good contractor. We have to go with one that's a DBE simply so we can meet our goal.

Several general contractors stated that there is an increased cost to using DBEs.

> We can usually meet our goals from our perspective anyway. But it comes at a cost, a lot of times. We're giving away work that, you know, we could be doing either cheaper ourselves or maybe with somebody that isn't a DBE but we have to meet the goals.
>
> There's a premium and sometimes you lose the job over it and you know you lost the job over it.
>
> Some of the DBE subs out there know that, hey these people have to have a DBE. And I guarantee you it costs the state millions of dollars a year.… It's not all DBEs, but there's some who really know how to play this game.
>
> We're actually paying more, substantially, to get to the DBE over the majority contractor.
>
> It's doable. It just depends on how much you want to spend and how many people you want to reject.

Other owners stated that whether the DBEs cost more varies with the project.

> Sometimes they are [higher priced], sometimes they aren't.
>
> It depends on the project.

Some general contractors add additional costs to the general fee and conditions when using a DBE because they believe the DBE will require more supervision than white male-owned firms.

> We may put money on top of somebody … that we know is going to be a problem. So, even though it says on that piece of paper that it's, you know, $10,000, we may look at it as $15,000.… You're going to write a lot more letters, you're going to have a full time project manager and assistant riding that sub only, just to make them show up because you got to basically hand carry them through. It's almost like the mentor-protégé. Just a subset of it.… It's not all [DBEs].… It's on the firm that this is the biggest project they've ever did or you just did three with them and they struggled.

A few participants suggested that the Department collect information on all quotes from subcontractors, to establish and evaluate whether the DBEs' prices are unreasonably high.

> Record what your dollars are that you had to buy a DBE for basically, [the price] differential.
>
> If you had a place where a contractor could put his lowest and best price, and then a price that meets the goal … then the owner knows that he's going to pay a ten percent premium or [whatever].…

It is more challenging to meet goals outside the Kansas City and St. Louis areas.

> There's some really good DBEs in our area.
>
> Sometimes we think the goals are a little bit high for some areas.
>
> [It's become harder to meet the goals because DBEs] want to stay in their area. They don't want to travel all over the state like we do.
>
> The complexity of the project and the diversity of the work scopes in a project [are factors]. And if you're out state, you know, if you're in Kansas City, St. Louis, Columbia, Springfield, one of the bigger urban cores you have good subs to draw from. But if you're outlying it gets tougher.… You pay a premium.

Some non-DBE participants believe that MoDOT does not adequately take into account the scopes of work of the project in setting the goal.

> We're not opposed to the program, at all [but set contract goals based on the work of the project].
>
> They need to lower the goals to a realistic level. The goals, the DBE contracting goals are significantly higher than the DBE availability.

Non-DBE subcontractors have been asked to use lower tier DBEs to assist the general contractors in meeting goals.

> If each sub did their part [to help the prime contractor meet the goal], then it would probably be a lot easier on the primes to get their goal.… If there's not DBE available subs, I mean you got to get it from somewhere … [so] they look at the subs. So then we go out and we have to look at, you know, we get fancy with material suppliers and whatever else you can do.… I get my materials and stuff from DBE suppliers to give my prime some DBE money.… We work with a certain set of generals, we give them, have to give them [second tier] DBE [participation] so they're not out there looking for somebody else.

Many non-DBE contractors, both prime contractors and subcontractors, believe that MoDOT's Program is a mandatory quota, not a goal, and that bidders who make good faith efforts but do not meet the goal will be denied the contract.

> For the most part, we don't feel like we can turn a bid in if we don't meet the goals.
>
> [On engineering contracts,] they're going to get other people that somehow meet the number.
>
> [Failing to meet the goal] can hurt your chances of getting contracts in the future.

> I wouldn't rely on those good faith efforts. Because I, in my experience, if you don't get it, you didn't show good faith.
>
> Don't even worry about the waiver because you just won't get it.
>
> We don't even turn [a bid] in if we don't meet the goal.
>
> It's easier to just take a $25,000 higher bid and be done.
>
> I think too many people are scared to try for the good faith effort.… It's not worth risking the job.
>
> MoDOT doesn't recognize good faith efforts. It is not a goal. It is a requirement.
>
> Whether they state it as a goal, if you come in with less than their stated percentage they'll reject the job and rebid it until they get the stated percentage. That's a given.

Some non-certified white women stated that primes tell them they "have to" use a more expensive and/or less qualified DBE to meet the goal.

> I have lost a lot of business because I do not have my DBE. And there's been instances where a contractor that I've worked for a long time will not be able to use me because I do not have it and they're not happy with the person that's on the job.
>
> [Prime contractors] have to [use DBEs] and it's cost them money because either, you know, they didn't have the license, they didn't have the Work[er's] Comp[ensation insurance] they were supposed to have. But that they had to stay on that job because they were the DBE.

Some firms did not understand the good faith efforts standards and process, and some were unaware that such documentation could be submitted.

> There should be some sort of part of the packet that allows you to have an explanation [of why you did not meet the goal] but doesn't remove you from consideration

Many non-DBEs that compete in the specialty trades where DBEs are clustered (e.g., landscaping, fencing, guardrails, stripping, flagging) felt that they are now the victims of discrimination because of the general contractors' use of DBEs to meet goals in those trades rather than giving up work the prime wants to perform.

> All the DBEs go to specialty trades because the G[eneral] C[ontractor]s don't want to give up any of their work [which hurts non-DBE specialty contractors].… If you got to give $100,000 away, you'd rather give it to a traffic signal company than to take it out of your concrete work or your bridge work.

> How is [the use of DBE specialty trade subcontractors] not reverse discrimination against us? We can't bid the job [because the general contractor uses DBEs against whom we compete to meet the goal].… We won't even bid MoDOT [contracts] anymore.
>
> [As a non-DBE specialty contractor,] a lot of times [general contractors] kick my bids out. Even though they say, [name], you're the cheapest, you're the best, or whatever. Because they had to go search out a DBE so they could get the job.
>
> There's a very over concentrated amount of DBE truckers [to the detriment of non-DBEs].
>
> We will give our bids and then sometimes we're told, okay, we're going to go with you. But then that contractor, the large main contractor, will come back and say, oh, man I can't get the job unless I meet this goal and I'm under goal so you're going to have to run it through XYZ Company because they're a female or … they're a DBE type company.…. So, we have to call [the DBE] let them know, hey, you got a job. And I think that it's unfair.
>
> We're being discriminated against every time we try to bid the job and nobody cares.… Nobody cares about us.… The discriminated party is the one that we're doing nothing for.… How is it not discrimination when my general contractors are people, general contractors call my office say, their first question, are you DBE? And I say, no. Click

Some general contractors agreed that long standing non-DBE subcontractors should not be burdened by the need to provide opportunities to new entrants.

> It hurts to see somebody that's worked two generations or one generation and then they just get cut off [by new DBEs in their niche].
>
> As a prime contractor, we've had to tell the [non-DBE sub]contractor, we don't need you. And they were lower.

5. Contract Performance Monitoring and Enforcement

By in large, DBEs reported that MoDOT adequately monitors participation during contract performance.

> If you call MoDOT, they will follow up.
>
> With MoDOT, they do check our paperwork on our guys.
>
> MoDOT has, if you are used on the contract, they send you a paper that you have to sign and return. And that way you know that you've been used.

> [A] person from MoDOT called me and asked me how much is the contract amount for, and what do you do?
>
> All you have to do if you haven't got paid from the [prime] is to contact MoDOT and you get your money pretty quick.
>
> When they pay the prime, they send an e-mail to me telling me that the prime has been paid.

Several participants complimented MoDOT's administration of the Program, especially when compared to other local agencies.

> [The DBE Director] is a great guy. Great guy. Found MoDOT to be very, very commonsense.… Everybody's got to make sure they're dotting the I's and crossing the T's. Able to understand where we've come from and what we're trying to accomplish. And that neither one of us can do it on our own.
>
> Having dealt with the airport, having dealt with multiple [agencies, MoDOT is] probably one of the better ones that in our mind kind of gets it.

Few DBEs reported being substituted without notice during performance. At the same time, replacing a non-performing DBE was difficult, according to some general contractors.

> MoDOT requires us to use these people to meet these goals. Okay? And a lot of times we are using shady, sometimes not very good contractors. And then when they fail then MoDOT always puts the blame back on us or the responsibility back on us and says, hey, it's your subcontractor. And we've had several that have went out of business during a job and then we're stuck with spending the extra money to finish their work basically.… See, they're getting selected over a legitimate well reputable company.… If they're way underperforming on the project and they're still in existence, it's almost impossible to replace someone.
>
> We've had subcontractors that didn't pay their bills and we had to wind up double paying everything. Very hard to track who's getting paid, who isn't getting paid. And then if they fail, [MoDOT will] say, well go out and look for another DBE. It's very difficult, very difficult.
>
> [MoDOT] gave us a hard time about [terminating a DBE for performance], you know, all these steps that you have to go through to get rid of that DBE.
>
> [The DBE's] equipment kept breaking down … we were doing everything that we could but you know, we're on a deadline too.… We're to that point [of no longer using this firm] because there is a very good specialty [trade] that we use a lot that is not a DBE.… I don't think we can get [a waiver based on good faith efforts] because they are a certified DBE with MoDOT. And if they're a certified DBE with MoDOT, here's your list.… I

> went to MoDOT and told them, I could have got the people that I bought the [materials] from in. And because they were a sub that we used quite often, I actually had to buy the [materials], you could do a joint check thing with the DBE. I had to do that with this subcontractor because they didn't, they couldn't even buy the [materials] themselves. So, I was able to take credit for what I [paid for] them.

Some DBEs noted that it is not only DBEs who sometimes do not perform. General contractors fail too.

> [The failure to perform] goes the other way around too.… I had to go back down and redo [the general contractor's work] because it wasn't done properly.

> We've been on jobs where the prime or the contractor or the general just cannot perform and we've had to step in to save them.

Some general contractors reported that their attempts to assist DBEs during performance were seen to run afoul of the Program's regulations.

> We're trying to help them, and granted they're stressed because we've given them larger subcontracts than they've ever had in their life. Because [we] had to. And so, we want to try to help them. Yet we're told by the Office of the Inspector General [at USDOT], you can't help him. You can give him limited advice. He's got to run his own work so leave him alone. He's coming to us, he wants our help. He says, I can't do this. I've never had a five million dollar job. Now I took the job, I can't do it. I need some help. We can't help him.

Some participants reported that DBEs sometimes do not perform a commercially useful function, or act as passthroughs.

> I think a lot of the DBE companies are just shell companies.… They don't do the work. They just hire it all out.

> I know of where contractors have actually just paid somebody to put their name on it and never involved them.

> On that [very large bridge] job … I got calls, and this is the stuff that makes you sick. I'd get calls. One was from Kansas City, she was a broker. She was a certified DBE and a broker … she wanted to sell my [product] to [the general contractor] and coordinate all [the purchases].

6. Payment

Some prime contractors were satisfied with the speed with which MoDOT processes complete invoices.

> MoDOT is a really good pay.

Others disagreed.

> MoDOT is ridiculous.

Subcontractors mostly reported general contractors pay them more or less in a timely fashion. Those that are not paid know to alert MoDOT. One stated she uses joint checks.

> [I] get a joint check [because some general contractors do not promptly pay subcontractors].

7. Assistance Programs for DBEs and Small Firms

DBEs have benefited from MoDOT's outreach efforts and would like more events and opportunities for training and access to MoDOT officials.

> The contacts that we made [at MoDOT networking events] were valuable.

> Put on webinars.

> [Provide more] supportive services.

DBEs generally supported the concept of mentor-protégé programs.

> Mentor-protégé, joint ventures and teaming agreements where you're allowed to actually really perform a meaningful service and you've got a governmental entity looking over your shoulder to ensure that you're doing what those agreements say you're supposed to be doing.

> MoDOT needs to hire somebody to come in and train them on how to do it and implement it. Because it's a great avenue for taking small businesses and allowing them to leverage off of large businesses in a win-win situation

A DBE that is participating in MoDOT's new Mentor-Protégé Program was very enthusiastic.

> [The general contractor] saw my work for [an agency project and asked [the agency] who did the survey: this was about 3 years ago. Later [the owner of the general contractor] used my company on several projects and a lot a trust and friendly mentoring started. When MoDOT announced the Mentor/Protégé Program, [he] liked the idea and agreed to be the Mentor for 1 year. [He] and I drafted the required Development Plan, had meetings, and made the final submittal to Federal Highways and MoDOT in about 4 months. We worked hard on this and made it look like a proposal with photos, a detailed schedule, and clearly defined milestones. The Mentor will provide the following training: Project Management, Construction Management, and Technical (Microstation/GeoPak).

> The Protégé will provide the following: I schedule the required meetings with [him], evaluate the training, and draft the reports that go to the MoDOT oversight committee.…This is working well for both the Mentor and the Protégé; [he] uses my business almost exclusively for survey work DBE or not. He markets our Mentor/Protégé team as approved by federal highways; [he] has worked with me directly and trained me on Microsoft Projects software for scheduling jobs. This is the software he uses for his big task assignments with the Corp of Engineers. [He] has also sent staff to my office to provide technical training on Microstation (CAD). [He] was awarded three projects last week; I am the [subcontractor] for all three of these jobs. When [he] wins a job, I win a job.

The large firms were less sanguine about the utility of a mentor-protégé approach.

> The concern … [is] being married to somebody. Because, truth be told, I don't know how you avoid that. Particularly the bigger firm.…. If they're going to make that investment of energy and time and resources, then they're going to want that [protégé] at the ready.

> As a mid-size firm … our concern would be absolutely [training our competition]. I want to be connected strategically so that we're benefiting each other. Not teaching you to beat me.… [A firm will not put] the time and effort into the mentor-protégé, grow somebody into a valuable resource, and then [have] their competition reaps the benefits … [without] the upfront costs and effort.

> I can mentor a DBE company but I can't count the work that he does. I can teach him so he can go to work for somebody else.

