

V. QUANTITATIVE ANALYSIS

A. Introduction

The quantitative, or statistical, portion of this disparity Study is made up of several key statistical components, all of which are based upon exacting data collection and the processing of information collected from Montgomery County ("the County") and other appropriate sources related to the County's contracting history from July 1, 2007 through June 30, 2012.

The first step in statistical analysis is to determine the geographic area where 75-85% of the firms contracting with Montgomery County are located, which is called the "relevant market." This determination is essential because the analysis will encompass only firms located within the geographic relevant market of each business category. Within the relevant market, Griffin & Strong, P.C. ("GSPC") compares the percentage of firms in each race, ethnicity, and gender group that are qualified, willing and able to perform services utilized by Montgomery County within each business category (i.e. construction, professional services, services, and goods) against the percentage of dollars spent by Montgomery County with the same groups in the same categories. In that comparison, GSPC will determine whether Montgomery County underutilized or overutilized a particular group, or whether they were at parity. GSPC must then establish if the difference between the availability percentage and the utilization percentage, the "disparity," is significant enough to be meaningful. These analyses, along with the public and private regression analyses, are used to determine whether or not discrimination exists in Montgomery County's marketplace and whether or not the County has been an active or passive participant in such discrimination.

Finally, a full disparity analysis requires a consideration of the extent to which contracting/subcontracting outcomes are conditioned on race/ethnicity/gender/disability status, and are not merely random. If indeed race/ethnicity/gender/disability status are found to condition contracting/subcontracting outcomes in a statistically significant way, there is an implication that any observed disparities suggest discrimination in the market for contracting/subcontracting with public authorities such as Montgomery County.

If it is determined that there is any statistically significant disparity between the availability and utilization of MFD firms, and the disparity was likely caused by race/gender/ethnicity/disability status, then GSPC will make recommendations regarding appropriate and narrowly-tailored



race/ethnicity/gender/disability status-neutral remedies in order to attempt to provide all firms with equal access to the County's contracts. If appropriate, GSPC may also recommend narrowly-tailored race/ethnicity/gender/disability status-conscious remedies. In the event that no statistically significant disparity exists between the availability and utilization of MFD firms that was likely caused by race/gender/ethnicity/disability status, then GSPC may still make certain recommendations to enhance and support the continuation of outreach, small business development, and non-discrimination policies in the County's procurement processes.

A thorough statistical disparity analysis involves several tasks related to the identification, collection and assessment of data. Data is key to determining accurate outcomes in a disparity study. As such, it is important to properly track and document a chain of data that can be checked, double-checked, and verified in a successful disparity study. The following processes were undertaken by GSPC in conducting this Study:

B. Data Assessment

The data assessment meetings were held with Griffin & Strong, P.C., on May 30, 2013, at the Department of General Services located at 255 Rockville Pike, #180, Rockville, MD 20850. Three meetings were scheduled—the first with procurement representatives from the Department of General Services Office of Procurement to have preliminary discussions about purchasing practices, policies and procedures; the second with IT representatives to discuss how and in what format data is maintained; and the last with Compliance representatives to obtain their input regarding MFD efforts. At the beginning of each meeting, GSPC's project manager explained what a disparity study was and its objectives. She further detailed the kind of data that would be necessary to conduct the study. Another similar meeting was held with the Department of Finance representatives on July 27, 2013, at their office at 101 Monroe Street, 8th Floor, Rockville, MD 20850.

The purpose of each of these meetings was to determine what data Montgomery County has, in what format, and how GSPC can obtain the data. Further, the objective was for GSPC to get a better understanding of how procurement operates in order to execute the methodology that has been approved by Montgomery County. It was also important for GSPC's team to get to know procurement personnel and understand how to operate the Study in a manner least intrusive to the County's personnel.

GSPC's Data Assessment Report is attached hereto as Appendix A.



C. Data Set-Up

Following approval of the Data Assessment Report, GSPC developed and executed a Data Collection Plan and submitted data requests to the County and other sources. The Data Collection Plan set out the process for collecting manual and electronic data for statistical analyses. In addition, it included a plan for collecting data needed for the anecdotal portions of the Study which included surveys, public hearings, focus groups, and interviews.

GSPC's Data Collection Plan is attached hereto as Appendix B.

D. Identification, Hiring and Training of Temporary Data Collectors

Bid tabulation data and the results from the Prime Vendor Questionnaire conducted by GSPC had to be collected and entered manually; therefore, GSPC contracted with 1st Choice Staffing, a Maryland-based, certified MFD company, to provide temporary data entry personnel. A job description outlining the required skills and abilities was provided to 1st Choice and 1st Choice provided data entry personnel to perform services at GSPC's offices in Atlanta, Georgia.

An on-site training session was conducted during which the temporary data entry personnel were trained by GSPC by entering actual data. Therefore, they were able to practice locating the relevant information and completing the data entry input forms. The data collectors also had ample opportunity to ask questions and a GSPC team member was always on hand to assist with any technical or logistical problems. A copy of the Microsoft Access data entry forms for each of the Prime Vendor Questionnaire and the Bid tabulations are attached in Appendices C and D.

E. Data Collection and Creation of Databases

1. Montgomery County's Procurements

In order to create and execute a data collection plan, GSPC needed to understand Montgomery County's procurement process and how they maintain their data. During the original data assessment, officials at Montgomery County described the process by which the information on each contract is captured and the various thresholds for data maintenance. Three types of procurements occur in Montgomery County:

Purchases under \$10,000, which are made by the department or end-user. County officials described competition on these types of procurements as "encouraged," though they are not considered competitive.



- Purchases between \$10,000 and \$99,999 are made using Request for Quotes (RFQs) and are considered informal.
- Purchases over \$100,000 are made using formal Invitations for Bid (IFBs) and Requests for Proposals (RFPs).

In 2010, roughly the middle of the Study Period, Montgomery County transitioned to a new Oracle procurement system. Due to this transition, not only were certain data determined to be available electronically and some only available in hard copy or PDF format, but also that some data needed for the Study were available in one format prior to the transition and a different format after the transition. GSPC undertook to collect all data in whatever format and to manage the data by matching data, filling in any missing assignments, and accounting for many data gaps.

2. Electronic Data

Electronic data supplied by Montgomery County and other data collected by GSPC were catalogued and stored in GSPC's computer systems subsequent to the data collection effort. The data entered were used to develop databases containing contracting history for each business type, for both prime contracting and subcontracting on behalf of Montgomery County. GSPC related all of the databases collected in order to cross-reference information among the files, including matching addresses, NIGP or NAICS codes, work categories, and MFD identification.

