Report

City of Davenport Disparity Study Regarding Minority and Women Participation In Contracting

Executive Summary

Submitted to:
The City of Davenport, Iowa

Submitted by:
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EXECUTIVE SUMMARY

I.   STUDY OVERVIEW

A.   Study Purpose

In 2008, the City of Davenport (City) commissioned Mason Tillman to determine whether or not a statistically significant disparity existed between the number of minority-owned and woman-owned business enterprises (M/WBEs) that were ready, willing, and able to provide goods and services to the City and the number of M/WBEs that were actually providing goods and services to the City. The City of Davenport Disadvantaged Business Enterprise Disparity Study (Disparity Study) focused on four industries—construction, design and engineering, professional services, and general services.[1] The Disparity Study reviewed the award of prime contracts during the study period of January 1, 2003 to December 31, 2007.

B.   Study Team

Mason Tillman Associates, Ltd., a public policy consulting firm based in Oakland, California, was selected to perform the Disparity Study. Mason Tillman also subcontracted with Jane Mobely Associates to perform data collection and anecdotal interviews.

C.   Industries Studies

The Disparity Study included a statistical analysis and evaluation of construction, design and engineering, professional services, and general services prime contracts and subcontracts awarded in the four industries.

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[1]   Professional services also includes the design and engineering industry category.

Construction was defined as services that include the process of building, altering, renovating, improving, or demolishing any public structure, or building, or other improvements to public real property.

Design and engineering was defined as professional services rendered by a licensed architect, engineer, or land surveyor.

Professional services were defined as services from individuals possessing a high degree of professional skill and include the services of accountants, physicians, and lawyers.

General services were defined as services for labor, time, or effort a contractor provides, except the delivery of a specific product that is merely incidental to the required performance.

D. Prime Contract Data

City prime contract records in the four industries were analyzed to determine the utilization of available M/WBEs and non-M/WBEs. The analysis of formal contracts was capped at $500,000 to ensure that the contracts examined in the disparity analysis were within the capacity level of available M/WBEs.

1. Prime Contract Data Sources

The prime contractor data was extracted from the City's financial system and submitted to Mason Tillman in an electronic format. The data for the study period of January 1, 2003 to December 31, 2007 was provided in the database structure specified by Mason Tillman.

Each contract was either classified into one of the three industry categories—construction, professional services,[2] general services—or marked for exclusion. A combination of the vendor name and the description provided in the contract record was used to determine the industry classification. Non-profits, government agencies, banks, airlines, payments for legal settlements, employee reimbursements, subscriptions, and seminar registration fees were excluded.

The next phase of the data cleaning process was the determination of the prime contractor's ethnicity and gender. Since ethnicity and gender information is critical to the prime contractor utilization analysis, research was conducted to secure this information for each prime contractor.

The ethnicity and gender of the utilized prime contractors were determined through a combination of research techniques. Company names were cross-referenced with certification

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[2]Professional services included design and engineering contracts.

lists, chambers of commerce directories, trade and professional organizations' membership lists, and various websites. A business survey was also conducted to garner ethnicity and gender information not found using the directories and the Internet.

E. Subcontractor Data

For the subcontract analysis of the utilization of available M/WBEs and non-M/WBEs, Mason Tillman gathered information on prime contractor construction, design and engineering, and professional services contracts awarded by the City. General services subcontracts were not compiled, because this industry typically offers very few subcontracting opportunities.

1. Subcontractor Data Sources

The City did not maintain subcontractor records in an electronic format during the study period. The data collection effort was limited to one industry, construction. Mason Tillman attempted to collect professional services data; however, there was insufficient data to perform a statistical analysis on professional services contracts. General service prime contracts for goods and other services were not considered for analysis because they traditionally do not include a significant number of subcontracts. The examination of construction prime contracts was limited to contracts with an award value of $50,000 or more.

Several data collection strategies were employed in an effort to collect comprehensive construction subcontract records. Bid packages, prime contractor invoices, purchase orders, progress reports, proposals, and prevailing wage reports served as sources for subcontractor data.

Project managers and engineers responsible for contract management were interviewed to identify the subcontractor records housed in their project files. It was determined that the engineers' files were stored at several different locations. City staff assisted in the identification of 113 project files containing prime contracts awarded during the study period. In 73 of these project files, one or more subcontractors were identified. A total of 261 subcontracts were collected for 73 prime contracts. The data collected from the project files were comprised of subcontractor commitments which were submitted with the prime contractor's bid.

In an effort to verify the accuracy of the subcontractor commitments listed in the prime contractors' bids prime contractor and subcontractor expenditure surveys were conducted. Each contractor that was awarded a prime contract of $50,000 or more was surveyed to verify the subcontractors listed in the bid and to name any contractors not listed in the bid. Each subcontractor listed in a bid was surveyed to verify utilization and payment.

The prime contractor survey was conducted by mail with a telephone follow-up. The mail survey contained the list of the subcontractor commitments recorded in the bids. Each prime contractor which failed to respond to the mail survey was called and encouraged to return the survey or provide the requested information via the telephone.

The subcontractor survey was performed by telephone. Each listed subcontractor was called and asked to verify its participation on a specific prime contract. Multiple calls were made to each subcontractor in an effort to confirm the level of participation listed on the prime contract.

The subcontractor records compiled through this research were sufficient to perform the subcontractor analysis for construction. This was only made by possible the extraordinary effort made by our project manager and City staff in reconstructing the subcontracts awarded by the businesses which received construction prime contracts from the City of Davenport from January 1, 2003 to December 31, 2007.

F.   Contract Thresholds

In the procurement process, there are two contract dollar thresholds. Formal contracts, which require advertising and competitive solicitations, valued at over $10,000 and informal contracts, which do not require advertising and competitive solicitations, are valued at $10,000 and under.