C. Conclusion

The interviews strongly suggest that MoDOT implements the DBE Program well within the parameters of 49 C.F.R. Part 26. Some improvements could be made, including increasing access to information about the Department's processes and upcoming opportunities; reviewing contract sizes and specifications to reduce barriers to the participation of small firms; explaining the process to establish a bidders good faith efforts to meet the contract goal; gathering information on the costs of all subcontractor bids to ensure competitiveness and non-discrimination; increasing race-neutral means to provide opportunities for DBEs to perform as prime contractors to reduce the burdens on non-DBE specialty trade firms; reviewing and publicizing procedures to substitute non-performing subcontractors; and providing additional supportive services to DBEs and other small firms.

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, DC, 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, Aldershot: 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, 449-469.

Enchautegui, Maria E., M. Fix, P. Loprest, S. von der Lippe and 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.

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, 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, Vol. 112(2), April, 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," Econometric Methods and Applications, 2, United Kingdom, Elgar, G.S. Maddala (ed.), 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), 91-109.

Munnell, A. G., M. B. Tootell, L. E. Browne and J. McEneaney (1996), "Mortgage lending in Boston, interpreting HMDA data," American Economic Review, March, 86(1), 25-53.

National Opinion Research Center (2005). "The 2003 Survey of Small Business Finances Methodology Report," mimeo, http://www.federalreserve.gov/pubs/oss/oss3/ssbf03/ssbf03home.html#ssbf03results.

NERA Economic Consulting (2004). *Disadvantaged Business Enterprise Availability Study*, prepared for the Missouri Department of Transportation, November 26.

Myrdal, G. (1944), An American dilemma, the negro problem and modern democracy, Volume 1, New York, Harper & Row.

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. 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. (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, 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 for the People & the Press.

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, DC.

U.S. Census Bureau (2004a), "Percent Distribution of Household Net Worth, by Amount of Net Worth and Selected Characteristics: 2004," INTERNET: http://www.census.gov/hhes/www/wealth/2004/wlth04-4.html.

U.S. Census Bureau (2004b), "Median Value of Assets for Households, by Type of Asset Owned and Selected Characteristics: 2004," INTERNET: http://www.census.gov/hhes/www/wealth/2004/wlth04-1.html.

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. 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.

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.

Appendix A. MoDOT Subrecipients in the Master Contract/Subcontract Database

Adair County
Andrew County
Atchison County
Audrain County
Barry County
Barton County
Benton County
Bolivar School District
Bollinger County
Boone County
Buchanan County
Butler County
Caldwell County
Cape Girardeau County
Carroll County
Cass County
Chariton County
Christian County
City of Adrian
City of Advance
City of Albany
City of Arnold
City of Ash Grove
City of Ashland
City of Aurora
City of Auxvasse
City of Ava
City of Ballwin
City of Bellefontaine
City of Berkeley
City of Bevier
City of Bloomfield
City of Blue Springs
City of Bolivar
City of Boonville
City of Bowling Green
City of Breckenridge Hills
City of Brunswick
City of Butler
City of Calhoun
City of Camden
City of Canton
City of Cape Girardeau
City of Carl Junction
City of Carrollton
City of Carthage
City of Caruthersville
City of Centralia
City of Chesterfield
City of Chula
City of Clarence
City of Clarksville
City of Clayton
City of Columbia
City of Concordia
City of Cottleville
City of Crane
City of Crestwood
City of Creve Coeur
City of Crocker
City of Cuba
City of Dardenne Prairie
City of Desloge

City of Desoto
City of Dexter
City of Diamond
City of Drexel
City of Eldon
City of Elsberry
City of Eminence
City of Eureka
City of Excelsior Springs
City of Fair Grove
City of Fayette
City of Fenton
City of Florissant
City of Fulton
City of Gainesville
City of Gladstone
City of Green Park
City of Greenville
City of Hale
City of Hamilton
City of Hannibal
City of Harrisonville
City of Hartville
City of Hayti
City of Hazelwood
City of Herculaneum
City of Hermann
City of Higginsville
City of Holden
City of Holt's Summit
City of Houston
City of Huntsville
City of Hurley
City of Independence
City of Jackson
City of Jefferson City
City of Jonesburg
City of Joplin
City of Kahoka
City of Kansas City, MO
City of Kearney
City of Kennett
City of Knob Noster
City of La Grange
City of Labadie
City of Ladue
City of Lake Saint Louis
City of Lancaster
City of Lee's Summit
City of Lexington
City of Liberty
City of Licking
City of Lockwood
City of Lowery
City of Malden
City of Maplewood
City of Marceline
City of Marshfield
City of Marthasville
City of Maryland Heights
City of Maryville
City of Maysville
City of Mexico
City of Milan
City of Moberly
City of Monett
City of Monroe
City of Montgomery
City of Neelyville
City of Nevada
City of New Haven
City of New London

City of Nixa
City of Noel
City of Northwoods
City of O'Fallon
City of Oak Grove
City of Old Appleton
City of Oronogo
City of Osage Beach
City of Ozark
City of Pacific
City of Pagedale
City of Palmyra
City of Paris
City of Park Hills
City of Peculiar
City of Perry
City of Perryville
City of Pineville
City of Pleasant Hill
City of Poplar Bluff
City of Raytown
City of Reed Springs
City of Republic
City of Richmond
City of Richmond Heights
City of Rock Hill
City of Salisbury
City of Sedalia
City of Shelbina
City of Sikeston
City of Slater
City of Smithton
City of Springfield
City of St Charles
City of St Clair
City of St John
City of St Joseph
City of St Louis
City of St Robert
City of Sturgeon
City of Sullivan
City of Sunset Hills
City of Sweet Springs
City of Town & Country
City of Trenton
City of Troy
City of Truesdale
City of Twin Oaks
City of Union
City of Unionville
City of University City
City of Valley Park
City of Warrenton
City of Warsaw
City of Washington
City of Webb City
City of Wentzville
City of West Plains
City of Weston
City of Westphalia
City of Wheaton
City of Wildwood
City of Willard
City of Willow Springs
City of Windsor
City of Wright City
Clay County
Clever School District
Clinton County
Cole County
Cooper County
Dade County

Daviess County

Dunklin County

Festus Special Road District

Franklin County

Gasconade County

Greene County

Grundy County

Harrison County

Henry County

Hickory County

Holt County

Howard County

Howell County

Jackson County

Jasper County

Jefferson City

Jefferson County

Knox County

Laclede County

Lawrence County

Lewis County

Lincoln County

Linn County

Livingston County

Macon County

Madison County

Maries County

Marion County

Mcdonald County

Mercer County

Miller County

Mississippi County

Missouri Botanical Gardens

Moniteau County

Monroe County

Montgomery County

Morgan County

Mountain Grove School District

New Madrid County

Newton County

Nodaway County

Northwest Missouri State University

Osage County

Pemiscot County

Perry County

Pettis County

Phelps County

Pike County

Polk County

Port Authority of Kansas City, MO

Putnam County

Ralls County

Ray County

Ripley County

Saline County

Schuyler County

Shelby County

Shelby County R-IV School District

St Charles County

St Louis County

St Louis Science Center Foundation

St Louis University

St Louis Zoo

Ste Genevieve County

Stoddard County

Sullivan County

Texas County

University of Missouri

Vernon County

Village of Indian Point

Warren County

Washington County

Wayne County

West Nodaway School District

Willard School District

Appendix B. Master M/W/DBE Directory Sources

A. Entities whose lists of DBE firms that were duplicative of previously collected lists

City of Columbia

City of Jefferson

City of Kansas City

City of St. Louis Contract

Clay County Economic Development Council

Gardner Area Chamber of Commerce

Greene County

Kansas City Area Transportation

Lambert-St. Louis International Airport

Lincoln University

Metro Transit, St. Louis

Missouri Enterprise - Kansas City

Missouri Minority Business Advocacy Commission Department of Minority Business

Missouri State University

MO-KAN Development, Inc.

Southeast Missouri State University

Springfield-Branson National Airport

The Kentucky Cabinet for Economic Development

The Women's Business Center

University of Missouri Minority Business Development

B. Entities who had no directory, or their directory did not identify race and gender

American Business Women Association – O'Hare 10 Charter Chapter

American Business Women Association MO Chapter

Asian Chamber of Commerce of Kansas City

Asian Women in Business

Belton Area Chamber of Commerce

Black Career Women

Black Economic Union

Boone County

Buchanan County

Butler County

Callaway County

Camden County

Cape Girardeau County

Capital Region Medical Center University of Missouri Health Care

Cass County

Center for Women's Business Research

Central Missouri Aviation Inc.

CGI Cape Girardeau Regional Airport

Christian County

City of Blue Springs

City of Cape Girardeau

City of Cedar Rapids

City of Chesterfield

City of Des Moines

City of Florissant
City of Fort Smith
City of Hannibal
City of Independence
City of Joplin
City of Lee's Summit
City of Oakville
City of O'Fallon
City of Oklahoma City
City of Raytown
City of Springfield
City of St. Charles
City of St. Joseph
City of St. Peters
Clay County
Coalition of Hispanic Organizations
Cole County
Collinsville Chamber of Commerce
Columbia Chamber of Commerce
Columbia Regional Airport
Cottleville-Weldon Spring Chamber of Commerce
County Economic Research Institute
Economic Council of St. Louis County
EDC Loan Corporation of Kansas City
Edwardsville-Glen Carbon Chamber of Commerce
Entrepreneur Development Center – Kansas City
Entrepreneur Development Center –Cedar Rapids
Excelsior Springs Area Chamber of Commerce
Fairview Heights Chamber of Commerce
Financial Women International
Franklin County
Gladstone Chamber of Commerce
Gladstone Economic Development Department
Grace Hill Women's Development Center
Grain Valley Chamber of Commerce
Greater Belleville Chamber of Commerce
Greater Topeka Chamber of Commerce
GSA Heartland Office of Small Business Utilization
Hannibal Regional Airport
Harrisonville Area Chamber of Commerce
Heartland Business Capital
Hispanic Women's Corporation
Illinois Department of Commerce and Economic Opportunity
Independence Chamber of Commerce
Independence School District
Jackson County
Jefferson City Memorial Airport
Jefferson City Public Schools
Jefferson County
Joplin Regional Airport
Kansas Camber of Commerce & Industry
Kansas City Area Development Council
Kansas City Aviation Department
Kansas City Kansas Community College, Workforce Development
Kansas City Kansas Public Library
Kansas City Missouri Small Business Division
Kansas Department of Commerce
Kansas Technology Enterprise Corporation

Kansas University Center for International Business Education and Research

Kansas World Trade Center

KC BizCare

Kearney Chamber of Commerce

Kentucky Department of Education

Kingdom of Callaway Chamber of Commerce

Lake Saint Louis-Dardenne Prairie Area Chamber of Commerce

Lawrence Regional Technology Center

Leadership Council Southwestern Illinois

Leavenworth-Lansing Area Chamber of Commerce

Lee's Summit Chamber of Commerce

Lee's Summit Economic Development Council

Lenexa Chamber of Commerce

Liberty Area Chamber of Commerce

Lincoln Airport Authority

Martin City Community Improvement District

Metro-East Professional Women

Metropolitan Community College – Institute for Workforce Innovation

Miami County

Mid-America Manufacturing Technology Center

Mid-America Regional Council – Research Services

Missouri Department of Economic Development – Kansas City Area

Missouri Women's Business Center

Missouri Women's Council

National Asian Pacific Legal Consortium

National Association of Professional Asian-American Women

National Hispanic Corporate Council

National Hispanic Leadership Institute

National Society of Black Engineers

Nebraska Department of Education

Northeast Johnson County Area Chamber

O'Fallon Chamber of Commerce

Oklahoma County

Oklahoma State Department of Education

Olathe Chamber of Commerce

Omaha Public Schools

Overland Park Chamber of Commerce

Paola Chamber of Commerce

Park Hill School District

Parkville Chamber of Commerce

Peculiar Chamber of Commerce

Platte County

Platte County Economic Development Council

Polk County

Raymore Chamber of Commerce

Raytown Chamber of Commerce

Shawnee Area Chamber of Commerce

Shelby County

Small and Home Business Connection

Smithville Area Chamber of Commerce

South Kansas City Chamber of Commerce

Southwest Johnson County Economic Development Corporation

Spring Hill Chamber of Commerce

Springfield Area Chamber of Commerce

St. Charles Chamber of Commerce

St. Charles County Transportation

St. Louis County

St. Louis Development Corporation

St. Louis Economic Council

St. Louis Regional Chamber & Growth Association

St. Peters Chamber of Commerce

Swansea Chamber of Commerce

The Diversity Awareness Partnership

The Economic Development Corporation of Kansas City

The National Association of Negro Business and Professional Women's Club

Troy Chamber of Commerce

University City

University of Central Missouri

University of Missouri Campus Facilities

Urban League of Kansas City

Urban League of Metropolitan St. Louis

Waldo Area Business Association

Waterloo Chamber of Commerce

Western Illinois University: Small Business Development Center

Weston Chamber of Commerce

Will Rogers World Airport-Oklahoma City Department of Airports

Womenbiz.gov

Women's Employment Network

African Chamber of Commerce

Blue Springs Chamber of Commerce

Cape Girardeau Chamber of Commerce

City of Louisville

Grandview Chamber of Commerce

Hispanic Chamber of Commerce of Greater Kansas City

Johnson County Community College

Kansas City Kansas Area Chamber of Commerce

Kansas Department of Transportation

Little Rock National Airport

New Melle Chamber of Commerce

Northland Regional Chamber of Commerce

Platte City Area Chamber of Commerce – Economic Development

Southtown Council

St. Joseph Area Chamber of Commerce

St. Louis Business Diversity Initiative

State of Kansas Division of Purchases

Stockton Area Chamber of Commerce

The Central Exchange

The Greater Kansas City Chamber of Commerce

Women's Yellow Pages of Greater St. Louis

Wyandotte County

C. Entities that were non responsive to repeated contacts

Alliance of Business Women International

Alliance of Minority Women for Business

Amazing Women of St. Louis

Arkansas Department of Education

Asian Pacific Women's Leadership Institute

Association of African-American Women Business Owners

Black Women's Entrepreneurial Network

Blue Springs Economic Development Corporation

Bonner Springs Chamber of Commerce

Cass County

Chamber of Commerce of Southwestern Madison County

City of Lincoln and Lancaster County

City of Tulsa

Citywide Development Corporation of Kansas City, KS

El Centro, Inc

Hispanic Chamber of Commerce of Metropolitan St. Louis

Hispanic Economic Development Center

Independence Council for Economic Development

Indian Business and Professional Women

Indo American Chamber of Commerce

International Trade Center of Greater Kansas City, Inc

Japanese Career Women's Network

Kansas Black Chamber of Commerce

Kansas City Council of Women Business Owners

Kansas City Hispanic Association Contractors Enterprises Inc.