3. Data Entry Verification

GSPC examined each list to make sure that they were consistent in ethnicity identifications and work categories. Independent sources were used to resolve any inconsistencies and entire lists were verified by comparison to other databases, rather than verifying just a sample of each list.

4. **Data Source Description**

The following describes the databases created by GSPC and used for the analyses contained in this Study:

a) **Bidders' List**

The Bidders' List is a compilation of electronic bid tabulations (in Excel and PDF format) as well as "Transmittal Sheets" which were in hard copies. GSPC compiled the Bidder's List from all IFBs and RFPs solicited during the Study Period. Bidder information only provides details about the prime vendors. The firms on the Bidders' List were included in the Master Vendor File and the Bidders' List was used to calculate the Relevant Market.



b) Contract List

The Contract List is a data file of all awards made during the Study Period. This data file of awardees was used as the mailing list for the Prime Vendor Questionnaire. It was also used to conduct the Threshold Analysis and all the firms on the Contract List, that were located within the Relevant Market, were included in the Availability Estimates. Firms in this unique prime database were counted once in each of the work categories in which they performed work (one category per contract) for purposes of availability, but each award made to a firm was counted in the Threshold Analysis.

c) Master Vendor File

The Master Vendor file is a compilation of all lists of vendors used to determine availability estimates. It was also used to match and verify data in other data files, particularly to make sure that information assigned to firms for utilization calculations matched the information assigned to firms for availability calculations. This is important to make sure that GSPC is comparing like-data to like-data. The Master Vendor File contains the lists of firms from the following data sources:

- Contract List
- > ERP Vendor List
- CVRS Vendor List
- Bidders' List (RFPs and IFBs)
- Subcontractors (from Prime Vendor Questionnaire)
- Purchase Orders
- > Washington Suburban Sanitary Commission (WSSC) Registered Vendor List

The purpose of the Master Vendor File is to collect, in one database, a listing of all firms that are ready, willing, and able to do business with the County. It includes internal lists from Montgomery County, as well as the Washington Suburban Sanitary Commission (WSSC) Vendor List, which is a list maintained outside of Montgomery County. Although not included in the Master Vendor List, the MDOT Prime and Subcontractor Minority and Female owned business list was used to match to the firms in the Master Vendor List to better identify firm ownership. By including the outside vendor list from WSSC, GSPC has a broader inclusion of



firms that have expressed an interest in doing business with government.¹³⁵ Although GSPC may not have picked up every available firm in the Relevant Market, it has included such a broad sample that the percentages are reliable and no sample bias would be indicated.

d) Prime Vendor Questionnaire

The Prime Vendor Questionnaire referenced above was conducted through a mail questionnaire prepared by GSPC and sent to all awardees for all contract awards during the Study Period. GSPC used a list of the contracts issued during the Study Period and, for purposes of benchmarking, all the way back to 2004. The contract file included every award from Fiscal Year 2005 to Fiscal Year 2012. A copy of the questionnaire is attached as Appendix E. A total of 941 questionnaires, reflecting 1407 individual contracts, were sent to contract awardees by the Heyman Mailing Service, a local small business located in Rockville, MD with a three-week return date.¹³⁶ The Winston/Terrell Group contacted those firms that did not respond via e-mail, which extended the overall response time to about three months. GSPC continued to take responses until it began conducting the analysis. 157 firms had envelopes returned as undeliverable and 147 unique firms, reflecting 226 contracts, responded to the questionnaire. There was a contract response rate of 16.06% and a unique firm response rate of 15.62%. This is a sufficient response to infer reliable conclusions about all firms and no response bias can be inferred by the firms that failed to return the questionnaire.

The results of the Prime Vendor Questionnaire were utilized to calculate Subcontractor Utilization, to include subcontractors in availability estimates, and to assist in determining benchmarks for subcontractors. In addition, the subcontractor race/ethnicity/gender identification was used to verify like information provided by Montgomery County in various databases.

e) Purchase Orders

During the County's transition to the Oracle system, the only Purchase Orders (P.O.'s) transferred from the previous system were those that had remaining balances, which are coded in the system, and new P.O.'s. GSPC was provided electronic P.O. data for FY2011 and FY2012 from the Oracle systems and for P.O.'s issued prior to 2010 from the Advanced Purchasing and Inventory Control

¹³⁵ GSPC only included firms from the outside vendor list that are registered to do business in the commodity classes in which Montgomery County also does business.



System (ADPICS). GSPC included in its analysis all P.O.'s issued from the Study Period (July 1, 2007 to June 30, 2012) in order to track prime contractor utilization. It should be noted that P.O.'s in Montgomery County represent committed and encumbered funds.

f) Payment File

The County's Finance Department provided electronic data from the FAMIS system from which GSPC was able to pull data for DPO Direct Purchases, but only for the FY2011 and FY2012 years. DPO data prior to that time was not available electronically, and after interviewing a substantial majority of the County's departments, it was determined that the departments did not maintain direct purchase data prior to 2011. Two years of data for DPOs is sufficient to conduct the necessary analysis.

g) **P-Card Purchases**

The County's finance department provided GSPC with all P-card purchases from FY2004 through FY2012. The P-card purchases are essentially the record of credit card purchases made by authorized County personnel. The P-card purchases carry account codes, but do not carry NIGP or other commodity codes that would permit GSPC to ascertain the work category. Therefore, the P-card purchase data was utilized to determine, as one category (as opposed to the four work categories), utilization by MFD firms. There was no utilization of identified disabled firms under P-card purchases.

F. Data Cleanup and Verification

After the completion of data collection, the data were electronically and manually "cleaned" to eliminate duplicates, fill in unpopulated fields, and resolve any anomalies. In the cleanup process, GSPC made the assumption that any vendor that was not otherwise identified as an ethnic minority or Caucasian Female owned business is owned by a non-MFD.¹³⁷ In addition, when a firm owner appeared in multiple categories, GSPC counted race and ethnicity over gender, resulting in only Caucasian Female owned firms in the Female owned category. Disabled owned firms are considered in a separate analysis throughout, as this identification can cross both race

¹³⁷ This assumption was made because MFDs are specifically identified and certified as such by governmental entities. To the contrary, non-MFDs are not typically given any identifier and have no indication of race/ethnicity/gender, or if they are identified, it has included that identification on the lists. Further, GSPC has used various lists to cross-reference against each other to verify race/ethnicity/gender. Where there were any inconsistencies, GSPC researched and confirmed the correct race/ethnicity/gender. Because of the large number of records in various data files, GSPC relied on matching firm names (and wherever possible vendor ID#) to match data. Not all data electronically matched because firm names may be spelled differently and therefore not electronically identified as the same firm. GSPC attempted to manually resolve these unmatched firms both in matching data and removing duplicates.



and gender. This means that all disabled firms were counted once in race/ethnicity/gender categories and once in the disabled category.