II.   METHODOLOGY AND STRUCTURE

A.   Methodology

Disparity Study:
Critical Components

1. **Legal Framework**
2. **Utilization Analysis**
3. **Market Area Analysis**
4. **Availability Analysis**
5. **Disparity Analysis**
6. **Anecdotal Analysis**
7. **Race Neutral Assessment**
8. **Recommendations**

The review of *Croson* and related case law provided the legal framework for conducting the disparity study. A legal review was the **first step** in the disparity study. Case law sets the standard for the methodology employed in a disparity study. **Step two** was to collect utilization records and determine the extent to which the City had used minority, woman-owned, and other businesses to secure its needed goods and services. Utilization records were also used to determine the geographical area in which companies that had received City contracts were located. In **step three,** the City's market area was identified. Once the market area was defined,

the **fourth step**, the availability analysis**,** identified businesses willing and able to provide services needed by the City. In the **fifth step**, the utilization and availability analyses were used to determine whether there was a statistically significant underutilization within the four industries. In **step six**, the anecdotal analysis, the contemporary experiences of business owners in the City's market area were collected. In **step seven**, the City's race-neutral efforts were reviewed to determine their scope and effectiveness in including M/WBEs in its contracting.   In **step eight**, the statistical and anecdotal analyses were reviewed and recommendations were written to enhance the City's efforts in contracting with M/WBEs in its market area. Additionally, a Regression Analysis was conducted to determine if factors other than discrimination could account for any statistically significant disparity.

B.   Structure

The Disparity Study findings are presented in 11 chapters. The contents of each chapter are briefly described below:

Disparity Study Report

- Chapter 1: Executive Summary presents the Study overview.

- Chapter 2: Legal Analysis presents the legal cases applicable to business affirmative action programs and the methodology based on those cases required for the Disparity Study.

- Chapter 3: Analysis of Purchasing and Contracting Policies and Procedures presents the City's contracting and procurement practices.

- Chapter 4: Prime Contractor Utilization Analysis presents the distribution of prime contracts by industry, ethnicity, and gender.

- Chapter 5: Subcontractor Utilization Analysis presents the distribution of subcontracts by industry, ethnicity, and gender.

- Chapter 6: Market Area Analysis presents the legal basis for geographical market area determination and defines the City's market area.

- Chapter 7: Availability Analysis presents the distribution of available businesses in the City's market area.

- Chapter 8: Anecdotal Analysis presents the business community's experiences and perceptions of barriers encountered in contracting or attempting to contract with the City.

- Chapter 9: Prime Contractor Disparity Analysis presents prime contractor utilization compared to prime contractor availability by industry, ethnicity, and gender and determines whether the comparison is statistically significant.

- Chapter 10: Subcontractor Disparity Analysis presents subcontractor utilization compared to subcontractor availability by industry, ethnicity and gender and determines whether the comparison is statistically significant.

- Chapter 11: Recommendations presents best management practices to enhance the City's contracting and procurement activities with D/M/WBEs and other small businesses.

- Appendix A: Regression Analysis.

- Appendix B: The U.S. Department of Transportation (USDOT) regulations are set forth in 49 CFR Part 26.

III. NOTABLE FINDINGS

A. Prime Contractor Utilization Analysis

The City issued 477 prime contracts during the January 1, 2003 to December 31, 2007 study period. These included 186 for construction, 23 for professional services, and 268 for general services. The City's design and engineering contracts were included in the professional services contracts for the statistical analysis.

The City expended $89,802,755 dollars during the January 1, 2003 to December 31, 2007 study period. These included $71,508,016 for construction, $3,363,568 for professional services, and $14,931,170 for general services.

B. Subcontractor Utilization Analysis

Mason Tillman identified 261 construction subcontracts during the January 1, 2003 to December 31, 2007 study period. On the subcontracts identified $16,313,268 total dollars were expended during the study period for construction subcontracts.

C. Market Area Analysis

Given the geographical distribution of the dollars awarded by the City, the Disparity Study's market area was determined to be the Quad Cities of Bettendorf, Iowa; Davenport, Iowa; East Moline Illinois; Moline, Illinois; and Rock Island, Illinois. The City awarded a total of 58.28 percent of its contracts and 73.02 percent of its dollars to businesses in the Disparity Study's market area.

D.   Disparity Analysis Methodology

The objective of the disparity analysis is to determine if minority and women business enterprises (M/WBEs) were underutilized at a statistically significant level on the City's contracts. Under a fair and equitable system of awarding contracts, the proportion of contract dollars awarded to M/WBEs would be approximate to the proportion of available M/WBEs[3] in the relevant market area. If a disparity exists between these proportions, a statistical test could determine the probability that the disparity is due to chance. If there is a low probability that the disparity is due to chance,[4] *Croson* states that an inference of discrimination can be made. This analysis should be applied to M/WBEs by ethnicity and gender.

E.   Contract Size Analysis

Contract size analysis of prime contracts was undertaken to determine the capacity required to perform on the City's prime contracts. The size distribution illustrates the fact that limited capacity is needed to perform the overwhelming majority of the City's contracts.

The percentage of the City's construction contracts valued at $25,000 and under was 27.42 percent; those $100,000 and under was 53.23 percent; and 82.8 percent was under $500,000. The percent of the City's professional services contracts valued at $25,000 and under was 43.48 percent; those less than $100,000 was 78.26 percent; and 95.65 percent was under $500,000. The percentage of the City's general services contracts valued at $25,000 and under was 62.31 percent; those $100,000 and under was 86.94 percent; and those under $500,000 was 98.13 percent. The contract analysis is discussed in depth in *Chapter 7, Availability Analysis*.

F.   Statistical Findings

There was a finding of statistically significant underutilization of M/WBEs in the award of formal and informal prime contracts and the award of subcontracts.