Kansas Department of Commerce

Mid America Minority Business Development Council

Minority Contractors Association

Missouri Department of Labor

National Asian Pacific American Bar Association

National Association of Minority Women in Business

National Association of Women Business Owners

National Business League

National Council of Negro Women

Nebraska Department of Roads

Professional Organization of Women, Inc

Springfield Black Chamber of Commerce

SSM St. Mary's Health Center

St. Louis Airport Authority

St. Louis Black Leadership Roundtable

St. Louis Minority Business Council

St. Louis Public Schools

Tennessee Department of Transportation

The Black Chamber of Commerce of Greater Kansas City

Tri-State Minority Supplier Development

University of Missouri Extension

US Pan Asian Chamber of Commerce

Wakarusa Valley Development Inc.

Women Entrepreneurs Online Network

Women's Business Center

D. Entities that refused to provide the requested information

Nashville Airport Authority

Heartland Procurement Technical Assistance Center – Kansas City

Mid-South Minority Business Council

Minority Professional Network

MOKAN: St. Louis Construction Contractors Assistance Center

National Association of Cuban American Women

National Association of Women's Business Owners

National Women Business Owners Corporation

Wentzville Chamber of Commerce

Women President's Organization

Appendix C. Glossary

ACS. *The American Community Survey*. 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.

African American: Or "Black" refers to an individual having origins in any of the Black racial groups of Africa.

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.

Asian or Asian/Pacific Islander: Refers to an individual having origins in the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islanders (except Native Hawaiians).

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, Table A indicates that DBE availability in Construction is 20.36 percent, indicating our estimate that 20.36 percent of all the construction establishments in MoDOT's relevant market area are owned by minorities or women. *See also* Utilization, Disparity Ratio.

Baseline Business Universe: The underlying population of business establishments that is used in an availability analysis. It is used as the denominator in a DBE availability measure.

Black: Or "African American" refers to an individual having origins in any of the Black racial groups of Africa.

Capacity: This term has no single definition. See Chapters II and IV for extended discussions of this concept and its role in disparity studies.

Constitutional significance or **substantive significance:** An indication of 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.

Decennial: Refers to the census conducted every decade by the U.S. Census Bureau. The last decennial census was conducted 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 (or Disparity Index): 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.

Distribution. A set of numbers and their frequency of occurrence collected from measurements over a statistical population.

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."

FFY: Fiscal Year. MoDOT's Federal Fiscal Year runs from October 1 through September 30.

First-tier subcontractors: Subcontractors, subconsultants, or suppliers hired directly by the prime contractor.

Hispanic: Refers to an individual of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

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% or more owned and controlled by racial or ethnic minorities (i.e., African Americans, Hispanics, Asian/Pacific Islanders, 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 nonminority female-owned is actually nonminority male-owned. *See also* "Nonclassification."

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.

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."

NSSBF or SSBF. The *Survey of Small Business Finances*, formerly the *National Survey of Small Business Finances*, was produced jointly by the Federal Reserve Board and the U.S. Small Business Administration to provide a periodic statistical picture of small business finances. The SSBF was discontinued in 2003.

Native American: Refers to an individual having origins in any of the original peoples of North America, including Native Hawaiians.

Nonminority: Firms that are not DBEs, i.e., not owned by African Americans, Hispanics, Asian/Pacific Islanders, Native Americans, or White females.

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 is devoted to capturing statistical information on the nation's minority-owned and women-owned business enterprises. 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."

SSBF. *See* NSSBF.

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 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. For example, Table B1 indicates that overall DBE utilization on federally-assisted contracts is 13.26 percent of award dollars and 13.62 percent of paid dollars, indicating we found that 13.26 percent of the $3.87B of contract awards and 13.62 percent of the $3.74B of contract payments by MoDOT and its subrecipients accrued to minorities or women, either as prime contractors or as first-tier subcontractors. *See also* Availability, Disparity Ratio.

WBE: Women-Owned Business Enterprise: A business establishment that is 51% or more owned and controlled by nonminority women. In this Study, unless otherwise indicated, WBE refers to nonminority women-owned firms.

WNC: Refers to the West North Central region in the NSSBF and SSBF data sets. The West North Central region includes the states of Missouri, Iowa, Kansas, Minnesota, Nebraska, North Dakota, and South Dakota.

Appendix D. Utilization Tables by Highway District

This appendix presents DBE utilization statistics analogous to those presented in Chapter VII, Table 7.1, according to MoDOT Highway District. Each business establishment in the Master Contract/Subcontract Database was associated with a Highway District based on their geographic location. Utilization statistics are also provided for firms located in the Kansas portion of the Kansas City, MO metropolitan area, the Illinois portion of the St. Louis metropolitan statistical area, and the outside the market area.

For the study period, MoDOT had ten Highway Districts. In May 2011, MoDOT changed its highway district boundaries, consolidating the ten existing Highway Districts into seven.

Below, we present two sets of tables. The first set, in Tables AD.1 through AD.10, uses the original Highway District boundaries. The second set, in Tables AD.11 through AD.17, uses the new boundaries. Finally, Tables AD.18 through AD.20 show out of district DBE utilization.

Table AD.1. DBE Utilization in Contracting by Old Highway District: Northwest

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.00	0.00	0.00	0.00	0.00	0.00
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.00	0.00	0.00	0.00	0.00	0.00
Nonminority Females	4.06	0.00	4.02	4.38	0.00	4.34
DBE Total	4.06	0.00	4.02	4.38	0.00	4.34
Non-DBE Total	95.94	100.00	95.98	95.62	100.00	95.66
Total ($)	147,372,898	1,371,278	148,744,177	133,322,355	1,301,287	134,623,642

Source: NERA Master Contract/Subcontract Database.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table AD.2. DBE Utilization in Contracting by Old Highway District: North Central

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.05	0.00	0.04	0.03	0.00	0.03
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.05	0.00	0.04	0.03	0.00	0.03
Nonminority Females	86.11	0.00	79.85	90.64	0.00	86.17
DBE Total	86.15	0.00	79.89	90.67	0.00	86.20
Non-DBE Total	13.85	100.00	20.11	9.33	100.00	13.80
Total ($)	35,876,542	2,811,904	38,688,446	53,179,633	2,758,521	55,938,154

Source and Note: See Table AD.1.

Table AD.3. DBE Utilization in Contracting by Old Highway District: Northeast

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.91	0.00	0.91	0.78	0.00	0.78
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.91	0.00	0.91	0.78	0.00	0.78
Nonminority Females	1.27	0.00	1.27	2.14	0.00	2.13
DBE Total	2.18	0.00	2.17	2.92	0.00	2.92
Non-DBE Total	97.82	100.00	97.83	97.08	100.00	97.08
Total ($)	397,828,945	805,641	398,634,586	416,468,411	831,117	417,299,529

Source and Note: See Table AD.1.

Table AD.4. DBE Utilization in Contracting by Old Highway District: Kansas City Area

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	1.88	4.14	2.21	1.81	4.22	2.14
Hispanic	0.08	0.00	0.07	0.08	0.00	0.07
Asian/Pacific Islander	0.92	1.76	1.05	0.91	1.39	0.97
Native American	0.87	0.00	0.74	0.87	0.00	0.75
Minority Total	3.75	5.91	4.07	3.67	5.61	3.94
Nonminority Females	14.18	2.61	12.47	13.65	2.54	12.16
DBE Total	17.94	8.51	16.54	17.33	8.15	16.09
Non-DBE Total	82.06	91.49	83.46	82.67	91.85	83.91
Total ($)	409,200,837	70,926,522	480,127,360	406,269,113	63,048,308	469,317,421

Source and Note: See Table AD.1.

Table AD.5. DBE Utilization in Contracting by Old Highway District: Central

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.00	0.00	0.00	0.00	0.00	0.00
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	8.81	0.05	8.78	8.64	0.06	8.61
Minority Total	8.81	0.05	8.78	8.64	0.06	8.61
Nonminority Females	9.98	2.38	9.95	9.33	2.47	9.30
DBE Total	18.79	2.43	18.73	17.97	2.53	17.92
Non-DBE Total	81.21	97.57	81.27	82.03	97.47	82.08
Total ($)	548,050,305	2,026,877	550,077,183	546,569,440	1,772,729	548,342,170

Source and Note: See Table AD.1.

Table AD.6. DBE Utilization in Contracting by Old Highway District: St. Louis Area

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	1.46	6.21	1.96	1.63	5.91	2.05
Hispanic	0.06	0.00	0.06	0.05	0.00	0.05
Asian/Pacific Islander	0.00	4.00	0.43	0.00	3.79	0.37
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	1.52	10.21	2.45	1.69	9.70	2.48
Nonminority Females	13.13	8.99	12.69	13.27	8.38	12.79
DBE Total	14.65	19.20	15.14	14.96	18.08	15.27
Non-DBE Total	85.35	80.80	84.86	85.04	81.92	84.73
Total ($)	1,085,290,431	129,582,133	1,214,872,565	1,037,013,497	113,458,877	1,150,472,374

Source and Note: See Table AD.1.

Table AD.7. DBE Utilization in Contracting by Old Highway District: Southwest

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.06	0.00	0.06	0.03	0.00	0.03
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.06	0.00	0.06	0.03	0.00	0.03
Nonminority Females	6.85	0.00	6.58	6.80	0.00	6.56
DBE Total	6.91	0.00	6.63	6.83	0.00	6.58
Non-DBE Total	93.09	100.00	93.37	93.17	100.00	93.42
Total ($)	37,381,635	1,554,821	38,936,456	35,453,184	1,324,240	36,777,424

Source and Note: See Table AD.1.

Table AD.8. DBE Utilization in Contracting by Old Highway District: Springfield Area

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.00	0.00	0.00	0.00	0.00	0.00
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.00	0.00	0.00	0.00	0.00	0.00
Nonminority Females	14.90	41.97	15.45	14.36	49.65	15.00
DBE Total	14.90	41.97	15.45	14.36	49.65	15.00
Non-DBE Total	85.10	58.03	84.55	85.64	50.35	85.00
Total ($)	241,872,476	5,021,390	246,893,866	221,527,610	4,129,988	225,657,599

Source and Note: See Table AD.1.

Table AD.9. DBE Utilization in Contracting by Old Highway District: South Central

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.00	0.00	0.00	0.00	0.00	0.00
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.00	0.00	0.00	0.00	0.00	0.00
Nonminority Females	1.96	10.06	2.08	2.57	13.14	2.69
DBE Total	1.96	10.06	2.08	2.57	13.14	2.69
Non-DBE Total	98.04	89.94	97.92	97.43	86.86	97.31
Total ($)	47,806,295	692,528	48,498,823	47,992,563	530,355	48,522,918

Source and Note: See Table AD.1.

Table AD.10. DBE Utilization in Contracting by Old Highway District: Southeast

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.06	0.00	0.06	0.06	0.00	0.06
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.06	0.00	0.06	0.06	0.00	0.06
Nonminority Females	4.32	0.00	4.25	4.11	0.00	4.04
DBE Total	4.38	0.00	4.31	4.17	0.00	4.10
Non-DBE Total	95.62	100.00	95.69	95.83	100.00	95.90
Total ($)	176,419,704	2,821,361	179,241,065	166,369,573	2,920,926	169,290,499

Source and Note: See Table AD.1.

Table AD.11. DBE Utilization in Contracting by New Highway District: Northwest

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.00	0.00	0.00	0.00	0.00	0.00
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.00	0.00	0.00	0.00	0.00	0.00
Nonminority Females	4.00	0.00	3.95	4.31	0.00	4.25
DBE Total	4.00	0.00	3.95	4.31	0.00	4.25
Non-DBE Total	96.00	100.00	96.05	95.69	100.00	95.75
Total ($)	149,683,636	1,882,966	151,566,602	135,621,508	1,814,184	137,435,692

Source: NERA Master Contract/Subcontract Database.

Note: Figures are rounded. Rounding was performed subsequent to any mathematical calculations.

Table AD.12. DBE Utilization in Contracting by New Highway District: Northeast

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.84	0.00	0.83	0.70	0.00	0.70
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.84	0.00	0.83	0.70	0.00	0.70
Nonminority Females	8.37	0.00	8.31	12.26	0.00	12.18
DBE Total	9.21	0.00	9.14	12.96	0.00	12.88
Non-DBE Total	90.79	100.00	90.86	87.04	100.00	87.12
Total ($)	429,675,518	3,105,858	432,781,377	465,629,636	3,076,741	468,706,378

Source and Note: See Table AD.11.

Table AD.13. DBE Utilization in Contracting by New Highway District: Kansas City

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	1.84	4.14	2.17	1.78	4.22	2.10
Hispanic	0.08	0.00	0.07	0.08	0.00	0.07
Asian/Pacific Islander	0.90	1.76	1.03	0.89	1.39	0.96
Native American	0.85	0.00	0.73	0.85	0.00	0.74
Minority Total	3.67	5.90	3.99	3.60	5.61	3.86
Nonminority Females	13.85	2.61	12.22	13.35	2.54	11.92
DBE Total	17.52	8.51	16.21	16.95	8.15	15.79
Non-DBE Total	82.48	91.49	83.79	83.05	91.85	84.21
Total ($)	419,044,402	70,959,321	490,003,724	415,444,542	63,081,107	478,525,649

Source and Note: See Table AD.11.