After electronically matching firms, not all of the firms were identified by business categories; therefore, GSPC undertook to manually assign business categories to firms in accordance with the Contract Classifications set forth below. In addition, some firms did not electronically match for race/ethnicity/gender, so GSPC undertook to manually match firms to the County MFD lists or the MDOT MWBE lists.

The business category was not able to be identified for all firms in the Master Vendor File and these firms, most of which were unmatched duplicates to firms already included in the Master Vendor File, were excluded from the availability analysis. However, since both MWBEs and non-MWBEs were equally likely to be in this category, the omission of these firms should not introduce any bias into the analysis.

G. Contract Classifications

The County's electronic files provided firms defined in four (4) business categories¹³⁸:

- Construction all firms whose line of business falls into traditional commercial construction functions, including general contractors, repair, maintenance, electrical, mechanical, painting, plumbing, and other specialty trade contractors.
- Professional Services- architects, engineers, lawyers, accountants, doctors, and other specialized consultants
- > Services other skilled and non-professional services.
- ▷ Goods supplies, goods, parts and other tangible products.

GSPC utilized the MFD lists provided by County or the MWBE lists provided by MDOT to confirm the race/ethnicity/gender status of a firm. §11B of Montgomery County's Code defines Minority businesses, as "Businesses that are certified as a minority business enterprise under State procurement law and certain non-profit entities organized to promote the interests of persons with a disability are eligible to be certified as an MFD business in accordance with these regulations." Under Maryland Procurement Law, COMAR §21.11.03.03:



(b) "Socially and economically disadvantaged individual" is rebuttably presumed to include a member of any of the following groups:

(i) African American, which includes an individual having origins in any of the black racial groups of Africa;

(ii) American Indian/Native American, which includes an individual having origins in any of the original peoples of North America and who is a documented member of a North American Tribe, Band, or otherwise has a special relationship with the United States or a state through treaty, agreement, or some other form of recognition, including an individual who claims to be an American Indian/Native American and who is so regarded by the American Indian/Native American community of which the individual claims to be a part, but not including an individual of Eskimo or Aleutian origin;

(iii) Asian, which includes an individual having origins in the Far East, Southeast Asia, or the Indian Subcontinent, and who is so regarded by the community of which the person claims to be a part;

(iv) Hispanic, which includes an individual of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race, and who is so regarded by the community of which the person claims to be a part;

(v) Physically or mentally disabled, which includes an individual who has an impairment that substantially limits one or more major life activities, who is regarded generally by the community as having such a disability, and whose disability has substantially limited the individual's ability to engage in competitive business;

(vi) Women, which includes an individual woman, regardless of race or ethnicity; or

(vii) Any other individual found by the certification agency to be socially and economically disadvantaged.



H. Relevant Market Analysis

The relevant market is the geographic area where 75-85% of the firms bidding with Montgomery County are located.

The now commonly-held idea that the relevant market area should encompass at least seventyfive to eighty-five percent of the "qualified" vendors that serve a particular sector has its origins in antitrust lawsuits.¹³⁹ In line with antitrust precepts, United States Supreme Court Justice Sandra Day O'Connor, in <u>Croson</u>, reasoned that a mere statistical disparity between the overall minority population in Richmond, Virginia, which was 50% African American, and the award of prime contracts to minority owned firms, 0.67% of which were African American owned firms, was an insufficient statistical comparison to raise an inference of discrimination. Justice O'Connor also wrote that the relevant statistical comparison is one between the percentage of Minority Business Enterprises in the marketplace [or *Relevant Market*] who were qualified to perform work (including prime and subcontractors) and the percentage of total City dollars awarded to minority firms.

In this Study, the relevant market has been determined for each of the major procurement categories using the same relevant market for both primes and subcontractors:

- > Construction
- Professional Services
- > Services
- ➢ Goods/Supplies

For each procurement category, GSPC measured the "relevant market" by the area where at least 75% of the bidders are located. GSPC gives this method greater weight than other potential methods for two reasons. First, in our view, it more accurately defines where firms come from that are offering their services to Montgomery County, and reflects the spirit of the Supreme

¹³⁹D. Burman. "Predicate Studies: The Seattle Model," Tab E of 11-12 <u>Minority and Women Business Programs Revisited</u> (ABA Section of Public Contract law, Oct. 1990). Relevant market is an economics concept used to analyze the competitive impact of a merger or business practice under antitrust investigation, since a competitor with low market share is presumed to lack market power.



Court's test, which asserts that qualified firms in the area demonstrate that they are "ready, willing and able" to do business with governmental or other entities. Second, an emphasis on the percentage of monetary awards or payments in a market ignores the possibility that a few firms dominate contracting. It also concentrates the relevant market only in areas where Montgomery County is already spending money, perhaps because of discrimination and ignores those areas where there are firms that have, at least, expressed an interest in doing business with Montgomery County but who may have not had the opportunity, again perhaps because of discrimination.

Tables 5-8 summarize the geographic area where at least 75% of firms offering their services, or providing their goods, are located. In analyzing the relevant market data, GSPC tabulated the percentage of usage beginning with City of Rockville, Maryland, which is within Montgomery County, and expanding out according to proximity. If the number of firms bidding, or with which Montgomery County spent dollars, that are located within the City of Rockville, did not reach the 75% benchmark, then GSPC began counting firms and dollars located in all of Montgomery County, then the State of Maryland. If the 75% mark was still not reached, GSPC counted the District of Columbia and Virginia, as those are the closest states to Montgomery County. If necessary, GSPC expanded out to West Virginia, Pennsylvania, and Delaware, as those are the nearest contiguous states to Maryland. Tables 5, 6. And 7 below show that the Relevant Market for both Construction, Professional Services, and Services is Maryland, D.C., and Virginia.

When, upon exhausting the firms contiguous to the State of Maryland, the 75% benchmark had still not been attained, GSPC then analyzed the bidding firms or dollars spent in the entire United States as is the case for the business category of Goods in Table 8.