Formal Prime Contract Disparity: A statistically significant underutilization of M/WBEs in formal prime contracts was found in construction and general services contracts. Table 1.01 below reflects the findings. There were too few contract records, as denoted by dashes, to analyze disparity for Native Americans and Asian Americans.

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[3]   Availability is defined as willing and able firms. The methodology for determining willing and able firms is detailed in Chapter 7 of the Report.

[4]   When conducting statistical tests, a confidence level must be established as a gauge for the level of certainty that an observed occurrence is not due to chance. It is important to note that a 100 percent confidence level or a level of absolute certainty can never be obtained in statistics. A 95 percent confidence level is considered by the courts to be an acceptable level in determining whether an inference of discrimination can be made. Thus, the data analyzed here was done within the 95 percent confidence level.

Table 1.01 Summary of Formal Prime Contract Disparity Findings

Ethnicity and Gender	Construction	General Services
Formal Contracts - $500,000 and under		
African Americans	Yes	Yes
Asian Americans	---	---
Hispanic Americans	No	Yes
Native Americans	**---**	**---**
Minority Business Enterprises	Yes	Yes
Women Business Enterprises	No	Yes
Minority and Woman Business Enterprises	Yes	Yes

Yes = Statistically significant disparity was found.
No = Statistically significant disparity was not found.
--- = There were insufficient records to determine statistical disparity.

A comparison between the prime contractor utilization and availability for the City's construction contracts under $500,000 is presented in Chart 1.01 below.

Chart 1.01 Comparison between Prime Contractor Utilization and Availability for Construction Contracts under $500,000

Comparison Between Prime Contractor Utilization and Availability - Construction Under $500,000
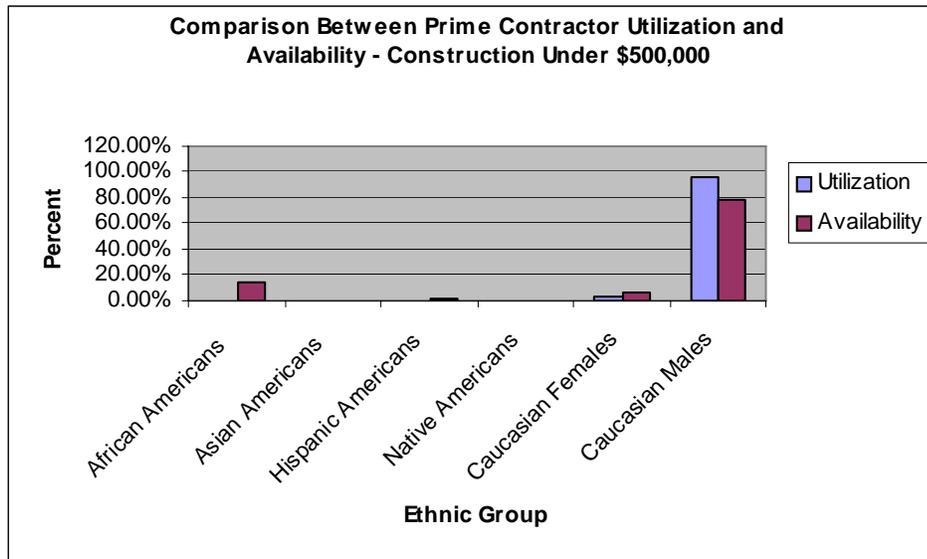
Chart 1.02 Comparison between Prime Contractor Utilization and Availability for General Services under $500,000
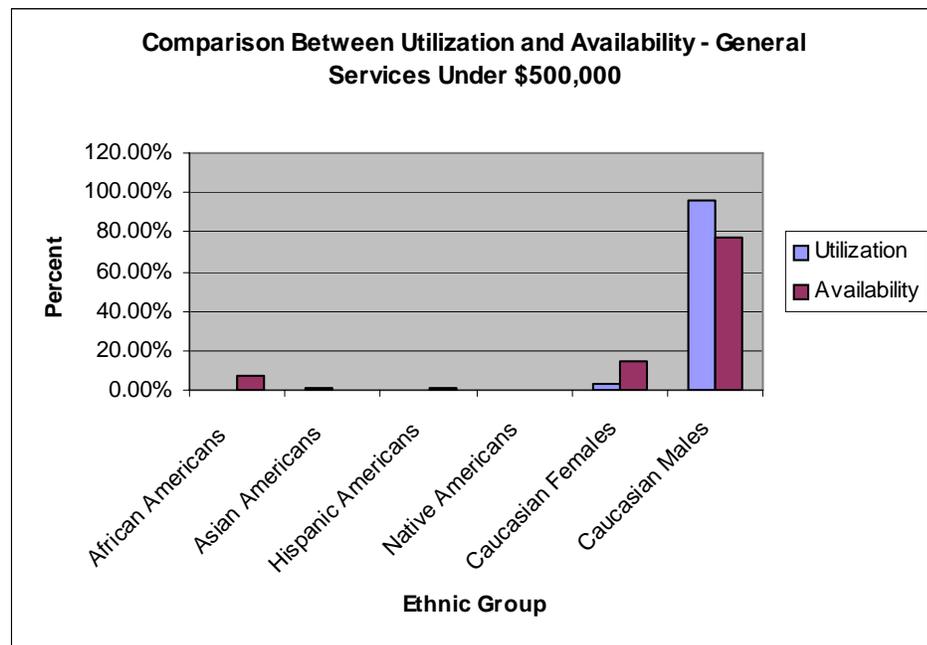
Comparison Between Utilization and Availability - General Services Under $500,000

Informal Prime Contract Disparity: A statistically significant underutilization of M/WBEs in informal prime contracts was found in construction and general services contracts. Table 1.02 below reflects the findings. Informal prime contracts do not require advertising.