Table AD.14. DBE Utilization in Contracting by New Highway District: Central

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.00	0.00	0.00	0.00	0.00	0.00
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	8.95	0.04	8.91	8.77	0.05	8.73
Minority Total	8.95	0.04	8.91	8.77	0.05	8.73
Nonminority Females	10.30	4.48	10.27	9.68	5.12	9.66
DBE Total	19.25	4.52	19.18	18.45	5.16	18.40
Non-DBE Total	80.75	95.48	80.82	81.55	94.84	81.60
Total ($)	539,470,105	2,633,893	542,103,998	538,727,448	2,217,571	540,945,019

Source and Note: See Table AD.11.

Table AD.15. DBE Utilization in Contracting by New Highway District: St. Louis

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	1.46	6.21	1.96	1.63	5.91	2.05
Hispanic	0.06	0.00	0.06	0.05	0.00	0.05
Asian/Pacific Islander	0.00	4.00	0.43	0.00	3.79	0.37
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	1.52	10.21	2.45	1.69	9.70	2.48
Nonminority Females	13.13	8.99	12.69	13.27	8.38	12.79
DBE Total	14.65	19.20	15.14	14.96	18.08	15.27
Non-DBE Total	85.35	80.80	84.86	85.04	81.92	84.73
Total ($)	1,085,290,431	129,582,133	1,214,872,565	1,037,013,497	113,458,877	1,150,472,374

Source and Note: See Table AD.11.

Table AD.16. DBE Utilization in Contracting by New Highway District: Southwest

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.01	0.00	0.01	0.00	0.00	0.00
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.01	0.00	0.01	0.00	0.00	0.00
Nonminority Females	13.65	31.94	14.07	13.09	37.44	13.59
DBE Total	13.66	31.94	14.07	13.10	37.44	13.59
Non-DBE Total	86.34	68.06	85.93	86.90	62.56	86.41
Total ($)	282,799,157	6,598,426	289,397,584	261,387,412	5,476,444	266,863,857

Source and Note: See Table AD.11.

Table AD.17. DBE Utilization in Contracting by New Highway District: Southeast

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.05	0.00	0.05	0.05	0.00	0.05
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.05	0.00	0.05	0.05	0.00	0.05
Nonminority Females	3.47	0.00	3.42	3.27	0.00	3.23
DBE Total	3.51	0.00	3.47	3.32	0.00	3.28
Non-DBE Total	96.49	100.00	96.53	96.68	100.00	96.72
Total ($)	221,136,819	2,851,861	223,988,680	210,341,338	2,951,426	213,292,764

Source and Note: See Table AD.11.

Table AD.18. DBE Utilization in Contracting by Highway District: Kansas portion of Kansas City Metropolitan Area

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	4.38	0.00	3.97	4.28	0.00	3.89
Hispanic	0.83	0.00	0.75	0.43	0.00	0.39
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	2.39	0.22	0.00	2.07	0.19
Minority Total	5.21	2.39	4.95	4.71	2.07	4.47
Nonminority Females	8.43	7.63	8.36	8.51	7.13	8.39
DBE Total	13.64	10.03	13.30	13.22	9.20	12.86
Non-DBE Total	86.36	89.97	86.70	86.78	90.80	87.14
Total ($)	232,540,284	23,859,423	256,399,708	223,455,309	22,017,229	245,472,538

Source and Note: See Table AD.11.

Table AD.19. DBE Utilization in Contracting by Highway District: Illinois portion of St. Louis Metropolitan Area

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	1.99	7.11	2.22	2.08	7.51	2.32
Hispanic	0.00	0.00	0.00	0.00	0.00	0.00
Asian/Pacific Islander	0.00	0.00	0.00	0.00	0.00	0.00
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	1.99	7.11	2.22	2.08	7.51	2.32
Nonminority Females	12.76	74.80	15.60	9.04	76.85	12.02
DBE Total	14.75	81.90	17.82	11.12	84.37	14.34
Non-DBE Total	85.25	18.10	82.18	88.88	15.63	85.66
Total ($)	14,513,072	696,025	15,209,097	14,313,865	658,088	14,971,953

Source and Note: See Table AD.11.

Table AD.20. DBE Utilization in Contracting by Highway District: Out of Market Area

DBE Type	Contracting Category					
	Dollars Awarded			Dollars Paid		
	Construction (%)	Consulting (%)	Overall (%)	Construction (%)	Consulting (%)	Overall (%)
African American	0.00	0.06	0.00	0.00	0.06	0.00
Hispanic	0.30	0.08	0.29	0.29	0.02	0.28
Asian/Pacific Islander	0.17	2.20	0.27	0.17	2.30	0.27
Native American	0.00	0.00	0.00	0.00	0.00	0.00
Minority Total	0.47	2.34	0.56	0.47	2.38	0.55
Nonminority Females	6.53	3.01	6.35	7.12	3.12	6.94
DBE Total	7.00	5.36	6.92	7.59	5.50	7.49
Non-DBE Total	93.00	94.64	93.08	92.41	94.50	92.51
Total ($)	500,367,801	25,963,730	526,331,532	478,665,494	22,569,322	501,234,816

Source and Note: See Table AD.11.

Appendix E. Availability Tables by Highway District

This appendix presents DBE availability statistics analogous to those presented in Chapter IV, Table 4.21, according to MoDOT Highway District. Each business establishment in the Baseline Business Universe was associated with a Highway District based on their geographic location. Availability statistics are also provided for firms located in the Kansas portion of the Kansas City, MO metropolitan area, the Illinois portion of the St. Louis metropolitan statistical area, and the outside the market area.

In May 2011, MoDOT changed its highway district boundaries, consolidating the ten existing Highway Districts into seven. The tables presented below are arranged according to the new highway district boundaries.

Table AE.1. DBE Availability in Contracting by New Highway District: Northwest

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.85	0.81	0.37	0.09	3.12	17.19	20.31	79.69
WEIGHTED BY PAID DOLLARS	1.86	0.78	0.34	0.11	3.09	17.32	20.41	79.59
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.83	0.96	0.97	1.01	4.78	22.09	26.87	73.13
WEIGHTED BY PAID DOLLARS	1.81	0.95	0.98	0.93	4.67	21.69	26.36	73.64

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.2. DBE Availability in Contracting by New Highway District: Northeast

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.44	0.59	0.21	0.44	2.68	13.27	15.95	84.05
WEIGHTED BY PAID DOLLARS	1.50	0.59	0.20	0.44	2.74	13.27	16.01	83.99
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.37	0.67	1.34	2.19	5.57	13.14	18.72	81.28
WEIGHTED BY PAID DOLLARS	1.37	0.67	1.35	2.19	5.58	13.12	18.70	81.30

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.3. DBE Availability in Contracting by New Highway District: Kansas City

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.00	0.44	0.77	0.67	2.88	14.02	16.91	83.09
WEIGHTED BY PAID DOLLARS	1.03	0.44	0.76	0.67	2.90	13.93	16.82	83.18
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.54	0.59	1.45	0.09	3.67	24.76	28.43	71.57
WEIGHTED BY PAID DOLLARS	1.54	0.59	1.45	0.08	3.66	24.79	28.44	71.56

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.4. DBE Availability in Contracting by New Highway District: Central

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.34	0.62	0.37	0.69	3.01	17.35	20.36	79.64
WEIGHTED BY PAID DOLLARS	1.38	0.62	0.36	0.71	3.06	17.25	20.31	79.69
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	2.54	0.63	3.46	1.54	8.16	15.38	23.54	76.46
WEIGHTED BY PAID DOLLARS	2.54	0.63	3.46	1.54	8.16	15.36	23.53	76.47

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.5. DBE Availability in Contracting by New Highway District: St. Louis

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	3.58	0.76	0.35	0.31	5.01	16.95	21.95	78.05
WEIGHTED BY PAID DOLLARS	3.65	0.76	0.35	0.32	5.07	16.86	21.93	78.07
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	3.36	1.31	2.60	0.23	7.50	15.31	22.81	77.19
WEIGHTED BY PAID DOLLARS	3.35	1.31	2.60	0.23	7.50	15.29	22.79	77.21

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.6. DBE Availability in Contracting by New Highway District: Southwest

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.33	0.66	0.27	0.49	2.75	15.12	17.87	82.13
WEIGHTED BY PAID DOLLARS	1.36	0.65	0.27	0.49	2.78	15.04	17.81	82.19
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.39	0.93	1.90	0.02	4.24	15.09	19.33	80.67
WEIGHTED BY PAID DOLLARS	1.39	0.93	1.90	0.02	4.24	15.07	19.31	80.69

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.7. DBE Availability in Contracting by New Highway District: Southeast

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.17	0.67	0.22	3.48	5.53	12.24	17.77	82.23
WEIGHTED BY PAID DOLLARS	1.21	0.66	0.21	3.38	5.46	12.23	17.69	82.31
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.47	0.66	1.48	0.15	3.75	19.29	23.04	76.96
WEIGHTED BY PAID DOLLARS	1.47	0.66	1.48	0.16	3.77	19.28	23.05	76.95

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.8. DBE Availability in Contracting by New Highway District: Kansas Portion of Kansas City Metropolitan Area

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.66	0.66	0.43	3.19	5.94	14.44	20.38	79.62
WEIGHTED BY PAID DOLLARS	1.70	0.67	0.42	3.15	5.94	14.42	20.36	79.64
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.49	0.93	3.75	0.64	6.81	14.32	21.14	78.86
WEIGHTED BY PAID DOLLARS	1.48	0.93	3.75	0.64	6.80	14.32	21.12	78.88

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Table AE.9. DBE Availability in Contracting by New Highway District: Illinois Portion of St. Louis Metropolitan Area

	African American	Hispanic	Asian	Native American	MBE	Non-minority Female	DBE	Non-DBE
CONSTRUCTION (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	3.61	0.67	0.25	0.41	4.95	17.64	22.59	77.41
WEIGHTED BY PAID DOLLARS	3.62	0.67	0.25	0.41	4.95	17.54	22.49	77.51
CONSULTING (ALL CONTRACTS)								
WEIGHTED BY AWARD DOLLARS	1.47	0.66	1.39	0.02	3.55	14.81	18.36	81.64
WEIGHTED BY PAID DOLLARS	1.47	0.66	1.39	0.01	3.54	14.79	18.33	81.67

Sources: Dun & Bradstreet/Hoovers; DBE business directory information compiled by NERA; Master Contract/Subcontract Database.

Appendix F. Utilization, Availability, and Disparity Tables by Detailed Industry Category

This appendix presents DBE utilization, availability, and disparity statistics analogous to those presented in Chapter VII, Tables 7.6 through 7.15, according to detailed NAICS Industry Groups.[348]

Tables AF.1 and AF.2 present the results of this comparison using dollars awarded and dollars paid, respectively, as the metric of utilization. These two tables cover all funding sources, both federal and state, and all contracts, whether let directly by MoDOT or by MoDOT subrecipients. Tables AF.3 and AF.4 are for federally-assisted contracts, whether let directly by MoDOT or by MoDOT subrecipients. Tables AF.5 and AF.6 are for federally-assisted contracts that were let directly by MoDOT. Tables AF.7 and AF.8 are for federally-assisted contracts that were let by MoDOT subrecipients. Finally, Tables AF.9 and AF.10 are for state-funded contracts.

[348] Comparable statistics were calculated at the NAICS Industry level as well (five-digit and six-digit NAICS). In the interest of space, these results are not reported here. Four-digit NAICS codes are most comparable to four-digit Standard Industrial Classification (SIC) codes, which were used prior to the advent of the NAICS system.

Table AF.1. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (All Funds) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.01	0.27	4.58 **
Asian/Pacific Islander	0.03	0.00	
Native American	1.86	1.94	95.58
Minority	1.90	4.44	42.87 ***
Nonminority female	3.99	15.15	26.34 ***
DBE total	5.89	19.59	30.09 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	1.42	2.63	54.11
Hispanic	0.47	1.37	34.26
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.57	0.22	
Minority	2.47	4.93	50.04 *
Nonminority female	34.50	16.87	
DBE total	36.97	21.80	
Utility System Construction (NAICS 2371)			
African American	1.76	1.70	
Hispanic	0.00	0.33	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	2.14	1.51	
Minority	3.90	3.54	
Nonminority female	1.43	20.02	7.15 ***
DBE total	5.33	23.56	22.63 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.43	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.43	0.00 ***
Nonminority female	0.00	13.98	0.00 ***
DBE total	0.00	14.41	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.07	2.77	2.52 ***
Hispanic	0.33	1.22	26.99
Asian/Pacific Islander	0.00	0.83	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.40	4.82	8.27 ***
Nonminority female	8.80	17.53	50.18 ***
DBE total	9.19	22.35	41.14 ***
General Freight Trucking (NAICS 4841)			
African American	10.08	4.72	
Hispanic	0.29	0.73	39.83
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	10.37	5.99	
Nonminority female	54.75	12.78	
DBE total	65.12	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	4.40	0.79	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.24	0.00	
Native American	0.00	0.00	
Minority	4.64	0.79	
Nonminority female	0.37	10.85	3.38 ***
DBE total	5.01	11.64	43.05 **
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.81	0.00 ***
Hispanic	0.00	0.34	0.00 ***
Asian/Pacific Islander	0.00	0.52	0.00 ***
Native American	0.00	0.06	0.00
Minority	0.00	3.73	0.00 ***
Nonminority female	1.88	17.46	10.76 ***
DBE total	1.88	21.19	8.87 ***
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	19.08	4.02	
Hispanic	1.99	0.98	
Asian/Pacific Islander	5.25	0.68	
Native American	0.00	0.05	0.00
Minority	26.31	5.72	
Nonminority female	41.25	20.30	
DBE total	67.57	26.02	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Services to Buildings and Dwellings (NAICS 5617)			
African American	1.80	2.52	71.51
Hispanic	0.00	0.23	0.00 ***
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.94	0.23	
Minority	2.74	3.03	90.54
Nonminority female	79.73	17.58	
DBE total	82.47	20.61	
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00 ***
Asian/Pacific Islander	0.00	0.68	0.00 ***
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	0.16	17.26	0.95 ***
DBE total	0.16	21.57	0.76 ***
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00 ***
Hispanic	0.00	2.29	0.00 ***
Asian/Pacific Islander	0.00	2.04	0.00 ***
Native American	0.00	0.75	0.00 ***
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.79	2.07	86.87
Hispanic	1.45	0.91	
Asian/Pacific Islander	0.05	2.50	2.08 ***
Native American	2.01	1.26	
Minority	5.30	6.73	78.75
Nonminority female	3.44	17.33	19.85 ***
DBE total	8.74	24.06	36.33 ***
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	7.31	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 ***
Native American	0.00	0.00	
Minority	7.31	2.61	
Nonminority female	76.69	10.74	
DBE total	84.00	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00 ***
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00 ***
Minority	0.00	3.06	0.00 ***
Nonminority female	59.46	9.70	
DBE total	59.46	12.75	
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 ***
Asian/Pacific Islander	0.00	1.34	0.00 ***
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	6.16	10.04	61.31
DBE total	6.16	12.32	49.98
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.17	0.00 ***
Hispanic	0.00	1.09	0.00 ***
Asian/Pacific Islander	0.00	1.09	0.00 ***
Native American	0.00	2.09	0.00 ***
Minority	0.00	6.45	0.00 ***
Nonminority female	0.20	22.01	0.89 ***
DBE total	0.20	28.45	0.69 ***
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	5.29	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00 ***
Native American	0.00	0.00	
Minority	5.29	2.30	
Nonminority female	50.23	9.73	
DBE total	55.52	12.03	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00 ***
Asian/Pacific Islander	0.00	0.98	0.00 ***
Native American	0.00	1.56	0.00 ***
Minority	0.00	3.71	0.00 ***
Nonminority female	5.51	16.26	33.91
DBE total	5.51	19.97	27.61
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	21.24	14.02	
DBE total	21.24	14.92	
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	1.64	0.97	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	1.64	1.46	
Nonminority female	73.68	13.91	
DBE total	75.32	15.37	
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00 ***
Nonminority female	4.98	15.33	32.50
DBE total	4.98	17.34	28.72