Construction Total	327			
	#	%	Cum#	Cum%
Rockville	19	6%	19	6%
Montgomery County	69	21%	88	27%
Maryland	144	44%	232	71%
Washington D.C.	17	5%	249	76%
Virginia	36	11%	285	87%
WV	0	0%	285	87%
РА	8	2%	293	90%
DE	0	0%	293	90%
US	33	10%	326	100%
Outside US	1		327	100%
Total	327	100%		

Table 5: Relevant Market – Construction



Professional Services Total	275			
	#	%	Cum#	Cum%
Rockville	29	11%	29	11%
Montgomery County	51	19%	80	29%
Maryland	88	32%	168	61%
Washington D.C.	15	5%	183	67%
Virginia	39	14%	222	81%
WV	0	0%	222	81%
PA	11	4%	233	85%
DE	0	0%	233	85%
US	42	15%	275	100%
Outside US	0	0%	275	100%
Total	275	100%		

Table 6: Relevant Market- Professional Services

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Table 7: Relevant Market - Services

Services Total	1363			
	#	%	Cum#	Cum%
Rockville	142	10%	142	10%
Montgomery County	365	27%	507	37%
Maryland	356	26%	863	63%
Washington D.C.	69	5%	932	68%
Virginia	138	10%	1070	79%
WV	0	0%	1070	79%
PA	55	4%	1125	83%
DE	3	0%	1128	83%
US	232	17%	1360	100%
Outside	3	0%	1363	100%
Total	1363	100%		



Goods Total	633			
	#	%	Cum#	Cum%
Rockville	49	8%	49	8%
Montgomery Count	128	20%	177	28%
Maryland	167	26%	344	54%
Washington D.C.	16	3%	360	57%
Virginia	53	8%	413	65%
WV	0	0%	413	65%
PA	31	5%	444	70%
DE	6	1%	450	71%
US	179	28%	629	99%
Outside US	4	1%	633	100%

Table 8: Relevant Market - Goods

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I. Availability Analysis

There are numerous approaches to measuring available, qualified firms. GSPC has established a methodology of measuring availability based upon demonstrated interest. GSPC measured Prime Contractor and Subcontractor Availability by utilizing the Master Vendor File (the contents of which are set forth in 4(c) above).

Typically, GSPC would determine a separate availability estimate for primes and subcontractors, but removing from the Master Vendor File, those firms that provide services in areas that are typically subcontractor services (e.g. HVAC, painting, plumbing, and electrical). However, the County, in fact, hires firms that perform services in these areas directly as prime contractors in the primary subcontractor areas. Therefore, GSPC did not remove them as potential primes.

Table 9 below provides the number of available firms, from the Master Vendor File, that are located within the relevant market for Construction firms (Rockville, Montgomery County, Maryland, Washington D.C., and Virginia) and that are ready, willing, and able to provide services as primes. It shows that 73.54% of all available firms are owned by Non-MFDs. African American owned firms are the largest minority group with 11%, followed by Hispanic owned firms with



6.14%, and White Female owned firms with 5.54%. Asian American and Native American owned firms each represent less than 4% of available construction firms.

Table 9: Prime Availability-Construction

Race/Ethnicity	#	%
AFRICAN AMERICAN	385	11.00%
ASIAN AMERICAN	115	3.29%
HISPANIC AMERICAN	215	6.14%
NATIVE AMERICAN	17	0.49%
WHITE FEMALE	194	5.54%
NON-MINORITY MALE	2573	73.54%
TOTALS	3499	100.00%

(Relevant Market-MD/DC/VA)

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Table 10, below, shows that Non-MFDs make up about 80% of all ownership of firms available to provide Professional Services including A/E, with African American ownership at about 8.25% and all other race/ethnicity/gender categories less than 5%.

Table 10: Prime Availability-Professional Services

(Relevant Market-MD/DC/VA)

Race/Ethnicity	#	%
AFRICAN AMERICAN	391	8.25%
ASIAN AMERICAN	195	4.11%
HISPANIC AMERICAN	59	1.24%
NATIVE AMERICAN	5	0.11%
WHITE FEMALE	202	4.26%
NON-MFD	3890	82.03%
TOTALS	4742	100.00%

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In Table 11, Non-MFDs again make up the largest availability group by far, with 75.82% of the firms that perform Services, with African American owned firms again being the largest minority group with 12.57%, followed by White Female owned and Asian American owned firms, at 5.46% and 3.49% respectively.

Table 11: Prime Availability-Services

Race/Ethnicity	#	%
AFRICAN AMERICAN	766	12.57%
ASIAN AMERICAN	213	3.49%
HISPANIC AMERICAN	157	2.58%
NATIVE AMERICAN	5	0.08%
WHITE FEMALE	333	5.46%
NON-MINORITY MALE	4622	75.82%
TOTALS	6096	100.00%

(Relevant Market- MD/DC/VA)

Griffin & Strong, P.C. 2014

Table 12 reveals that over 86% of firms that are willing and able to provide Goods and Supplies to Montgomery County are Non-MFDs, with African American owned firms representing only 5.79% of all available firms in Goods and White Female owned firms following closely at 4.5%. Asian American owned firms represent 2% of firms available as prime contractors in the Goods and Supplies category, and Hispanic American owned firms are 1.5% of total primes. Native American owned firms again represent less than 1% of the overall availability in the relevant market.

Table 12: Prime Availability-Goods

(Relevant Market-US)

Race/Ethnicity	#	%
AFRICAN AMERICAN	326	5.79%
ASIAN AMERICAN	113	2.01%
HISPANIC AMERICAN	85	1.51%
NATIVE AMERICAN	6	0.11%
WHITE FEMALE	253	4.50%
NON-MINORITY MALE	4843	86.08%
TOTALS	5626	100.00%



Table 13: Prime Availability for Disabled- Owned Firms, All Categories

Construction					
	#	%			
Disabled	35	1.00%			
TOTALS	3499	1.00%			
Professional Services					
Disabled	38	0.80%			
TOTALS	4742	0.80%			
	Services				
Disabled	38	0.62%			
TOTALS	6096	100%			
Goods					
Disabled	43	0.76%			
TOTALS	5626	100%			

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Disabled owned firms account for 1% or under in all work categories. All disabled owned firms were counted in this availability and were also counted in the race/ethnicity/gender classification of the owner.



J. Prime Contractor Utilization Analysis

GSPS analyzed utilization in several data sets. It is ideal to combine all utilization but when the data sets are not comparable that is not possible. GSPC was able to obtain data on all five years of the Study for P.O.s for purchases over \$10,000, but could only obtain two (2) years of DPO data for purchases under \$10,000. P-Card purchases used for the analysis are really a sample of the P-Card purchases because only \$2,234,547 was able to be analyzed because GSPC could not match the firms where the remaining \$32,915,762 was spent to work categories.

Additionally, Prime Utilization was separated from Subcontractor Utilization for several reasons. First, Prime Utilization was taken from the County's records and, except for P-Card purchases represented substantially the entire data set. Since the County does not track all subcontractor utilization, GSPC sent a prime vendor questionnaire to primes to obtain subcontractor data. The replies represent a sample of the subcontractor utilization. GSPC could not combine full data sets and samples together for analysis because the percentage outcomes would be skewed.