Table 1.02 Summary of Informal Prime Contract Disparity Findings

| Ethnicity and Gender	Construction	General Services
Informal Contracts - $10,000 and under		
African Americans	Yes	Yes
Asian Americans	---	---
Hispanic Americans	No	No
Native Americans	---	---
Minority Business Enterprises	Yes	Yes
Women Business Enterprises	No	No
Minority and Women Business Enterprises	Yes	Yes

Yes = Statistically significant disparity was found.
No = Statistically significant disparity was not found.
--- = There were insufficient records to determine statistical disparity.

Subcontract Disparity: The statistically significant underutilization of M/WBEs in the award of subcontracts was found in construction where the disparity analysis was performed. Table 1.03 below reflects the findings.

Table 1.03 Summary of Subcontract Disparity Findings

Ethnicity and Gender	Construction Subcontracts
All Contracts over $50,000	
African Americans	Yes
Asian Americans	---
Hispanic Americans	No
Native Americans	---
Minority Business Enterprises	*Yes*
Women Business Enterprises	---
Minority and Women Business Enterprises	*No*

Yes = Statistically significant disparity was found.
No = Statistically significant disparity was not found.
--- = There were insufficient records to determine statistical disparity.

A comparison between the prime contractor utilization and availability for the City's construction subcontracts is presented in Chart 1.03 below.

**Chart 1.03 Comparison between Prime Contractor Utilization
and Availability for the City's Construction Subcontracts**

**Comparison Between Utilization and Availability -
Construction Subcontracts**
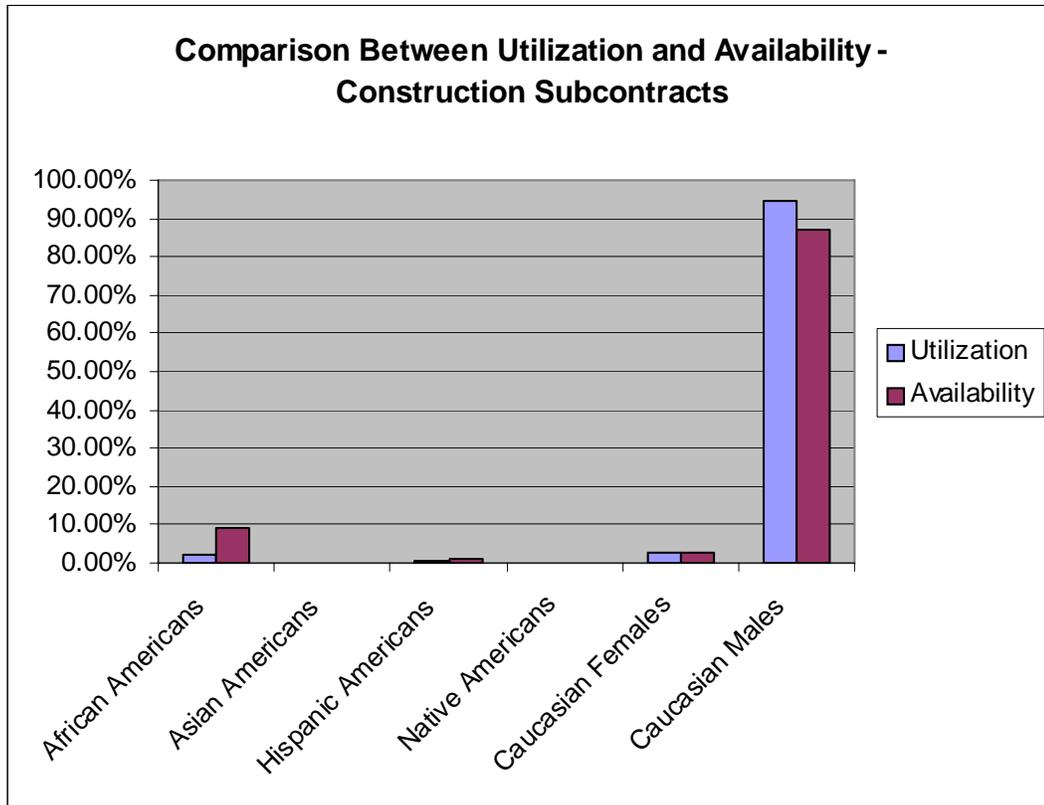
IV. ANECDOTAL FINDINGS

In addition to requiring a statistical analysis, the United States Supreme Court in *Croson*, stated that anecdotal findings "if supported by appropriate statistical proofs, lend support to a [local entity's] determination that broader remedial relief [be] justified."[5] *Croson* authorizes anecdotal inquiries along two lines. The first approach examines barriers attributed to the local entity. Such action is defined as the active participation of the government entity, while the second approach examines passive participation which are the barriers created by the contractors which are awarded public funds.

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[5]*Id.*

Twenty business owners were interviewed about their experiences doing business with the City. Members of all ethnic groups were interviewed, and the anecdotes provide accounts of both active and passive barriers M/WBEs encountered in dealing with City officials and the business community. The anecdotal data also presents examples of exemplary practices of the City and other agencies within the county. Detailed anecdotal findings are presented in *Chapter 8, Anecdotal Analysis.*

It should be noted that many business owners described the City's DBE Program as valuable and a major factor in keeping their businesses solvent. Additionally, many City staff members received commendations from interviewees concerning their assistance to DBEs.

The following is an overview of the anecdotal findings:

- Minority business owners reported that they were held to a higher standard of review than their Caucasian counterparts.

- DBEs reported that they experienced difficulty in attempting to break into the contractor community.

- DBEs reported difficulty meeting the City's pre-qualification requirements, specifically the City's Contractor Licensing Test (Block Test).

- DBEs recommended that the City relax its standards concerning brand name requirements.

- The interviewees also recommended more diversity on the City's selection panel committee.

Table 1.04 below presents a summary of findings from the anecdotal analysis regarding barriers reported by DBEs in their efforts to obtain contracts with the City.