Source and Notes: See Table 7.6.

Table AF.2. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (All Funds) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.01	0.27	4.86 **
Asian/Pacific Islander	0.03	0.00	
Native American	1.91	1.94	98.34
Minority	1.96	4.44	44.09 ***
Nonminority female	3.76	15.15	24.85 ***
DBE total	5.72	19.59	29.21 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	1.31	2.63	49.83
Hispanic	0.30	1.37	21.59 **
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.34	0.22	
Minority	1.95	4.93	39.50 **
Nonminority female	33.34	16.87	
DBE total	35.29	21.80	
Utility System Construction (NAICS 2371)			
African American	1.65	1.71	96.85
Hispanic	0.00	0.32	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	2.15	1.52	
Minority	3.81	3.54	
Nonminority female	1.46	20.02	7.31 ***
DBE total	5.27	23.57	22.36 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.46	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.46	0.00 ***
Nonminority female	0.00	14.00	0.00 ***
DBE total	0.00	14.45	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.07	2.77	2.60 ***
Hispanic	0.30	1.22	24.57
Asian/Pacific Islander	0.00	0.82	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.37	4.82	7.71 ***
Nonminority female	8.29	17.53	47.30 ***
DBE total	8.66	22.35	38.76 ***
General Freight Trucking (NAICS 4841)			
African American	8.11	4.72	
Hispanic	0.09	0.73	12.87
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	8.20	5.99	
Nonminority female	64.42	12.78	
DBE total	72.62	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	4.53	0.80	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.24	0.00	
Native American	0.00	0.00	
Minority	4.77	0.80	
Nonminority female	0.35	10.89	3.17 ***
DBE total	5.12	11.69	43.77 **
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	18.58	4.01	
Hispanic	1.76	0.98	
Asian/Pacific Islander	5.22	0.68	
Native American	0.00	0.05	0.00
Minority	25.55	5.72	
Nonminority female	40.91	20.27	
DBE total	66.47	25.99	
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.87	0.00 ***
Hispanic	0.00	0.35	0.00
Asian/Pacific Islander	0.00	0.53	0.00
Native American	0.00	0.07	0.00
Minority	0.00	3.82	0.00 ***
Nonminority female	1.76	17.54	10.01 ***
DBE total	1.76	21.36	8.22 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00 ***
Asian/Pacific Islander	0.00	0.68	0.00 **
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	0.20	17.26	1.19 ***
DBE total	0.20	21.57	0.95 ***
Services to Buildings and Dwellings (NAICS 5617)			
African American	1.65	2.52	65.55
Hispanic	0.00	0.23	0.00 **
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.88	0.23	
Minority	2.53	3.03	83.54
Nonminority female	79.82	17.58	
DBE total	82.34	20.61	
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00 ***
Hispanic	0.00	2.29	0.00 ***
Asian/Pacific Islander	0.00	2.04	0.00 ***
Native American	0.00	0.75	0.00
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00 **
Minority	0.00	3.06	0.00 ***
Nonminority female	61.87	9.70	
DBE total	61.87	12.75	
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	10.55	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 ***
Native American	0.00	0.00	
Minority	10.55	2.61	
Nonminority female	73.32	10.74	
DBE total	83.87	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00 *
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00 *
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.74	2.04	85.23
Hispanic	0.94	0.90	
Asian/Pacific Islander	0.05	2.48	2.15 ***
Native American	2.00	1.33	
Minority	4.73	6.75	70.09
Nonminority female	3.58	17.53	20.41 ***
DBE total	8.31	24.28	34.23 ***
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 ***
Asian/Pacific Islander	0.00	1.34	0.00 ***
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	4.60	10.04	45.83
DBE total	4.60	12.32	37.36 *
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.14	0.00 ***
Hispanic	0.00	1.08	0.00 ***
Asian/Pacific Islander	0.00	1.08	0.00 ***
Native American	0.00	2.08	0.00 ***
Minority	0.00	6.38	0.00 ***
Nonminority female	0.21	22.01	0.95 ***
DBE total	0.21	28.39	0.73 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	6.67	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00 ***
Native American	0.00	0.00	
Minority	6.67	2.30	
Nonminority female	59.18	9.73	
DBE total	65.85	12.03	
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00 ***
Asian/Pacific Islander	0.00	0.98	0.00 ***
Native American	0.00	1.56	0.00 ***
Minority	0.00	3.71	0.00 ***
Nonminority female	5.44	16.26	33.49
DBE total	5.44	19.97	27.27
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	20.69	14.02	
DBE total	20.69	14.92	
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00 ***
Nonminority female	5.36	15.33	35.00
DBE total	5.36	17.34	30.93
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	1.87	0.97	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	1.87	1.46	
Nonminority female	75.31	13.91	
DBE total	77.18	15.37	

Source and Notes: See Table 7.6.

Table AF.3. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (Federally-Assisted Contracts) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.01	0.27	4.84 **
Asian/Pacific Islander	0.04	0.00	
Native American	1.92	1.94	98.95
Minority	1.97	4.44	44.41 **
Nonminority female	3.81	15.15	25.12 ***
DBE total	5.78	19.59	29.49 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	1.47	2.64	55.54
Hispanic	0.49	1.38	35.20
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.58	0.23	
Minority	2.54	4.95	51.27
Nonminority female	35.43	16.87	
DBE total	37.96	21.82	
Utility System Construction (NAICS 2371)			
African American	1.76	1.70	
Hispanic	0.00	0.33	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	2.14	1.51	
Minority	3.90	3.54	
Nonminority female	1.43	20.02	7.15 ***
DBE total	5.33	23.56	22.63 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.30	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.30	0.00
Nonminority female	0.00	13.98	0.00 ***
DBE total	0.00	14.28	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.07	2.77	2.54 ***
Hispanic	0.34	1.22	27.86
Asian/Pacific Islander	0.00	0.83	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.41	4.83	8.50 ***
Nonminority female	9.09	17.53	51.82 ***
DBE total	9.50	22.36	42.47 ***
General Freight Trucking (NAICS 4841)			
African American	10.14	4.72	
Hispanic	0.29	0.73	40.09
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	10.43	5.99	
Nonminority female	55.06	12.78	
DBE total	65.50	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	4.44	0.79	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.25	0.00	
Native American	0.00	0.00	
Minority	4.68	0.79	
Nonminority female	0.37	10.84	3.39 ***
DBE total	5.05	11.63	43.42 **
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.81	0.00 ***
Hispanic	0.00	0.34	0.00 ***
Asian/Pacific Islander	0.00	0.52	0.00 ***
Native American	0.00	0.06	0.00
Minority	0.00	3.73	0.00 ***
Nonminority female	1.88	17.46	10.77 ***
DBE total	1.88	21.19	8.88 ***
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	19.08	4.02	
Hispanic	1.99	0.98	
Asian/Pacific Islander	5.25	0.68	
Native American	0.00	0.05	0.00
Minority	26.32	5.72	
Nonminority female	41.25	20.30	
DBE total	67.57	26.02	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Services to Buildings and Dwellings (NAICS 5617)			
African American	1.83	2.52	72.57
Hispanic	0.00	0.23	0.00 ***
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.95	0.23	
Minority	2.78	3.03	91.89
Nonminority female	80.76	17.58	
DBE total	83.55	20.61	
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00 ***
Asian/Pacific Islander	0.00	0.68	0.00 ***
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	0.16	17.26	0.95 ***
DBE total	0.16	21.57	0.76 ***
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00 ***
Hispanic	0.00	2.29	0.00 ***
Asian/Pacific Islander	0.00	2.04	0.00 ***
Native American	0.00	0.75	0.00 ***
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.79	2.07	86.75
Hispanic	1.45	0.91	
Asian/Pacific Islander	0.05	2.50	2.08 ***
Native American	2.01	1.26	
Minority	5.30	6.73	78.72
Nonminority female	3.44	17.33	19.86 ***
DBE total	8.74	24.06	36.33 ***
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	7.34	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 ***
Native American	0.00	0.00	
Minority	7.34	2.61	
Nonminority female	76.80	10.74	
DBE total	84.15	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00 ***
Minority	0.00	3.06	0.00 ***
Nonminority female	59.49	9.70	
DBE total	59.49	12.75	
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 ***
Asian/Pacific Islander	0.00	1.34	0.00 ***
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	6.17	10.04	61.42
DBE total	6.17	12.32	50.07
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00 ***
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.15	0.00 ***
Hispanic	0.00	1.09	0.00 ***
Asian/Pacific Islander	0.00	1.09	0.00 ***
Native American	0.00	2.09	0.00 ***
Minority	0.00	6.42	0.00 ***
Nonminority female	0.21	22.01	0.97 ***
DBE total	0.21	28.42	0.75 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	5.67	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00 ***
Native American	0.00	0.00	
Minority	5.67	2.30	
Nonminority female	53.80	9.73	
DBE total	59.46	12.03	
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00 ***
Asian/Pacific Islander	0.00	0.98	0.00 ***
Native American	0.00	1.56	0.00 ***
Minority	0.00	3.71	0.00 ***
Nonminority female	5.55	16.26	34.11
DBE total	5.55	19.97	27.77
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	21.48	14.02	
DBE total	21.48	14.92	
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00 ***
Nonminority female	4.99	15.33	32.54
DBE total	4.99	17.34	28.75
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	1.77	0.97	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	1.77	1.46	
Nonminority female	72.46	13.91	
DBE total	74.23	15.37	

Source and Notes: See Table 7.6.

Table AF.4. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (Federally-Assisted Contracts) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.01	0.27	5.15 *
Asian/Pacific Islander	0.04	0.00	
Native American	1.98	1.94	
Minority	2.03	4.44	45.75 **
Nonminority female	3.58	15.15	23.66 ***
DBE total	5.62	19.59	28.66 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	1.35	2.64	51.22
Hispanic	0.31	1.38	22.22 *
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.35	0.23	
Minority	2.01	4.95	40.52 **
Nonminority female	34.24	16.87	
DBE total	36.24	21.82	
Utility System Construction (NAICS 2371)			
African American	1.65	1.71	96.85
Hispanic	0.00	0.32	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	2.15	1.52	
Minority	3.81	3.54	
Nonminority female	1.46	20.02	7.31 ***
DBE total	5.27	23.57	22.36 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.31	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.31	0.00
Nonminority female	0.00	14.01	0.00 ***
DBE total	0.00	14.32	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.07	2.77	2.57 ***
Hispanic	0.31	1.22	25.28
Asian/Pacific Islander	0.00	0.83	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.38	4.83	7.87 ***
Nonminority female	8.53	17.53	48.67 ***
DBE total	8.91	22.36	39.86 ***
General Freight Trucking (NAICS 4841)			
African American	8.15	4.72	
Hispanic	0.09	0.73	12.93
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	8.24	5.99	
Nonminority female	64.72	12.78	
DBE total	72.96	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	4.57	0.80	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.25	0.00	
Native American	0.00	0.00	
Minority	4.81	0.80	
Nonminority female	0.35	10.88	3.18 ***
DBE total	5.16	11.69	44.14 **
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	18.58	4.01	
Hispanic	1.76	0.98	
Asian/Pacific Islander	5.22	0.68	
Native American	0.00	0.05	0.00
Minority	25.56	5.72	
Nonminority female	40.91	20.27	
DBE total	66.46	25.99	
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.87	0.00 ***
Hispanic	0.00	0.35	0.00 *
Asian/Pacific Islander	0.00	0.53	0.00 *
Native American	0.00	0.07	0.00
Minority	0.00	3.82	0.00 ***
Nonminority female	1.76	17.54	10.03 ***
DBE total	1.76	21.36	8.23 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00 ***
Asian/Pacific Islander	0.00	0.68	0.00 **
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	0.21	17.26	1.19 ***
DBE total	0.21	21.57	0.95 ***
Services to Buildings and Dwellings (NAICS 5617)			
African American	1.68	2.52	66.56
Hispanic	0.00	0.23	0.00 *
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.89	0.23	
Minority	2.57	3.03	84.82
Nonminority female	80.93	17.58	
DBE total	83.50	20.61	
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00 ***
Hispanic	0.00	2.29	0.00 ***
Asian/Pacific Islander	0.00	2.04	0.00 ***
Native American	0.00	0.75	0.00
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00 **
Minority	0.00	3.06	0.00 ***
Nonminority female	61.90	9.70	
DBE total	61.90	12.75	
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	10.60	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 ***
Native American	0.00	0.00	
Minority	10.60	2.61	
Nonminority female	73.42	10.74	
DBE total	84.02	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.74	2.04	85.10
Hispanic	0.94	0.90	
Asian/Pacific Islander	0.05	2.48	2.16 ***
Native American	2.00	1.33	
Minority	4.73	6.75	70.06
Nonminority female	3.58	17.53	20.41 ***
DBE total	8.31	24.28	34.22 ***
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 ***
Asian/Pacific Islander	0.00	1.34	0.00 ***
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	4.61	10.04	45.91
DBE total	4.61	12.32	37.43 *
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00 ***
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	6.93	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00
Native American	0.00	0.00	
Minority	6.93	2.30	
Nonminority female	61.47	9.73	
DBE total	68.40	12.03	
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.14	0.00 ***
Hispanic	0.00	1.08	0.00 ***
Asian/Pacific Islander	0.00	1.08	0.00 ***
Native American	0.00	2.07	0.00 ***
Minority	0.00	6.37	0.00 ***
Nonminority female	0.24	22.01	1.09 ***
DBE total	0.24	28.38	0.84 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00 ***
Asian/Pacific Islander	0.00	0.98	0.00 ***
Native American	0.00	1.56	0.00 ***
Minority	0.00	3.71	0.00 ***
Nonminority female	5.48	16.26	33.68
DBE total	5.48	19.97	27.42
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	20.92	14.02	
DBE total	20.92	14.92	
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00 ***
Nonminority female	5.37	15.33	35.04
DBE total	5.37	17.34	30.96
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	2.06	0.97	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	2.06	1.46	
Nonminority female	73.94	13.91	
DBE total	75.99	15.37	