Further, it is important that the County consider subcontractor data separately because subcontracting is another opportunity in the marketplace and it has a separate set of processes and potential barriers apart from direct contracting with the County. It is possible that there could be no discrimination in prime contracting, while there could be active discrimination in the subcontracting marketplace. Subcontractor utilization is also a reflection of whether there is discriminatory behavior in the private marketplace.

It is also another way to satisfy the utilization balance with availability in the marketplace and may be a stepping stone for firms to become primes. Without an assessment of subcontractor utilization there would be an incomplete picture of contracting by the County and in the marketplace. In fact, although not in the County's jurisdiction, there have been instances where a lack of inclusion of subcontractor analysis has caused the support for a remedial program to fail (See, <u>W.H. Scott Construction Co., Inc. v. City of Jackson</u>, 199 F.3d 206 (5th Cir. 1999).



Prime Contractor Utilization for Purchases Over \$10,000 (Using P.O.
 Data)

a) Utilization by Dollar Amount

In order to determine utilization, GSPC examined the P.O. data provided by Montgomery County and calculated according to dollars spent by the County in each respective category and race/gender/ethnic group. Table 14 below shows that Hispanic American owned firms were highly overutilized during the Study Period; however, this is due to two firms that have had high awards over the past five years. The Hispanic American owned firm total accounts for 12.79% of the total prime Construction dollars when their availability is at 6.14%. Alternatively, African American owned firms are highly underutilized, totaling only 1.52% out of the 11% available.

FY	FY AFRICAN AMERICAN		ASIAN AMERICAN		HISPANIC AMERICAN		NATIVE AMERICAN	
	\$	%	\$	%	\$	%	\$	%
2008	\$1,031,079	0.81%	\$3,204,772	2.53%	\$26,217,080	20.66%	\$366,425	0.29%
2009	\$1,422,386	0.65%	\$5,343,918	2.45%	\$27,188,110	12.46%	\$ 0	0.00%
2010	\$1,374,790	0.81%	\$3,291,820	1.93%	\$30,741,065	18.03%	\$ 0	0.00%
2011	\$309,921	0.08	\$9,708,569	2.57%	\$35,564,467	9.40%	\$102,070	0.03%
2012	\$13,718,816	4.95%	\$12,060,058	4.35%	\$30,137,319	10.86%	\$39,352	0.01%
TOTAL	\$17,856,992	1.52%	\$33,609,137	2.87%	\$149,848,041	12.79%	\$507,847	0.04%

Table 14: Prime Contractor Utilization-Construction (MD/DC/VA)

FY	WHITE FEMALE	NON-MFD			TOTAL
	\$	%	\$	%	\$
2008	\$7,965,343	6.28%	\$88,098,223	69.43%	\$126,882,922
2009	\$15,443,080	7.08%	\$168,827,648	77.36%	\$218,225,142
2010	\$9,431,382	5.53%	\$125,646,265	73.70%	\$170,485,322
2011	\$8,162,787	2.157%	\$324,567,384	85.77%	\$378,415,198
2012	\$9,490,028	3.42%	\$211,938,831	76.41%	\$277,384,404
TOTAL	\$50,492,621	4.31%	\$919,078,351	78.46%	\$1,171,392,989



Table 15 below will show that Montgomery County's utilization of prime contractors in the category of Professional Services is also heavily skewed away from the available MFD firms. African American firms total 1.77% of total utilization, when their total availability in the relevant market area is over 8% of all firms. Similarly, Asian American and White Female owned firms are significantly underutilized. Again, Hispanic American firms are overutilized in this category, totaling 3.63% of all prime contracting business with the County at only 1.24% availability. Non-MFDs are utilized at 10% over their availability. Native American owned firms were not utilized.

FY	AFRICAN AMERICAN		AFRICAN ASIAN AMERICAN AMERICAN		HISPANIC AMERICAN		NATIVE AMERICAN	
	\$	%	\$	%	\$	%	\$	%
2008	\$1,461,796	2.15%	\$9,180	0.01%	\$1,857,928	2.73%	\$0	0.00%
2009	\$1,731,121	2.31%	\$53,068	0.07%	\$1,573,375	2.10%	\$0	0.00%
2010	\$1,537,585	2.46%	\$71,995	0.12%	\$37,616	0.06%	\$0	0.00%
2011	\$649,856	1.66%	\$206,536	0.53%	\$2,505,991	6.38%	\$0	0.00%
2012	\$310,000	0.41%	\$785,792	1.03%	\$5,677,152	7.46%	\$0	0.00%
TOTAL	\$5,690,358	1.77%	\$1,126,571	0.35%	\$11,652,061	3.63%	\$0	0.00%

Table 15: Prime Contractor Utilization-Professional Services

FY	WHITE FEMALE		NON-M	FD	TOTAL		
	\$	%	\$	%	\$		
2008	\$1,141,647	1.68%	\$63,480,731	93.42%	\$67,951,281		
2009	\$758,145	1.01%	\$70,901,341	94.51%	\$75,017,050		
2010	\$958,042	1.53%	\$59,997,680	95.84%	\$62,602,918		
2011	\$897,659	2.29%	\$34,997,530	89.15%	\$39,257,572		
2012	\$3,311,082	4.35%	\$65,980,100	86.74%	\$76,064,126		
TOTAL	\$7,066,574	2.20%	\$295,357,383	92.04%	\$320,892,947		



Table 16 below reveals the utilization for the Services category. African Americans are again underutilized at nearly 10% less than their overall availability in the market area, and White Female owned firms and Asian American owned firms both reveal disparities, though not as great. Hispanic American owned firms are utilized much closer to their availability levels in this category (but are still slightly overutilized) and, as we have seen in other categories so far, Non-MFD owned firms are significantly overutilized.

FY	AFRICA AMERIC	AN CAN	ASIAN AMERIC	N AN	HISPAN AMERIC	IIC AN	NATIVE AMERICAN		
	\$	%	\$	%	\$	%	\$	%	
2008	\$641,695	0.30%	\$5,610,358	2.63%	\$7,890,366	3.70%	\$ 0	0.00%	
2009	\$867,302	0.50%	\$10,175,227	5.83%	\$3,223,894	1.85%	\$o	0.00%	
2010	\$2,031,770	1.27%	\$12,157,710	7.59%	\$6,101,647	3.81%	\$o	0.00%	
2011	\$655,310	2.92%	\$2,624,655	11.70%	\$279,760	1.25%	\$1,955,000	8.71%	
2012	\$1,697,221	3.13%	\$3,281,966	6.06%	\$119,450	0.22%	\$720,000	1.33%	
TOTAL									
	\$5,893,298	0.94%	\$33,849,917	5.42%	\$17,615,117	2.82%	\$2,675,000	0.43%	