Table 1.04 Summary of Barriers Identified

Type of Evidence
BUSINESS COMMUNITY BARRIERS
Barriers Based on Gender
Barriers Based on Race
Difficulty Breaking into Contracting Network

Type of Evidence
BARRIERS CREATED BY THE CITY
Agency Failure to Monitor M/WBE Program Requirements
Public Agency Managers Creating Barriers
Problems with Certification Procedures
DIFFICULTIES IN BID PROCESS
Difficulty Meeting Pre-qualification Requirements
Difficulty Navigating the Bid Process
FINANCIAL BARRIERS
Difficulty Obtaining Financing or Credit
Difficulty Obtaining Insurance or Bonding
Late Payment by the City
Late Payment by Prime Contractors

V. RACE AND GENDER-CONSCIOUS RECOMMENDATIONS

The following race and gender-conscious recommendations result from Mason Tillman's disparity analysis findings and include prime contracting and subcontracting remedies. The recommendations are discussed in detail in *Chapter 11*, *Recommendations*.

A. Prime Contract Remedies

1) Small Contract Rotation Program for construction contracts: This program should be established for construction contracts valued at $100,000 or less and limited to competition for businesses from the statistically significant underutilized group and other disadvantaged businesses of comparable capacity.

2) Prime contract-Specific DBE Goals: Contract-specific DBE prime contracting goals should be set on all construction and general services contracts to address the identified disparity. The goals could reflect the actual availability for each contract that is advertised, or the goals could be set no higher than the actual availability for each advertised contract. Tables 1.05 and 1.06 below describe the prime contractor availability percentages.

Table 1.05 Construction Prime Contractor Availability

Underutilized Groups	Percentage of Availability
African Americans	14.46%
Minority and Women Business Enterprises	21.69%

Table 1.06 General Services Prime Contractor Availability

Underutilized Groups	Percentage of Availability
African Americans	6.9%
Hispanic Americans	1.48%
Women Business Enterprises	14.29%
Minority and Women Business Enterprises	23.15%

B.   Subcontractor Remedies

1) DBE Subcontracting Goals: The goals should be applied to the City's prime construction contracts. The overall goals for the group should reflect its availability, as identified in the Study. Table 1.07 depicts the availability of minority and women construction subcontractors.

Table 1.07 Subcontractor Availability

Underutilized Groups	Construction Availability
African Americans	8.92%
Minority Business Enterprises	10.19%

2) Weighted Good Faith Efforts: Detailed and quantifiable Good Faith Effort criteria should be developed and applied to each solicitation with a subcontractor goal. Each criterion, such as negotiation in good faith with potential subcontractors, should define and quantify the minimum behavior required to demonstrate an attempt to meet the subcontracting goal.

VI. RACE AND GENDER-NEUTRAL RECOMMENDATIONS

Race and gender-neutral program recommendations are offered to ensure equity in the contracting process. They incorporate a number of best management practices gleaned from the anecdotal interviews, innovations used in other governmental entities and corporate organizations, and the analysis of the City's contracting process. These race and gender-neutral recommendations can serve as a guide to enhance the City's contracting efforts. Detailed race and gender-neutral recommendations are presented in *Chapter 11*, *Recommendations*.

A. Procurement Strategies

Pre-Award Recommendations

- Unbundle large procurements into smaller contracts where feasible to maximize small business participation.

- Establish a Direct Purchase Program for construction contracts to encourage purchasing supplies and/or leasing the required equipment for a job, then subcontract only for the expertise or labor required to perform the work.

- Establish an Apprentice Program on construction contracts.

- Post plan holders list for upcoming bids on the City's website.

- Create a virtual plan room by purchasing software that would allow bidders to obtain measurements for bid specifications by digitizing an area on a blueprint on the City's website.

- Form partnerships with lending institutions by leveraging banking relationships with financial institutions to assist DBEs and other small businesses with project financing and start-up costs.

- Establishing an Owner-Controlled Insurance Program to consolidate risk management costs and reduce the burden of the insurance premium for DBEs and small business owners.

- Expand the City's DBE Certification Program by accepting the State's Targeted Small Business certifications.

1. Post-Award Strategies

- Revise he City's procurement procedures to include a requirement that the DBE Program Manager be informed in writing and receive a copy of any proposed contract or procurement for construction, professional services, and general services within three business days of the release of the RFP, RFQ, or RFB.

- Enact uniform affirmative action requirements that do not allowing potential bidders to enter into contractual arrangements that circumvent the City's affirmative action requirements.

- Publish DBE utilization reports to measure the effectiveness of the City's DBE Program. The report should include verified payment and award data organized by industry, department, ethnicity, gender, and DBE status.

- Give five-day notice of invoice disputes so that the disputes may be resolved quickly and small businesses can maintain positive cash flow while providing services to the City.

- Failure by prime contractors to list the names of all subcontractors on the City's *Work Types and DBE Contact form* should render the submittal non-responsive and therefore void.

- Conduct routine post-award contract compliance monitoring to ensure that DBE participation is being maintained

B.   Best Management Practices

1. Administrative Recommendations

- Enhance the City's website by the addition of a link, as high on the page as possible, to a page consolidating all information for those wishing to work with the City. This destination should list all contracts available for bid, as well all contracts awarded.

- Evaluate staff compliance with the DBE Program through department-level reports of DBE utilization and staff performance reviews.

- Develop a department-wide DBE training manual which would provide background on the DBE Program, any federal regulations which govern the program, and the City's DBE policy and objectives.

- Conduct outreach and implement marketing strategies to attract more market area businesses to bid or propose to perform work on the City's contracts.

2. Data Management Recommendations

- Design a subcontractor utilization tracking database to enhance the tracking and monitoring of subcontract awards more efficiently. The recommended enhancements would support a more accurate assessment of the effectiveness and compliance of the City's DBE Program.