Source and Notes: See Table 7.6.

Table AF.5. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (Federally-Assisted Contracts) (MoDOT Directly Let) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.01	0.27	3.42 **
Asian/Pacific Islander	0.04	0.00	
Native American	1.82	1.94	93.94
Minority	1.87	4.44	42.23 ***
Nonminority female	3.43	15.15	22.62 ***
DBE total	5.30	19.59	27.06 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	1.26	2.64	47.66
Hispanic	0.06	1.38	4.60 ***
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.61	0.23	
Minority	1.93	4.95	39.07 *
Nonminority female	39.81	16.87	
DBE total	41.74	21.82	
Utility System Construction (NAICS 2371)			
African American	1.44	1.70	84.67
Hispanic	0.00	0.33	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	1.13	1.51	74.58
Minority	2.56	3.54	72.38
Nonminority female	1.55	20.02	7.75 ***
DBE total	4.12	23.56	17.47 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.30	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.30	0.00
Nonminority female	0.00	13.98	0.00 ***
DBE total	0.00	14.28	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.00	2.77	0.00 ***
Hispanic	0.47	1.22	38.69
Asian/Pacific Islander	0.00	0.83	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.47	4.83	9.78 ***
Nonminority female	9.92	17.53	56.57 *
DBE total	10.39	22.36	46.47 ***
General Freight Trucking (NAICS 4841)			
African American	9.33	4.72	
Hispanic	0.27	0.73	36.98
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	9.60	5.99	
Nonminority female	54.89	12.78	
DBE total	64.49	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	0.69	0.79	86.32
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.69	0.79	86.32
Nonminority female	0.20	10.84	1.80 ***
DBE total	0.88	11.63	7.58 ***
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.81	0.00 ***
Hispanic	0.00	0.34	0.00
Asian/Pacific Islander	0.00	0.52	0.00 ***
Native American	0.00	0.06	0.00
Minority	0.00	3.73	0.00 ***
Nonminority female	1.89	17.46	10.82 ***
DBE total	1.89	21.19	8.91 ***
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	20.09	4.02	
Hispanic	2.70	0.98	
Asian/Pacific Islander	3.72	0.68	
Native American	0.00	0.05	0.00
Minority	26.51	5.72	
Nonminority female	46.66	20.30	
DBE total	73.17	26.02	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Services to Buildings and Dwellings (NAICS 5617)			
African American	0.53	2.52	21.11
Hispanic	0.00	0.23	0.00 ***
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.23	0.00 ***
Minority	0.53	3.03	17.58 *
Nonminority female	84.57	17.58	
DBE total	85.10	20.61	
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00 ***
Asian/Pacific Islander	0.00	0.68	0.00 ***
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	0.00	17.26	0.00 ***
DBE total	0.00	21.57	0.00 ***
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00 ***
Hispanic	0.00	2.29	0.00 ***
Asian/Pacific Islander	0.00	2.04	0.00 ***
Native American	0.00	0.75	0.00
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.41	2.07	68.47
Hispanic	0.00	0.91	0.00 ***
Asian/Pacific Islander	0.06	2.50	2.60 ***
Native American	2.50	1.26	
Minority	3.98	6.73	59.11
Nonminority female	2.86	17.33	16.49 ***
DBE total	6.84	24.06	28.42 ***
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	7.66	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 ***
Native American	0.00	0.00	
Minority	7.66	2.61	
Nonminority female	90.63	10.74	
DBE total	98.29	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00 ***
Minority	0.00	3.06	0.00 ***
Nonminority female	58.88	9.70	
DBE total	58.88	12.75	
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 ***
Asian/Pacific Islander	0.00	1.34	0.00 ***
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	1.97	10.04	19.57
DBE total	1.97	12.32	15.95 **
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00 ***
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.15	0.00 ***
Hispanic	0.00	1.09	0.00 ***
Asian/Pacific Islander	0.00	1.09	0.00 ***
Native American	0.00	2.09	0.00 ***
Minority	0.00	6.42	0.00 ***
Nonminority female	0.00	22.01	0.00 ***
DBE total	0.00	28.42	0.00 ***
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	4.67	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00 ***
Native American	0.00	0.00	
Minority	4.67	2.30	
Nonminority female	61.69	9.73	
DBE total	66.36	12.03	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00 ***
Asian/Pacific Islander	0.00	0.98	0.00 ***
Native American	0.00	1.56	0.00 ***
Minority	0.00	3.71	0.00 ***
Nonminority female	4.28	16.26	26.31
DBE total	4.28	19.97	21.43
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	0.23	14.02	1.62 *
DBE total	0.23	14.92	1.52 *
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00 ***
Nonminority female	1.88	15.33	12.30
DBE total	1.88	17.34	10.86
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	0.00	0.97	0.00 ***
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	0.00	1.46	0.00 ***
Nonminority female	74.30	13.91	
DBE total	74.30	15.37	

Source and Notes: See Table 7.6.

Table AF.6. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (Federally-Assisted Contracts) (MoDOT Directly Let) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.01	0.27	3.68 **
Asian/Pacific Islander	0.04	0.00	
Native American	1.87	1.94	96.31
Minority	1.92	4.44	43.27 ***
Nonminority female	3.24	15.15	21.41 ***
DBE total	5.16	19.59	26.36 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	1.18	2.64	44.69
Hispanic	0.06	1.38	4.11 ***
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.32	0.23	
Minority	1.56	4.95	31.52 **
Nonminority female	38.69	16.87	
DBE total	40.25	21.82	
Utility System Construction (NAICS 2371)			
African American	1.26	1.71	74.14
Hispanic	0.00	0.32	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	1.25	1.52	82.67
Minority	2.52	3.54	71.03
Nonminority female	1.58	20.02	7.89 ***
DBE total	4.10	23.57	17.39 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.31	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.31	0.00
Nonminority female	0.00	14.01	0.00 ***
DBE total	0.00	14.32	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.00	2.77	0.00 ***
Hispanic	0.43	1.22	35.23
Asian/Pacific Islander	0.00	0.83	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.43	4.83	8.90 ***
Nonminority female	9.41	17.53	53.69 **
DBE total	9.84	22.36	44.02 ***
General Freight Trucking (NAICS 4841)			
African American	7.44	4.72	
Hispanic	0.07	0.73	9.14
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	7.50	5.99	
Nonminority female	64.81	12.78	
DBE total	72.32	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	0.51	0.80	63.65
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.51	0.80	63.65
Nonminority female	0.17	10.88	1.55 ***
DBE total	0.68	11.69	5.82 ***
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	19.49	4.01	
Hispanic	2.43	0.98	
Asian/Pacific Islander	3.71	0.68	
Native American	0.00	0.05	0.00
Minority	25.64	5.72	
Nonminority female	46.34	20.27	
DBE total	71.98	25.99	
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.87	0.00 ***
Hispanic	0.00	0.35	0.00
Asian/Pacific Islander	0.00	0.53	0.00 *
Native American	0.00	0.07	0.00
Minority	0.00	3.82	0.00 ***
Nonminority female	1.77	17.54	10.10 ***
DBE total	1.77	21.36	8.29 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00 ***
Asian/Pacific Islander	0.00	0.68	0.00 **
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	0.00	17.26	0.00 ***
DBE total	0.00	21.57	0.00 ***
Services to Buildings and Dwellings (NAICS 5617)			
African American	0.21	2.52	8.23 **
Hispanic	0.00	0.23	0.00 **
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.23	0.00 **
Minority	0.21	3.03	6.86 ***
Nonminority female	84.56	17.58	
DBE total	84.77	20.61	
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00 ***
Hispanic	0.00	2.29	0.00
Asian/Pacific Islander	0.00	2.04	0.00
Native American	0.00	0.75	0.00
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00 **
Minority	0.00	3.06	0.00 ***
Nonminority female	62.05	9.70	
DBE total	62.05	12.75	
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	11.95	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 **
Native American	0.00	0.00	
Minority	11.95	2.61	
Nonminority female	86.33	10.74	
DBE total	98.28	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.40	2.04	68.53
Hispanic	0.00	0.90	0.00 ***
Asian/Pacific Islander	0.07	2.48	2.70 ***
Native American	2.51	1.33	
Minority	3.98	6.75	58.87
Nonminority female	3.13	17.53	17.84 ***
DBE total	7.10	24.28	29.25 ***
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 ***
Asian/Pacific Islander	0.00	1.34	0.00 ***
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	3.29	10.04	32.73
DBE total	3.29	12.32	26.68 *
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00 ***
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	6.07	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00
Native American	0.00	0.00	
Minority	6.07	2.30	
Nonminority female	68.82	9.73	
DBE total	74.89	12.03	
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.14	0.00 ***
Hispanic	0.00	1.08	0.00 ***
Asian/Pacific Islander	0.00	1.08	0.00 ***
Native American	0.00	2.07	0.00 ***
Minority	0.00	6.37	0.00 ***
Nonminority female	0.00	22.01	0.00 ***
DBE total	0.00	28.38	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00 ***
Asian/Pacific Islander	0.00	0.98	0.00 ***
Native American	0.00	1.56	0.00 ***
Minority	0.00	3.71	0.00 ***
Nonminority female	4.21	16.26	25.87
DBE total	4.21	19.97	21.07
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	0.22	14.02	1.54 *
DBE total	0.22	14.92	1.45 *
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00 ***
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00 ***
Nonminority female	2.28	15.33	14.88
DBE total	2.28	17.34	13.15
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	0.00	0.97	0.00 **
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	0.00	1.46	0.00 **
Nonminority female	76.07	13.91	
DBE total	76.07	15.37	

Source and Notes: See Table 7.6.

Table AF.7. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (Federally-Assisted Contracts) (Subrecipients) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.04	0.27	16.52
Asian/Pacific Islander	0.00	0.00	
Native American	2.72	1.94	
Minority	2.76	4.44	62.26
Nonminority female	6.92	15.15	45.69 ***
DBE total	9.69	19.59	49.45 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	2.54	2.64	96.16
Hispanic	2.66	1.38	
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.45	0.23	
Minority	5.65	4.95	
Nonminority female	12.86	16.87	76.19
DBE total	18.50	21.82	84.80
Utility System Construction (NAICS 2371)			
African American	5.13	1.70	
Hispanic	0.00	0.33	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	12.69	1.51	
Minority	17.82	3.54	
Nonminority female	0.17	20.02	0.83 ***
DBE total	17.99	23.56	76.34
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.30	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.30	0.00
Nonminority female	0.00	13.98	0.00 ***
DBE total	0.00	14.28	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.25	2.77	9.07 ***
Hispanic	0.00	1.22	0.00 ***
Asian/Pacific Islander	0.00	0.83	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.25	4.83	5.21 ***
Nonminority female	6.94	17.53	39.59 ***
DBE total	7.19	22.36	32.17 ***
General Freight Trucking (NAICS 4841)			
African American	22.31	4.72	
Hispanic	0.63	0.73	86.65
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	22.93	5.99	
Nonminority female	57.61	12.78	
DBE total	80.55	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	14.14	0.79	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.88	0.00	
Native American	0.00	0.00	
Minority	15.03	0.79	
Nonminority female	0.81	10.84	7.49 ***
DBE total	15.84	11.63	
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.81	0.00 ***
Hispanic	0.00	0.34	0.00
Asian/Pacific Islander	0.00	0.52	0.00
Native American	0.00	0.06	0.00
Minority	0.00	3.73	0.00 ***
Nonminority female	1.86	17.46	10.65 **
DBE total	1.86	21.19	8.77 ***
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	16.22	4.02	
Hispanic	0.00	0.98	0.00 ***
Asian/Pacific Islander	9.54	0.68	
Native American	0.00	0.05	0.00
Minority	25.76	5.72	
Nonminority female	26.01	20.30	
DBE total	51.78	26.02	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Services to Buildings and Dwellings (NAICS 5617)			
African American	8.66	2.52	
Hispanic	0.00	0.23	0.00
Asian/Pacific Islander	0.00	0.05	0.00
Native American	5.96	0.23	
Minority	14.61	3.03	
Nonminority female	60.76	17.58	
DBE total	75.37	20.61	
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00
Asian/Pacific Islander	0.00	0.68	0.00
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	2.50	17.26	14.50
DBE total	2.50	21.57	11.61 **
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00
Hispanic	0.00	2.29	0.00
Asian/Pacific Islander	0.00	2.04	0.00
Native American	0.00	0.75	0.00
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	3.33	2.07	
Hispanic	7.35	0.91	
Asian/Pacific Islander	0.00	2.50	0.00 ***
Native American	0.00	1.26	0.00 ***
Minority	10.67	6.73	
Nonminority female	5.81	17.33	33.54 ***
DBE total	16.49	24.06	68.52 ***
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	6.34	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 ***
Native American	0.00	0.00	
Minority	6.34	2.61	
Nonminority female	32.64	10.74	
DBE total	38.97	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00
Minority	0.00	3.06	0.00 ***
Nonminority female	62.45	9.70	
DBE total	62.45	12.75	
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 ***
Asian/Pacific Islander	0.00	1.34	0.00 ***
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	16.53	10.04	
DBE total	16.53	12.32	
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.15	0.00 ***
Hispanic	0.00	1.09	0.00
Asian/Pacific Islander	0.00	1.09	0.00
Native American	0.00	2.09	0.00 ***
Minority	0.00	6.42	0.00 ***
Nonminority female	2.17	22.01	9.85 ***
DBE total	2.17	28.42	7.63 ***
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	12.50	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00
Native American	0.00	0.00	
Minority	12.50	2.30	
Nonminority female	0.00	9.73	0.00 ***
DBE total	12.50	12.03	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00
Asian/Pacific Islander	0.00	0.98	0.00
Native American	0.00	1.56	0.00
Minority	0.00	3.71	0.00
Nonminority female	21.93	16.26	
DBE total	21.93	19.97	
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	91.26	14.02	
DBE total	91.26	14.92	
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00
Nonminority female	61.16	15.33	
DBE total	61.16	17.34	
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	60.36	0.97	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	60.36	1.46	
Nonminority female	11.63	13.91	83.57
DBE total	71.99	15.37	