Table 16: Prime Contractor Utilization-Services

FY	WHITE FEMALE		NON-M	FD	TOTAL		
	\$	%	\$	%	\$		
2008	\$4,139,711	1.94%	\$194,772,292	91.42%	\$213,054,423		
2009	\$3,284,350	1.88%	\$156,949,922	89.94%	\$174,500,695		
2010	\$604,658	0.38%	\$139,261,586	86.95%	\$160,157,372		
2011	\$3,826,091	17.051%	\$13,098,623	58.37%	\$22,439,439		
2012	\$4,369,362	8.06%	\$43,993,633	81.20%	\$54,181,632		
TOTAL	\$16,224,172	2.60%	\$548,076,057	87.79%	\$624,333,561		



Below, GSPC has developed tables to examine the County's prime contractor utilization in the field of Goods. Again, African American owned firms come out at a significant underutilization, as do Asian American and White Female owned firms. Hispanic American owned firms are slightly overutilized and Native American owned firms show no significant disparity between their availability and utilization. Non-MFDs again emerge at over 10% overutilization, with their availability at 85% and their utilization at 96%.

FY	AFRICA AMERIC	AN CAN	ASIAN AMI	ERICAN	HISPAN AMERIC	JIC CAN	NATIVE AMERICAN		
	\$	%	\$	%	\$	%	\$	%	
2008	\$14,034	0.02%	\$13,563	0.02%	\$1,041,351	1.65%	\$ 0	0.00%	
2009	\$412,120	0.61%	\$0	0.00%	\$677,165	1.00%	\$0	0.00%	
2010	\$508,009	0.99%	\$0	0.00%	\$298,053	0.58%	\$0	0.00%	
2011	\$590,227	0.89%	\$25,306	0.04%	\$0	0.00%	\$0	0.00%	
2012	\$705,105	0.43%	\$70,258	0.04%	\$112,000	0.07%	\$0	0.00%	
TOTAL	\$2,229,496	0.54%	\$109,127	0.03%	\$2,128,569	0.52%	\$0	0.00%	

Table 17: Prime Contractor Utilization-Goods

FY	WHITE FEMALE		NON-M	FD	TOTAL
	\$	%	\$	%	\$
2008	\$1,736,723	2.75%	\$60,303,512	95.55%	\$63,109,184
2009	\$1,658,486	2.44%	\$65,206,433	95.96%	\$67,954,205
2010	\$802,733	1.57%	\$49,650,958	96.86%	\$51,259,752
2011	\$1,933,490	2.91%	\$63,819,970	96.16%	\$66,368,993
2012	\$3,252,925	2.00%	\$158,803,847	97.46%	\$162,944,135
TOTAL	\$9,384,357	2.28%	\$397,784,720	96.64%	\$411,636,269



b) Prime Contractor Utilization over \$10,000 by Firm Number (Using P.O. Data)

GSPC also ran the utilization numbers according to the number of unique firms awarded work in each category and each racial or ethnic group. Tables 18 through 21 below show prime contractor utilization for purchases over \$10,000 (using P.O.s) by firm number. Except for Construction, which is the one category in which Hispanic American owned firms are reported as having fewer firms bringing in more high-dollar contracts, and Services, where the same is true for Native American owned firms, the trend was that African American, Asian American, Hispanic American, and Native American owned firms are at a higher utilization percentage by firm number than by dollars spent. This would indicate that the individual contract amounts are smaller and spread over more firms for minorities. The numbers for White Female owned firms seem to be more or less on parity in each category. Non-MFD firms pull in almost exactly the percentage of firms as they do dollars spent in every category, when the Study Period is taken in its entirety.

	Afri Am	ican erican	A Am	sian erican	H Ar	ispanic nerican	N An	Native nerican	V F	Vhite emale	Non	-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	7	3.08%	9	3.96%	16	7.05%	3	1.32%	7	3.08%	185	81.50%	227
2009	8	4.02%	7	3.52%	14	7.04%	2	1.01%	7	3.52%	161	80.90%	199
2010	7	3.74%	10	5.35%	15	8.02%	1	0.53%	7	3.74%	147	78.61%	187
2011	8	3.70%	14	6.48%	14	6.48%	1	0.46%	14	6.48%	165	76.39%	216
2012	14	6.01%	16	6.87%	14	6.01%	2	0.86%	15	6.44%	172	73.82%	233
TOTAL	44	4.14%	56	5.27%	73	6.874%	9	0.85%	50	4.71%	830	78.15%	1062

Table 18: Construction Prime Utilization by Firm Number

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Table 19 below reveals that Non-MFD firms, totaled over the Study Period, represent 92% of prime contractors utilized in Professional Services and show exactly 92% of dollars spent. African American owned firms, however, show 2.73% of all firms and 1.77% of dollars spent. Asian American owned firms split .35% of dollars spent on contracts between 14 firms or 1.22% of overall utilization during the Study Period. Hispanic American owned firms come in again over their firm number percentage threshold in dollars, representing only 1.49% of firms, but showing 3.63% of dollars spent.



	At Am	frican nerican	An An	Asian nerican	Hi An	ispanic nerican	N Am	ative erican	V Fe	Vhite emale	Nor	-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	6	2.36%	3	1.18%	3	1.18%	0	0.00%	5	1.97%	237	93.31%	254
2009	6	2.45%	3	1.22%	4	1.63%	0	0.00%	3	1.22%	229	93.47%	245
2010	4	1.77%	2	0.88%	2	0.88%	0	0.00%	1	0.44%	217	96.02%	226
2011	7	3.52%	3	1.51%	3	1.51%	0	0.00%	8	4.02%	178	89.45%	199
2012	6	2.73%	3	1.36%	5	2.27%	0	0.00%	9	4.09%	197	89.55%	220
TOTAL	29	2.53%	14	1.22%	17	1.49%	0	0.00%	26	2.27%	1058	92.48%	1144

Table 19: Professional Services Prime Utilization by Firm Number

Griffin & Strong, P.C. 2014

In the Services work category, Asian American owned firms are paid 5.42% of contract dollars spent over the Study Period, but spread it over only 20 firms, or 1.55% of the overall number of firms. Hispanic American owned firms and Native American owned firms have dollar and number utilization percentages that are closer together, while African American owned firms took in less than 1% of dollars spent to spread over 3% of total firms awarded.