- Track subcontractor utilization in a database to track and verify payments to subcontractors that perform work on the City's contracts.

APPENDIX A

Executive Summary
City of Davenport DBE Disparity Study
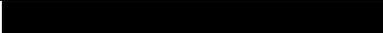
APPENDIX A

REGRESSION ANALYSIS

The analysis noted that there were statistically significant disparities for some minority groups (and non-Hispanic, white women) in rates of business ownership, earnings of business owners, and frequency of business loan denials. The analysis considered the possibility that neutral factors, such as age, education, access to capital and creditworthiness (among others) might account for at least a portion of these disparities. The analysis further investigated these issues through multivariate regression analyses. This appendix documents the regression analysis.

Business Ownership

There is an extensive literature on the determinants of business ownership. Prior studies have found that neutral factors such as access to financial capital, education, age, family characteristics (e.g. marital status) and other factors can help explain rates of self-employment.

This issue has also been examined in other disparity studies. Prior studies in Minnesota[1] and Illinois[2] have conducted econometric analyses to investigate whether or not disparities in business ownership among race, ethnic and gender groups in the combined construction and engineering industry remain after controlling for neutral factors. These studies have incorporated probit econometric models using data from the 2000 Census Public Use Microdata Sample (2000 PUMS). These studies have been among the materials submitted to the courts in litigation concerning states' implementation of the Federal DBE Program.

To examine potential disparities in the rates of business ownership among ethnicity and gender groups in Davenport, Iowa, the analysis developed a probit model using 2000 PUMS data for Davenport residents. The PUMS data is a 5 percent sample of U.S. households and the Census Bureau assigns a weight to each observation so that the weighted sample is representative of the population as a whole.

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[1] National Economic Research Associates, Inc. 2000. *Disadvantaged Business Enterprise Availability Study.* Prepared for the Minnesota Department of Transportation.

[2] National Economic Research Associates, Inc. 2004. *Disadvantaged Business Enterprise Availability Study.* Prepared for the Illinois Department of Transportation.

A probit model functional form was used for the regression analysis. This model is consistent with other research. The probit model of business ownership in Davenport includes more than 52,000 individuals working in the construction and engineering industries. The dependent variable is binary – coded as a "1" for individuals who are self-employed and a "0" for individuals who are not self-employed. The model estimates the probabilities of being a business owner among workers in each industry. The analysis excluded observations where the Census Bureau had imputed self-employment (the dependent variable).

The extensive literature on business ownership explains the theoretical basis for business ownership regression models. The model specification was based on models previously reviewed by the courts. The independent variables include:

- Personal characteristics potentially linked to the likelihood of business ownership (age, age-squared, marital status, number of children and elderly people in the household, ability to speak English and disability status);

- Variables to control for differences in educational attainment;

- Measures and indicators related to personal financial resources and constraints (home ownership, home value, monthly mortgage payment, dividend and interest income and additional household income from a spouse or unmarried partner); and

- Variables to indicate the race, ethnicity and gender of the individual.

The specification of this model is very similar to models used in other studies previously reviewed by the courts.

Results for Davenport, Iowa. Figure A-1 presents the coefficients and t-statistics for the initial probit model. The model indicates that several of the neutral factors are statistically significant in predicting the probability of business ownership;

- Older individuals are more likely to be business owners, but this marginal effect declines for the oldest individuals;

- Being married is positively correlated with being a business owner;

- Being disabled is negatively correlated with being a business owner;

- Having pre-school age children is positively correlated with being a business owner;

- Having some college, up to a four year college degree, decreases the likelihood of being a business owner;

- Having an advanced degree increases the likelihood of being a business owner;

- Homeownership decreases the likelihood of being a business owner until the value of the home rises above approximately $ 70,000, where increasing values also increase the likelihood of being a business owner.

The effects of these neutral factors are generally consistent with previous research on business ownership and entrepreneurship. Even after controlling for the neutral factors that can be identified based on the PUMS data, statistically significant disparities in rates of business ownership remain for Asian Pacific Americans, Subcontinent Asian Americans, and women.

Figure A-1.
Davenport, Iowa Probit Model

Variable	Coefficient	t-statistic
Constant	-6.2891	-13.35*
Age	0.1483	7.52*
Age-squared	-0.0014	-6.59*
Married	0.4871	3.5*
Disabled	-0.2672	-1.81
Own children younger than 6	0.6441	2.84*
Number of people over 65 in HH	-0.0203	-0.16
Own home	-0.7458	-2.83*
Home value (24 level categorical variable)	0.0683	3.45*
Monthly mortgage payment	0.0002	1.29
Interest and dividend income ($000s)	0.0086	2.59*
Income of spouse or partner ($000s)	-0.0008	-0.78
Speaks English very well	0.4529	1.35
Less than high school education	-0.376	-1.89
Some college	-0.232	-1.76
Four year degree	-0.5752	-3.24*
Advanced degree	0.7366	3.47*
African American	-0.5181	-1.63
Asian Pacific American	0.7989	1.97*
Subcontinent Asian American	-3.4249	-3.75*
Hispanic American	-0.4811	-1.39
Native American	0.6531	1.13
Other minority group	-0.8088	-1.42
Female	-0.4194	-3.87*

Note:*Significant at 95% confidence level.

Source Mason Tillman Research & Consulting based on analysis of 2000 Census Public Use Microdata Sample.

The data were insufficient to conduct separate analyses for the construction or engineering industries.

Business Earnings

Differences in business owner earnings may be at least partially accounted for by race- and gender-neutral factors such as age.

The regression analysis was applied to the 2000 PUMS data to examine whether disparities in business earnings remained after controlling for neutral factors, using ordinary least squares regression, as consistent with past court-reviewed research. The OLS model of business owner earnings in Davenport included 9,883 observations.