Source and Notes: See Table 7.6.

Table AF.8. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (Federally-Assisted Contracts) (Subrecipients) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.05	0.27	17.45
Asian/Pacific Islander	0.00	0.00	
Native American	2.91	1.94	
Minority	2.95	4.44	66.56
Nonminority female	6.44	15.15	42.53 ***
DBE total	9.40	19.59	47.97 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	2.23	2.64	84.36
Hispanic	1.57	1.38	
Asian/Pacific Islander	0.00	0.70	0.00 ***
Native American	0.46	0.23	
Minority	4.27	4.95	86.18
Nonminority female	11.62	16.87	68.88
DBE total	15.89	21.82	72.81
Utility System Construction (NAICS 2371)			
African American	5.92	1.71	
Hispanic	0.00	0.32	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	12.08	1.52	
Minority	18.01	3.54	
Nonminority female	0.18	20.02	0.88 ***
DBE total	18.18	23.57	77.15
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	0.31	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.31	0.00
Nonminority female	0.00	14.01	0.00 ***
DBE total	0.00	14.32	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.25	2.77	9.12 ***
Hispanic	0.00	1.22	0.00 ***
Asian/Pacific Islander	0.00	0.83	0.00 ***
Native American	0.00	0.01	0.00
Minority	0.25	4.83	5.24 ***
Nonminority female	6.30	17.53	35.91 ***
DBE total	6.55	22.36	29.29 ***
General Freight Trucking (NAICS 4841)			
African American	20.08	4.72	
Hispanic	0.56	0.73	76.44
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00 ***
Minority	20.63	5.99	
Nonminority female	63.13	12.78	
DBE total	83.76	18.77	
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	14.69	0.80	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.86	0.00	
Native American	0.00	0.00	
Minority	15.55	0.80	
Nonminority female	0.79	10.88	7.25 ***
DBE total	16.34	11.69	
Foundation, Structure, and Building Exterior Contractors (NAICS 2381)			
African American	16.20	4.01	
Hispanic	0.00	0.98	0.00 **
Asian/Pacific Islander	9.14	0.68	
Native American	0.00	0.05	0.00
Minority	25.34	5.72	
Nonminority female	26.77	20.27	
DBE total	52.10	25.99	
Nonresidential Building Construction (NAICS 2362)			
African American	0.00	2.87	0.00 *
Hispanic	0.00	0.35	0.00
Asian/Pacific Islander	0.00	0.53	0.00
Native American	0.00	0.07	0.00
Minority	0.00	3.82	0.00 ***
Nonminority female	1.73	17.54	9.86 **
DBE total	1.73	21.36	8.10 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Finishing Contractors (NAICS 2383)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.13	0.00
Asian/Pacific Islander	0.00	0.68	0.00
Native American	0.00	0.22	0.00
Minority	0.00	4.30	0.00 ***
Nonminority female	2.97	17.26	17.19
DBE total	2.97	21.57	13.76 **
Services to Buildings and Dwellings (NAICS 5617)			
African American	9.05	2.52	
Hispanic	0.00	0.23	0.00
Asian/Pacific Islander	0.00	0.05	0.00
Native American	5.35	0.23	
Minority	14.40	3.03	
Nonminority female	62.75	17.58	
DBE total	77.15	20.61	
Other Heavy and Civil Engineering Construction (NAICS 2379)			
African American	0.00	2.55	0.00
Hispanic	0.00	2.29	0.00
Asian/Pacific Islander	0.00	2.04	0.00
Native American	0.00	0.75	0.00
Minority	0.00	7.63	0.00 ***
Nonminority female	0.00	13.51	0.00 ***
DBE total	0.00	21.14	0.00 ***
Metal and Mineral (except Petroleum) Merchant Wholesalers (NAICS 4235)			
African American	0.00	0.00	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	2.72	0.00 ***
Native American	0.00	0.34	0.00
Minority	0.00	3.06	0.00 ***
Nonminority female	61.13	9.70	
DBE total	61.13	12.75	
Electrical and Electronic Goods Merchant Wholesalers (NAICS 4236)			
African American	6.35	1.32	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.28	0.00 ***
Native American	0.00	0.00	
Minority	6.35	2.61	
Nonminority female	32.78	10.74	
DBE total	39.13	13.35	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	3.07	2.04	
Hispanic	4.64	0.90	
Asian/Pacific Islander	0.00	2.48	0.00 ***
Native American	0.00	1.33	0.00 ***
Minority	7.71	6.75	
Nonminority female	5.36	17.53	30.56 ***
DBE total	13.07	24.28	53.83 ***
Lumber and Other Construction Materials Merchant Wholesalers (NAICS 4233)			
African American	0.00	0.00	
Hispanic	0.00	0.93	0.00 **
Asian/Pacific Islander	0.00	1.34	0.00 **
Native American	0.00	0.00	
Minority	0.00	2.28	0.00 ***
Nonminority female	8.12	10.04	80.84
DBE total	8.12	12.32	65.90
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	14.12	0.47	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00
Native American	0.00	0.00	
Minority	14.12	2.30	
Nonminority female	0.00	9.73	0.00 ***
DBE total	14.12	12.03	
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.14	0.00 ***
Hispanic	0.00	1.08	0.00
Asian/Pacific Islander	0.00	1.08	0.00
Native American	0.00	2.07	0.00 ***
Minority	0.00	6.37	0.00 ***
Nonminority female	2.27	22.01	10.29 ***
DBE total	2.27	28.38	7.98 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural and Structural Metals Manufacturing (NAICS 3323)			
African American	0.00	0.00	
Hispanic	0.00	1.17	0.00
Asian/Pacific Islander	0.00	0.98	0.00
Native American	0.00	1.56	0.00
Minority	0.00	3.71	0.00
Nonminority female	21.90	16.26	
DBE total	21.90	19.97	
Building Material and Supplies Dealers (NAICS 4441)			
African American	0.00	0.90	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.90	0.00
Nonminority female	98.65	14.02	
DBE total	98.65	14.92	
Agencies, Brokerages, and Other Insurance Related Activities (NAICS 5242)			
African American	0.00	1.97	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.00	
Minority	0.00	2.02	0.00
Nonminority female	61.33	15.33	
DBE total	61.33	17.34	
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	61.67	0.97	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	61.67	1.46	
Nonminority female	12.14	13.91	87.25
DBE total	73.81	15.37	

Source and Notes: See Table 7.6.

Table AF.9. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (State-Funded Contracts) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.00	0.27	0.00 ***
Asian/Pacific Islander	0.00	0.00	
Native American	0.70	1.94	35.91
Minority	0.70	4.44	15.71 *
Nonminority female	7.25	15.15	47.83 *
DBE total	7.94	19.59	40.55 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	1.84	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	1.84	0.00
Nonminority female	0.00	13.90	0.00 ***
DBE total	0.00	15.74	0.00 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	0.00	2.30	0.00 ***
Hispanic	0.00	1.25	0.00 ***
Asian/Pacific Islander	0.00	0.71	0.00
Native American	0.18	0.11	
Minority	0.18	4.37	4.03
Nonminority female	4.06	16.84	24.09
DBE total	4.23	21.21	19.96 *
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00
Nonminority female	0.00	8.05	0.00 ***
DBE total	0.00	11.26	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.06	2.71	2.05 *
Hispanic	0.00	1.19	0.00
Asian/Pacific Islander	0.00	0.75	0.00
Native American	0.00	0.03	0.00
Minority	0.06	4.68	1.19 ***
Nonminority female	0.00	17.31	0.00 ***
DBE total	0.06	21.99	0.25 ***
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.28	0.00 ***
Hispanic	0.00	1.16	0.00 ***
Asian/Pacific Islander	0.00	1.16	0.00 ***
Native American	0.00	2.17	0.00 ***
Minority	0.00	6.78	0.00 ***
Nonminority female	0.00	21.99	0.00 ***
DBE total	0.00	28.77	0.00 ***
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	0.00	0.47	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00
Native American	0.00	0.00	
Minority	0.00	2.30	0.00
Nonminority female	0.00	9.73	0.00 ***
DBE total	0.00	12.03	0.00 ***
Services to Buildings and Dwellings (NAICS 5617)			
African American	0.00	2.52	0.00
Hispanic	0.00	0.23	0.00
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.23	0.00
Minority	0.00	3.03	0.00
Nonminority female	9.97	17.58	56.72
DBE total	9.97	20.61	48.39
Other General Purpose Machinery Manufacturing (NAICS 3339)			
African American	0.00	1.32	0.00
Hispanic	0.00	3.86	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	1.93	0.00
Minority	0.00	7.11	0.00 ***
Nonminority female	0.00	8.71	0.00 ***
DBE total	0.00	15.82	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	0.00	0.51	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.51	0.00
Nonminority female	0.24	11.37	2.13 ***
DBE total	0.24	11.88	2.04 ***
General Freight Trucking (NAICS 4841)			
African American	0.33	4.72	7.05 *
Hispanic	0.00	0.73	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00
Minority	0.33	5.99	5.56 *
Nonminority female	7.36	12.78	57.61
DBE total	7.69	18.77	40.99

Source and Notes: See Table 7.6.

Table AF.10. Industry Group Utilization, Availability, and Disparity Results for MoDOT Construction Contracting (State-Funded Contracts) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Highway, Street, and Bridge Construction (NAICS 2373)			
African American	0.00	2.23	0.00 ***
Hispanic	0.00	0.27	0.00 **
Asian/Pacific Islander	0.00	0.00	
Native American	0.71	1.94	36.33
Minority	0.71	4.44	15.89 *
Nonminority female	6.83	15.15	45.07 *
DBE total	7.54	19.59	38.46 **
Nonmetallic Mineral Mining and Quarrying (NAICS 2123)			
African American	0.00	1.75	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	1.75	0.00
Nonminority female	0.00	13.87	0.00 ***
DBE total	0.00	15.62	0.00 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	0.00	2.30	0.00 ***
Hispanic	0.00	1.25	0.00 *
Asian/Pacific Islander	0.00	0.71	0.00
Native American	0.15	0.11	
Minority	0.15	4.37	3.46
Nonminority female	5.33	16.84	31.64
DBE total	5.48	21.21	25.83
Petroleum and Coal Products Manufacturing (NAICS 3241)			
African American	0.00	3.21	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	3.21	0.00
Nonminority female	0.00	8.05	0.00
DBE total	0.00	11.26	0.00

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	0.10	2.71	3.52
Hispanic	0.00	1.19	0.00
Asian/Pacific Islander	0.00	0.75	0.00
Native American	0.00	0.03	0.00
Minority	0.10	4.68	2.04 **
Nonminority female	0.00	17.32	0.00 ***
DBE total	0.10	21.99	0.43 ***
Commercial and Industrial Machinery and Equipment Rental and Leasing (NAICS 5324)			
African American	0.00	2.16	0.00 ***
Hispanic	0.00	1.09	0.00 ***
Asian/Pacific Islander	0.00	1.09	0.00 ***
Native American	0.00	2.09	0.00 ***
Minority	0.00	6.43	0.00 ***
Nonminority female	0.00	22.01	0.00 ***
DBE total	0.00	28.44	0.00 ***
Services to Buildings and Dwellings (NAICS 5617)			
African American	0.00	2.52	0.00
Hispanic	0.00	0.23	0.00
Asian/Pacific Islander	0.00	0.05	0.00
Native American	0.00	0.23	0.00
Minority	0.00	3.03	0.00
Nonminority female	7.19	17.58	40.91
DBE total	7.19	20.61	34.90
Petroleum and Petroleum Products Merchant Wholesalers (NAICS 4247)			
African American	0.00	0.47	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	1.83	0.00
Native American	0.00	0.00	
Minority	0.00	2.30	0.00
Nonminority female	0.00	9.73	0.00
DBE total	0.00	12.03	0.00
Cement and Concrete Product Manufacturing (NAICS 3273)			
African American	0.00	0.51	0.00
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	0.00	0.51	0.00
Nonminority female	0.24	11.37	2.14 ***
DBE total	0.24	11.88	2.05 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
General Freight Trucking (NAICS 4841)			
African American	0.33	4.72	7.05 *
Hispanic	0.00	0.73	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.54	0.00
Minority	0.33	5.99	5.56 *
Nonminority female	7.36	12.78	57.61
DBE total	7.69	18.77	40.99
Other General Purpose Machinery Manufacturing (NAICS 3339)			
African American	0.00	1.32	0.00
Hispanic	0.00	3.86	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	1.93	0.00
Minority	0.00	7.11	0.00 ***
Nonminority female	0.00	8.71	0.00 ***
DBE total	0.00	15.82	0.00 ***

Source and Notes: See Table 7.6.