	Af Am	rican erican	A Am	sian erican	Hi Am	spanic lerican	N Am	ative erican	W Fe	/hite male	Nor	-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	8	2.69%	5	1.68%	10	3.37%	0	0.00%	4	1.35%	270	90.91%	297
2009	9	2.98%	6	1.99%	9	2.98%	0	0.00%	7	2.32%	271	89.74%	302
2010	9	3.15%	5	1.75%	9	3.15%	0	0.00%	6	2.10%	257	89.86%	286
2011	7	3.65%	2	1.04%	5	2.60%	1	0.52%	13	6.771%	164	85.42%	192
2012	8	3.74%	2	0.93%	5	2.34%	1	0.47%	15	7.01%	183	85.51%	214
TOTAL	41	3.18%	20	1.55%	38	2.94%	2	0.15%	45	3.49%	1145	88.69%	1291

Table 20: Services Prime Utilization by Firm Number



In the table below, the Goods category shows that Non-MFD primes represent 93.71% of the firms hired, and they received nearly 97% of the contract dollars spent. African American, Asian American, and Hispanic American owned prime contracting firms, representing 1.8%, .38%, and 1.5% of the number of firms respectively, received 0.5%, 0.03% and 0.5% of the dollars spent, 1.03% of all dollars combined. Native American owned firms show no utilization numbers in this category.

	A An	frican 1erican	Ar	Asian nerican	Hi An	spanic 1erican	N Am	ative erican	W Fe	hite male	No	n-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	3	1.38%	1	0.46%	6	2.76%	0	0.00%	4	1.84%	203	93.55%	217
2009	2	0.83%	0	0.00%	4	1.65%	0	0.00%	5	2.07%	231	95.45%	242
2010	4	1.72%	0	0.00%	5	2.15%	0	0.00%	4	1.72%	220	94.42%	233
2011	5	2.66%	2	1.06%	0	0.00%	0	0.00%	7	3.72%	174	92.55%	188
2012	5	2.70%	1	0.54%	1	0.54%	0	0.00%	8	4.32%	170	91.89%	185
TOTAL	19	1.78%	4	0.38%	16	1.50%	0	0.00%	28	2.63%	998	93.71%	1065

Table 21: Goods Prime Utilization by Firm Number

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c) Disabled owned Firm Utilization for Purchases over \$10,000 By Dollars (Using P.O. data)

GSPC conducted a separate analysis of Disabled owned firms. All disabled- owned firms were counted in previous tables according to race/ethnicity/gender and are counted here separately as Disabled owned. On average Disabled owned firms account for just under 1% of all Construction dollars or about \$11 Million over the Study Period.



	Disable	d	TOTAL
FY	#	%	#
2008	\$0	0.00%	\$126,882,922
2009	\$2,425,651	1.11%	\$218,225,142
2010	\$2,361,486	1.39%	\$170,485,322
2011	\$2,317,575	0.61%	\$378,415,198
2012	\$3,690,134	1.33%	\$277,384,404
TOTAL	\$10,794,846	0.92%	\$1,171,392,989

Table 22: Construction-Disabled owned Firms

Griffin & Strong, P.C. 2014

Disabled owned firms account for all most no utilization in any work category other than Construction, although there is some utilization in Services.

Table 23: Professional Services-Disabled owned Firms

	D	isabled	TOTAL
FY	#	%	#
2008	\$0	0.00%	\$67,951,281
2009	\$ 0	0.00%	\$75,017,050
2010	\$0	0.00%	\$62,602,918
2011	\$ 0	0.00%	\$39,257,572
2012	\$ 0	0.00%	\$76,064,126
TOTAL	\$0	0.00%	\$320,892,947



	Disab	led	TOTAL
FY	#	%	#
2008	\$o	0.00%	\$213,054,423
2009	\$o	0.00%	\$174,500,695
2010	\$o	0.00%	\$160,157,372
2011	\$o	0.00%	\$22,439,439
2012	\$18,000	0.03%	\$54,181,632
TOTAL	\$18,000	0.03%	\$624,333,561

Table 24: Services- Disabled Owned-Firms

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Table 25: Goods-Disabled owned Firms Disabled TOTAL FY % # # 0.00% \$63,109,184 2008 **\$0** 0.00% \$67,954,205 2009 **\$**0 0.00% \$51,259,752 2010 **\$**0 0.00% \$66,368,993 **\$**0 2011 0.00% 2012 **\$0** \$162,944,135 TOTAL **\$**0 0.00% \$411,636,269

Griffin & Strong, P.C. 2014

d) Disabled owned Firms Utilization for Purchases over \$10,000 by Firm Number (Using P.O. Data)

In Table 26 below, only two disabled firms were utilized in Construction during the Study Period and one firm was utilized in Services. No other Disabled owned firms were utilized as prime contractors during the Study Period for purchases of \$10,000 or above.



		CONSTRUCTION		
FY	#	%	TOT	ΓAL
2008	0	0.00%	227	.00
2009	1	0.50%	199	.00
2010	1	0.53%	187	.00
2011	1	0.46%	216	.00
2012	2	0.86%	233	.00
TOTAL	2	0.19%	106:	2.00
		PROFESSIONAL SERVICES		
FY	#	%		TOTAL
2008	0.00	0.00%		\$254
2009	0.00	0.00%		\$245
2010	0.00	0.00%		\$226
2011	0.00	0.00%		\$199
2012	0.00	0.00%		\$220
TOTAL	0.00	0.00%		\$1,144
		SERVICES		
FY	#	%		TOTAL
2008	0.00	0.00%		297
2009	0.00	0.00%		302
2010	0.00	0.00%		286
2011	0.00	0.00%		192
2012	1.00	0.47%		214
TOTAL	1.00	0.08%		1291
		GOODS		
FY		#	%	TOTAL
2008	0.00	0.00%		217
2009	0.00	0.00%		242
2010	0.00	0.00%		233
2011	0.00	0.00%		188
2012	0.00	0.00%		185
TOTAL	0.00	0.00%		1065

Table 26: Disabled Owned Firms Utilization by Firm Number



K. Prime Utilization for Direct Purchases Under \$10,000

1. Prime Utilization Dollars for Direct Purchases (using DPO Data)

Direct Purchase Orders ("DPOs") represent those purchases made by Montgomery County that amounted to less than \$10,000, but exclude P-Card purchases. GSPC has run utilization numbers for these purchases separately from our P.O. analysis above. This analysis is for FY2011 and FY2012 of the Study Period, because these are the only years that electronic data was maintained by the County for P.O.'s, and manual data was not available from the County's departments to execute the analysis.

In the table below, it is apparent that African American owned firms make up 4.29% of all construction DPO's and White Female owned firms see a slight increase at 5.83%. Native American Owned firms are completely unutilized at this threshold and Asian American owned firms make up on a little over 1% of overall DPO's. Hispanic American Owned firms are 4.28% of DPOs and Non-MFDs make up the vast majority at 84.47%.