The dependent variable in this model is the natural log of business earnings. Business owners reporting zero or negative business earnings were excluded, as were observations where the Census Bureau had imputed the amount of business earnings. Apart from variables indicating the race, ethnicity and gender of the business owner, the model also contained the available measures from the PUMS data considered likely to affect earnings potential – including age, age-squared, marital status, ability to speak English very well, disability condition and educational attainment.

Results for Davenport, Iowa. Figure A-2 depicts the results of the OLS model for Davenport, Iowa. The model indicates that several of the neutral factors are statistically significant in predicting earnings of business owners in Davenport:

- Older business owners have greater earnings, but this marginal effect declines for the oldest individuals

- Owners who are married tend to have greater business earnings

- Business owners with less than a high school degree tend to have lower business earnings

After accounting for neutral factors, there are statistically significant disparities for African American and Hispanic American business owners as well as women.

Figure A-2.
Davenport Business Owner Earnings Model

Variable	Coefficient	t-statistic
Constant	6.671328	23.22 *
Age	0.134376	10.21 *
Age-squared	-0.001459	-9.80 *
Married	0.409922	10.45 *
Speak English Very Well	0.050617	0.89
Disabled	-0.002063	-0.04
Less than HS	-0.245781	-4.28 *
Some College	-0.008317	-0.18
Four Year Degree	0.035475	0.58
Advanced Degree	0.017928	0.19
African American	-0.472129	-2.80 *
Asian Pacific American	-0.075027	-1.00
Subcontinent Asian American	0.340119	1.41
Hispanic American	-0.211683	-3.83 *
Native American	-0.172427	-1.05
Other Minority Group	0.426328	2.98 *
Female	-0.618914	-8.16 *

Note:*Significant at 95% confidence level.

Source: Mason Tillman Research & Consulting, 2009 based on analysis of 2000 Census Public Use Microdata Sample.

The data were insufficient to conduct separate analyses for the construction or engineering industries.

Likelihood of Business Loan Denial

Access to capital is an important factor in small business formation and expansion. Based on data from the 2003 National Survey of Small Business Finances (NSSBF), loan applications from firms owned by African Americans and women are more frequently denied than those from white-male-owned firms.

There is an extensive literature on business loan denials that provides the theoretical basis for the regression models. Previous studies have used probit econometric analysis in an effort to determine whether higher rates of loan denial for minorities can be explained by neutral factors. The standard model includes four types of variables, that describe:

- The owner's credit and resources

- The firm's credit and financial health

- The environment in which the firm and lender operate

- Owner's minority group membership[5]

To examine whether neutral factors might explain the higher rates of loan denials for some minority groups, the analysis developed a probit model using the data from the 2003 NSSBF. Probit regressions look at a binary (e.g., approval/denial) outcome. After excluding a small number of observations where the loan outcome was imputed, the national sample included 7640 firms that had applied for a loan during the three years preceding the survey. The North Eastern Central region included 3260 such firms. The dependent variable aggregated all loans for the business into three categories: whether the loans were (1) "always approved", (2) "sometimes approved and sometimes denied", or (3) "always denied". The probit regression model used these outcomes as ordered categories.

A large number of variables are required to control for differences in the neutral factors described previously. A total of 54 variables are included. They represent the owners' credit and resources (10 variables), the firm's credit and financial health (29 variables), and the environment in which the firm and lender operate including the nature of the loan applied for (15 variables). Given the relatively small sample sizes and the large number of variables the model requires, this model could not be estimated for the North Eastern Central region. Instead, the model included observations throughout the entire country and sought, through interaction terms, to identify any significant differences between the national credit market and the North Eastern Central region credit market. These interactions include firms located in the North Eastern Central region and firms owned by minorities and women in the region. This approach has been used in previous, peer-reviewed research.[6]

Figure A-3 on the following page presents the coefficients and t-statistics from the probit model of load denials.

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5 See, for example, Blanchard, Lloyd; Zao, Bo and John Yinger. 2005. *Do Credit Barriers Exist for Minority and Women Entrepreneurs?* Center for Policy Research, Syracuse University.

6 Blanchflower, David G.; Levine, Phillip B. and David J. Zimmerman. 2003. "Discrimination in the Small-Business Credit Market." The Review of Economics and Statistics. 85(4): 930-943.

Figure A-3.
Dependent Variable: Loan Approval

Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
Race/Ethnicity/Gender			**Firm's Credit and Financial Health**			**Firm and Lender Environment and Loan Characteristics**		
Constant -0.3753	-0.3753	0.31	D&B high risk	-0.5592	20.62*	Partnership	0.1418	0.39
Asian (including PI)	-0.1808	1.17	D&B significant risk	-0.3118	6.72*	S corporation	0.3212	2.39
African American	-1.3949	76.85*	D&B average risk	-0.2583	5.28*	C corporation	0.3173	2.11
Hiispanic	-0.2030	1.90	D&B moderate risk	-0.0203	0.04	Construction	-0.2753	5.58*
Female	-0.1657	3.62	Total employees	0.0002	0.05	Manufacturing	0.1360	1.32
North East Central Region	-0.1234	0.94	% Principal owned	-0.0040	5.65*	Transportation	0.4545	3.58
Asian in North East Central	4.5731	0	Family owned	-0.0600	0.31	Finance	-0.1136	0.42
Afr Am in North East Central	5.2105	0	Purchased	0.5738	31.94*	Services	0.1313	1.74
Hispanic in North East Central	4.1385	0	Inherited	0.5052	6.28*	Herf = .1 to .18	-0.3241	3.15
Female in North East Central	6.5658	0	Firm age	0.0102	4.18*	Herf = .18 or above	-0.3519	3.61
			Firm has checking	0.5039	2.57	Capital lease applic	-9.1976	0
Owners' Credit and Resources			Firm has savings acct	0.3245	13.54*	Mortgage applic	-12.1642	0
Age	0.0051	0.99	Firm has line of credit	0.6796	85.96*	Vehicle loan applic	-9.5508	0
Experience	-0.0004	0.01	Existing capital leases	0.2041	4.12*	Equip loan applic	-10.0389	0
Less than High School education	6.0614	0	Existing bus mortgage	-0.2032	5.92*	Other loan applic	-9.2532	0
Some college	-0.1098	1.41	Existing vehicle loan	0.2955	14.74*			
Four year degree	0.3689	4.35*	Existing equip loan	-0.0956	1.17			
Advanced degree	-0.1196	1.76	Existing stockholder	-0.1411	3.22			
Bankruptcy in past 7 years	-0.6897	5.02*	Existing other loans	-0.2546	8.05*			
Judgment against in past 3 yrs	-0.1604	0.82	Used trade credit	-0.2461	5.39*			
Log of net worth exc home	0.0692	1.97	Log of total sales	0.0246	0.02			
Negative worth indicator	0.6445	4.08*	Negative sales indic	5.3910	0			
			Log of cost doing bus.	0.1354	0.67			
			Log of total assets	0.0467	0.26			
			Negative assets indic	1.0369	3.42			
			Log of total equity	-0.0002	0			
			Negative equity indic	-0.2989	0.65			
			Firm bankruptcy p7Y	-0.8644	4.81*			
			Firm delinquency	-0.3147	13.03*			