Table AF.11. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (All Funds) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	2.63	2.31	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	2.77	2.64	
Native American	0.23	0.54	42.30
Minority	5.63	6.51	86.47
Nonminority female	6.56	15.36	42.68 ***
DBE total	12.19	21.87	55.71 ***
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00 ***
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00 ***
Native American	0.00	0.00	
Minority	0.00	6.06	0.00 ***
Nonminority female	7.15	17.53	40.78
DBE total	7.15	23.59	30.31
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00 ***
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	38.23	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	38.23	5.38	
Nonminority female	36.88	27.45	
DBE total	75.12	32.83	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Building Equipment Contractors (NAICS 2382)			
African American	98.35	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	98.35	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	98.35	22.47	
Management, Scientific, and Technical Consulting Services (NAICS 5416)			
African American	17.88	3.27	
Hispanic	0.00	0.81	0.00
Asian/Pacific Islander	0.00	1.73	0.00 ***
Native American	0.00	0.12	0.00
Minority	17.88	5.94	
Nonminority female	1.69	17.78	9.53 **
DBE total	19.57	23.72	82.52
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Computer Systems Design and Related Services (NAICS 5415)			
African American	0.00	4.61	0.00
Hispanic	0.00	1.38	0.00
Asian/Pacific Islander	0.00	3.61	0.00
Native American	0.00	0.26	0.00
Minority	0.00	9.86	0.00 ***
Nonminority female	20.84	16.43	
DBE total	20.84	26.29	79.26
Utility System Construction (NAICS 2371)			
African American	0.00	1.76	0.00 ***
Hispanic	0.00	0.24	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	1.55	0.00 ***
Minority	0.00	3.55	0.00 ***
Nonminority female	0.00	20.05	0.00 ***
DBE total	0.00	23.61	0.00 ***

Source and Notes: See Table 7.6.

Table AF.12. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (All Funds) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	2.59	2.31	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	2.54	2.63	96.56
Native American	0.20	0.54	37.45
Minority	5.34	6.51	81.99
Nonminority female	6.40	15.39	41.56 ***
DBE total	11.73	21.90	53.58 ***
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00 ***
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00 ***
Native American	0.00	0.00	
Minority	0.00	6.06	0.00 ***
Nonminority female	6.41	17.53	36.56
DBE total	6.41	23.59	27.17
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00 ***
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	46.89	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	46.89	5.38	
Nonminority female	30.42	27.45	
DBE total	77.31	32.83	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Management, Scientific, and Technical Consulting Services (NAICS 5416)			
African American	14.13	3.18	
Hispanic	0.00	0.90	0.00
Asian/Pacific Islander	0.00	1.88	0.00 ***
Native American	0.00	0.18	0.00
Minority	14.13	6.15	
Nonminority female	1.72	17.73	9.70 **
DBE total	15.85	23.88	66.36
Building Equipment Contractors (NAICS 2382)			
African American	98.11	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	98.11	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	98.11	22.47	
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	0.00	0.97	0.00 *
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	0.00	1.46	0.00 *
Nonminority female	0.00	13.91	0.00 ***
DBE total	0.00	15.37	0.00 ***

Source and Notes: See Table 7.6.

Table AF.13. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (Federally-Assisted Contracts) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	2.90	2.30	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	3.55	2.63	
Native American	0.32	0.54	59.17
Minority	6.77	6.51	
Nonminority female	5.60	15.37	36.40 ***
DBE total	12.37	21.88	56.51 **
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00 ***
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	40.42	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	40.42	5.38	
Nonminority female	38.99	27.45	
DBE total	79.41	32.83	
Building Equipment Contractors (NAICS 2382)			
African American	97.94	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	97.94	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	97.94	22.47	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00 ***
Native American	0.00	0.00	
Minority	0.00	6.06	0.00 ***
Nonminority female	91.76	17.53	
DBE total	91.76	23.59	

Source and Notes: See Table 7.6.

Table AF.14. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (Federally-Assisted Contracts) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	2.83	2.30	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	3.09	2.63	
Native American	0.28	0.55	50.66
Minority	6.20	6.51	95.22
Nonminority female	5.09	15.40	33.05 ***
DBE total	11.29	21.91	51.52 ***
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00 ***
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	50.01	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	50.01	5.38	
Nonminority female	32.45	27.45	
DBE total	82.47	32.83	
Building Equipment Contractors (NAICS 2382)			
African American	97.56	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	97.56	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	97.56	22.47	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00 ***
Native American	0.00	0.00	
Minority	0.00	6.06	0.00 ***
Nonminority female	83.27	17.53	
DBE total	83.27	23.59	

Source and Notes: See Table 7.6.

Table AF.15. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (Federally-Assisted Contracts) (MoDOT Directly Let) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	2.72	2.30	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	3.80	2.63	
Native American	0.37	0.54	68.53
Minority	6.89	6.51	
Nonminority female	4.67	15.37	30.37 ***
DBE total	11.56	21.88	52.83 **
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00 ***
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	32.12	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	32.12	5.38	
Nonminority female	43.71	27.45	
DBE total	75.83	32.83	
Building Equipment Contractors (NAICS 2382)			
African American	97.21	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	97.21	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	97.21	22.47	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00
Native American	0.00	0.00	
Minority	0.00	6.06	0.00
Nonminority female	98.67	17.53	
DBE total	98.67	23.59	

Source and Notes: See Table 7.6.

Table AF.16. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (Federally-Assisted Contracts) (MoDOT Directly Let) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	2.60	2.30	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	3.29	2.63	
Native American	0.32	0.55	57.35
Minority	6.21	6.51	95.33
Nonminority female	4.14	15.40	26.86 ***
DBE total	10.34	21.91	47.20 **
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00 ***
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	41.79	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	41.79	5.38	
Nonminority female	37.16	27.45	
DBE total	78.95	32.83	
Building Equipment Contractors (NAICS 2382)			
African American	96.61	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	96.61	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	96.61	22.47	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00
Native American	0.00	0.00	
Minority	0.00	6.06	0.00
Nonminority female	98.46	17.53	
DBE total	98.46	23.59	

Source and Notes: See Table 7.6.

Table AF.17. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (Federally-Assisted Contracts) (Subrecipients) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	3.58	2.30	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	2.61	2.63	99.09
Native American	0.13	0.54	24.93
Minority	6.32	6.51	97.18
Nonminority female	8.99	15.37	58.48 ***
DBE total	15.31	21.88	69.99 **
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	74.52	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	74.52	5.38	
Nonminority female	19.60	27.45	71.41
DBE total	94.12	32.83	
Building Equipment Contractors (NAICS 2382)			
African American	99.59	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	99.59	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	99.59	22.47	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00
Native American	0.00	0.00	
Minority	0.00	6.06	0.00 ***
Nonminority female	41.05	17.53	
DBE total	41.05	23.59	

Source and Notes: See Table 7.6.

Table AF.18. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (Federally-Assisted Contracts) (Subrecipients) (Dollars Paid)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	3.64	2.30	
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	2.38	2.63	90.58
Native American	0.15	0.55	26.49
Minority	6.17	6.51	94.82
Nonminority female	8.54	15.40	55.42 ***
DBE total	14.71	21.91	67.13 ***
Office Administrative Services (NAICS 5611)			
African American	100.00	3.18	
Hispanic	0.00	0.00	
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.00	
Minority	100.00	3.18	
Nonminority female	0.00	17.72	0.00
DBE total	100.00	20.90	
Advertising, Public Relations, and Related Services (NAICS 5418)			
African American	76.51	3.44	
Hispanic	0.00	0.52	0.00
Asian/Pacific Islander	0.00	1.41	0.00
Native American	0.00	0.00	
Minority	76.51	5.38	
Nonminority female	17.28	27.45	62.95
DBE total	93.79	32.83	
Building Equipment Contractors (NAICS 2382)			
African American	99.55	2.79	
Hispanic	0.00	1.23	0.00 ***
Asian/Pacific Islander	0.00	0.85	0.00 ***
Native American	0.00	0.00	
Minority	99.55	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	99.55	22.47	

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Offices of Real Estate Agents and Brokers (NAICS 5312)			
African American	0.00	2.79	0.00
Hispanic	0.00	1.10	0.00
Asian/Pacific Islander	0.00	1.13	0.00
Native American	0.00	1.96	0.00
Minority	0.00	6.98	0.00
Nonminority female	100.00	25.72	
DBE total	100.00	32.70	
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00
Native American	0.00	0.00	
Minority	0.00	6.06	0.00 ***
Nonminority female	24.94	17.53	
DBE total	24.94	23.59	

Source and Notes: See Table 7.6.

Table AF.19. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (State-Funded Contracts) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.97	2.32	85.08
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	0.88	2.64	33.31 *
Native American	0.00	0.52	0.00 ***
Minority	2.85	6.52	43.77 **
Nonminority female	8.89	15.34	57.99 **
DBE total	11.75	21.86	53.75 ***
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00
Native American	0.00	0.00	
Minority	0.00	6.06	0.00
Nonminority female	0.81	17.53	4.61
DBE total	0.81	23.59	3.43
Computer Systems Design and Related Services (NAICS 5415)			
African American	0.00	4.61	0.00
Hispanic	0.00	1.38	0.00
Asian/Pacific Islander	0.00	3.61	0.00
Native American	0.00	0.26	0.00
Minority	0.00	9.86	0.00
Nonminority female	0.00	16.43	0.00
DBE total	0.00	26.29	0.00 ***
Management, Scientific, and Technical Consulting Services (NAICS 5416)			
African American	0.00	3.27	0.00
Hispanic	0.00	0.81	0.00
Asian/Pacific Islander	0.00	1.73	0.00
Native American	0.00	0.12	0.00
Minority	0.00	5.94	0.00 ***
Nonminority female	2.42	17.78	13.62
DBE total	2.42	23.72	10.21

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Utility System Construction (NAICS 2371)			
African American	0.00	1.76	0.00
Hispanic	0.00	0.24	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	1.55	0.00
Minority	0.00	3.55	0.00
Nonminority female	0.00	20.05	0.00 ***
DBE total	0.00	23.61	0.00 ***
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	0.00	0.97	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	0.00	1.46	0.00
Nonminority female	0.00	13.91	0.00 ***
DBE total	0.00	15.37	0.00 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	0.00	2.89	0.00 ***
Hispanic	0.00	1.47	0.00 ***
Asian/Pacific Islander	0.00	0.70	0.00
Native American	0.35	0.31	
Minority	0.35	5.37	6.51
Nonminority female	13.14	16.90	77.76
DBE total	13.49	22.27	60.58

Source and Notes: See Table 7.6.

Table AF.20. Industry Group Utilization, Availability, and Disparity Results for MoDOT Consulting Contracting (State-Funded Contracts) (Dollars Awarded)

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Architectural, Engineering, and Related Services (NAICS 5413)			
African American	1.95	2.32	83.93
Hispanic	0.00	1.03	0.00 ***
Asian/Pacific Islander	1.05	2.64	39.89
Native American	0.00	0.53	0.00 ***
Minority	3.00	6.52	45.99 **
Nonminority female	9.95	15.35	64.81 **
DBE total	12.95	21.87	59.20 ***
Scientific Research and Development Services (NAICS 5417)			
African American	0.00	2.36	0.00
Hispanic	0.00	0.71	0.00
Asian/Pacific Islander	0.00	2.99	0.00
Native American	0.00	0.00	
Minority	0.00	6.06	0.00
Nonminority female	0.54	17.53	3.09
DBE total	0.54	23.59	2.29
Management, Scientific, and Technical Consulting Services (NAICS 5416)			
African American	0.00	3.27	0.00
Hispanic	0.00	0.81	0.00
Asian/Pacific Islander	0.00	1.73	0.00
Native American	0.00	0.12	0.00
Minority	0.00	5.94	0.00 ***
Nonminority female	2.23	17.78	12.53
DBE total	2.23	23.72	9.40
Communications Equipment Manufacturing (NAICS 3342)			
African American	0.00	0.00	
Hispanic	0.00	0.97	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	0.49	0.00
Minority	0.00	1.46	0.00
Nonminority female	0.00	13.91	0.00 ***
DBE total	0.00	15.37	0.00 ***

NAICS Industry Group / DBE Type	Utilization (%)	Availability (%)	Disparity Ratio
Utility System Construction (NAICS 2371)			
African American	0.00	1.76	0.00
Hispanic	0.00	0.24	0.00
Asian/Pacific Islander	0.00	0.00	
Native American	0.00	1.55	0.00
Minority	0.00	3.55	0.00
Nonminority female	0.00	20.05	0.00 ***
DBE total	0.00	23.61	0.00 ***
Other Specialty Trade Contractors (NAICS 2389)			
African American	0.00	2.89	0.00 ***
Hispanic	0.00	1.47	0.00 *
Asian/Pacific Islander	0.00	0.70	0.00
Native American	0.38	0.31	
Minority	0.38	5.37	7.14
Nonminority female	14.40	16.90	85.21
DBE total	14.78	22.27	66.38
Building Equipment Contractors (NAICS 2382)			
African American	100.00	2.79	
Hispanic	0.00	1.23	0.00
Asian/Pacific Islander	0.00	0.85	0.00
Native American	0.00	0.00	
Minority	100.00	4.87	
Nonminority female	0.00	17.60	0.00 ***
DBE total	100.00	22.47	

Source and Notes: See Table 7.6.

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