Note:* Significant at 95% confidence level.

Source: Mason Tillman Research & Consulting analysis of 2003 NSSBF data.

The loan denial model indicates that a number of neutral factors are significantly correlated with the probability of loan denial. These include:

- Factors specific to the business owner, including whether or not the owner had a four-year college degree, been personally bankrupt within the past seven years, or had negative net worth;

- Factors related to the firm's credit and financial health, including the firm's credit rating, the method of acquisition of the business, or if the existence of loans and lines of credit for the firm. Firms with a bankruptcy in the past seven years or with delinquencies in business transactions were more likely to be denied.

- Some of the firm, lender and loan environment characteristics. Firms in the construction industry are more likely to have their loan applications denied than firms in other industries, but transportation firms were also likely to be denied. Firms in highly concentrated industry segments (as measured by the Herfindahl Index, a commonly accepted measure calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers) are more likely to be denied.

- After accounting for these and the other potential neutral influences itemized above, firms owned by African Americans and women remain significantly more likely to have their loans denied than other firms. The interaction terms for the North Eastern Central region, and for minority- and women-owned firms within the region, are insignificant. This result implies that the probabilities of loan denials for minority- and women-owned firms within the North Eastern Central region are not statistically different from the national probabilities.

In the table below, the analysis shows simulated loan approval rates for the one minority group with a statistically significant disparity (note that the approval rate is equal to one minus the denial rate). Figure A-4 shows the simulated loan approval rate and compares it to the actual, observed mean probability of loan approval for the same group in the NSSBF data set.

Figure A-4.
Comparison of Actual Loan Approval Rates to Simulated Loan Approval Rates
Under Non-Hispanic, White Male Business Environment for African Americans

	Loan Approval Rates		Disparity Index
Group	Actual	Benchmark	(100 = parity)
African Americans	47.6%	64.7%	74

Source: Mason Tillman Research & Consulting analysis of 2003 NSSBF data.

Based on the NSSBF data, African American-owned firms that applied for loans were denied at a rate of nearly 48 percent. Model results show that African American-owned firms would be denied loans about 35 percent of the time if they were denied at the same rate as similarly situate firms owned by non-Hispanic, white males.

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APPENDIX B

The U.S. Department of Transportation (USDOT) regulations are set forth at 49 CFR Part 26. Their main components are as follows:

1. Goal Setting

Section 26.45 lays out a two-step process for setting goals. Step 1 is establishing a base figure for DBE availability. It specifies three examples: DBE Directories and Census Bureau Data; Bidders List; and Disparity Study Data (but see *Western States Paving*). Step 2 is an adjustment of that base figure if there is evidence available in the jurisdiction that supports one.

2. Meeting Overall Goals

Section 26.51 requires that the "maximum feasible portion" of the overall DBE goal be met through the use of race/gender-neutral mechanisms. To the extent that these means are insufficient to meet overall goals, recipients may use race/gender-conscious mechanisms, such as contract goals. However, contract goals are not required on every USDOT-assisted contract, regardless of whether they were needed to meet overall goals.

If during the year it becomes apparent that the goals will be exceeded, the recipient is to reduce or eliminate the use of goals. Similarly, if it is determined that a goal will not be met, an agency should modify the use of race and gender-neutral and race and gender- conscious measures in order to meet its overall goals.

Set-asides may not be used for DBEs on USDOT contracts subject to Part 26 except, "in limited and extreme circumstances when no other method could be reasonably expected to address egregious instances of discrimination."

3. Good Faith Efforts

The new regulation emphasizes that when recipients use contract goals, they must award the contract to a bidder that makes good faith efforts to meet the goal. The contract award cannot be denied if the firm has not attained the goal, but has documented good faith efforts to do so. Recipients must provide administrative reconsideration to a bidder who is denied a contract on the basis of a failure to make good faith efforts.

4. DBE Diversification

Section 26.33 is an effort to diversify the types of work in which DBEs participate, as well as to reduce perceived unfair competitive pressure on non-DBE firms attempting to work in certain fields. This provision requires that if agencies determine there is an over-concentration of DBEs in a certain type of work, they must take appropriate measures to address the issue. Remedies may include incentives, technical assistance, business development programs, and other appropriate measures.

5. Alternative Programs

Section 26.15 allows recipients to obtain a waiver of the provisions of the DBE program requirements if they demonstrate that there are "special or exceptional circumstances, not likely to be generally applicable, and not contemplated in connection with the rule making that establish this part."