	CONSTRUCTION														
	Afrie Amer	can ican	Asian An	nerican	Hisp Ame	anic rican	Na Am	ative erican	White H	emale	Non-M	IFD	TOTAL		
FY	#	%	#	%	#	%	#	%	#	%	#	%	#		
2011	\$0	0.00%	\$6,699	2.51%	\$55,460	20.76%	\$0	0.00%	\$14,174	5.306%	\$190,818	71.43%	\$267,151		
2012	\$80,834	5.00%	\$14,504	0.90%	\$25,165	1.56%	\$0	0.00%	\$95,590	5.92%	\$1,399,802	86.63%	\$1,615,894		
TOTAL	\$80,834	4.29%	\$21,203	1.13%	\$80,625	4.28%	\$0	0.00%	\$109,764	5.83%	\$1,590,619	84.47%	\$1,883,045		

Table 27: Construction Utilization by DPO

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Table 28 below shows that 96% of DPO's in professional services are awarded to Non-MFD firms. Native American owned firms are the least utilized, followed by Asian American owned firms, then African American, Hispanic American, and White Female owned firms.



Table 28: Professional Services Utilization by DPO

					PRO	FESSION	AL SERV	ICES					
	African	American	Asian A	merican	Hispanic A	merican	Native A	merican	White F	emale	Non-M	IFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2011	\$o	0.00%	\$0	0.00%	\$10,585	5.15%	\$0	0.00%	\$288	0.14%	\$194,715	94.71%	\$205,588
2012	\$3,200	0.23%	\$140	0.01%	\$8,880	0.64%	\$0	0.00%	\$25,704	1.85%	\$1,350,415	97.27%	\$1,388,339
TOTAL	\$3,200	0.20%	\$140	0.01%	\$19,465	1.22%	\$0	0.00%	\$25,993	1.63%	\$1,545,129	96.94%	\$1,593,927

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Table 29 shows an increase in African American owned firm utilization from the other categories, though Non-MFD firm utilization spikes to nearly 98% overall, leaving each other racial /ethnic/gender category under 1% utilization.

Table 29: Services Utilization by DPO

	SERVICES														
	African American Asian American Hispanic American Native American White Female Non-MFD														
FY	#	%	#	%	#	%	#	%	#	%	#	%	#		
2011	\$10,085	4.75%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$2,117	0.998%	\$199,898	94.25%	\$212,100		
2012	\$50,324	1.40%	\$855	0.02%	\$2,499	0.07%	\$0	0.00%	\$15,027	0.42%	\$3,518,760	98.08%	\$3,587,465		
TOTAL	\$60,409	1.59%	\$855	0.02%	\$2,499	0.07%	\$0	0.00%	\$17,144	0.45%	\$3,718,658	97.87%	\$3,799,565		

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Goods DPOs are 3.67% White Female Owned firms, with a 95% Non-MFD firm utilization and all other minority categories below 1% utilization overall.

Table 30: Goods Utilization by DPO

	GOODS													
	African	American	Asian An	nerican	Hispanic	American	Native A	merican	White F	emale	Non-M	IFD	TOTAL	
FY	#	%	#	%	#	%	#	%	#	%	#	%	#	
2011	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$21,520	6.92%	\$289,350	93.08%	\$310,870	
2012	\$1,245	0.03%	\$28,033	0.78%	\$0	0.00%	\$0	0.00%	\$122,001	3.39%	\$3,450,344	95.80%	\$3,601,622	
TOTAL	\$1,245	0.03%	\$28,033	0.72%	\$0	0.00%	\$0	0.00%	\$143,521	3.67%	\$3,739,694	95.58%	\$3,912,492	



Table 31: "Other" Work Category Utilization by DPO

						(THEF	2					
	Af	rican erican	A Am	sian erican	His Am	spanic erican	Na Am	ative erican	W Fe	hite male	Non-M	1FD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2011	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.000 %	\$1,318,389	100.00%	\$1,318,389
2012	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$18,443,395	100.00%	\$18,443,395
TOTAL	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$19,761,785	100.00%	\$19,761,785

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2. Disabled Prime Utilization by DPO Dollars

Disabled owned firms represent .09% of Construction DPOs, .02% of Professional Services, 18.70% of all Services DPOs, and reveal no utilization at all in the Goods category. This can be seen below in Table 32 below

Table 32: Disabled owned Prime Utilization by DPO

	CONSTR	UCTION	
FY	\$	%	Total
2011	\$0	0.00%	\$267,151
2012	\$1,687	0.10%	\$1,615,894
TOTAL	\$1,687	0.09%	\$1,883,045
	PROFESSION	AL SERVICES	
FY	\$	%	TOTAL
2011	\$o	0.00%	\$205,588
2012	\$375	0.03%	\$1,388,339
TOTAL	\$375	0.02%	\$1,593,927
	SERV	ICES	
FY	\$	%	TOTAL
2011	\$929	0.30%	\$310,870
2012	\$730,528	20.28%	\$3,601,622
TOTAL	\$731,457	18.70%	\$3,912,492
	GOO	DDS	
FY	\$	%	TOTAL
2011	\$0	0.00%	\$1,318,389
2012	\$0	0.00%	\$18,443,395
TOTAL	\$0	0.00%	\$19,761,785



L. P-Card Purchases

P-Card Purchases are typically purchases under \$10,000 that are charged to certain chart of accounts. These charts do not correlate to NIGP or other commodity codes that would allow determination of which work category the purchase was made in. Therefore, GSPC matched the work category of the firm providing the goods or services.

Generally, more than 95 % of all P-Card purchases were made with Non-MFDs during the Study Period. Even this percentage was skewed lower by substantial purchases with Female owned firms in Goods during 2012.¹⁴⁰

	Afi Amo	rican erican	As Am	sian erican	His Am	spanic erican	Na Ame	tive rican	Wh Fen	nite nale	Non-N	IWBE	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	*	%	#
2008	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$2,022	100.00%	\$2,022
2009	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$934	100.00%	\$934
2010	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$7,383	100.00%	\$7,383
2011	\$0	0.00%	\$0	0.00%	\$ 0	0.00%	\$0	0.00%	\$607	2.678 %	\$22,062	97.32%	\$22,670
2012	\$0	0.00%	\$ 0	0.00%	\$ 0	0.00%	\$ 0	0.00%	\$ 0	0.00%	\$2,890	100.00%	\$2,890
TOTAL	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$607	1.69%	\$35,291	98.31%	\$35,898

Table 33: Utilization for Construction P-Card Purchases

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Table 34: Utilization for Professional Services P-Card Purchases

	Afi Amo	rican erican	A Am	sian erican	His Am	panic erican	Na Ame	tive crican	W Fe	hite male	Non-l	MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	\$ 0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$1,365	100.00%	\$1,365
2009	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$19,762	100.00%	\$19,762
2010	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$63,341	100.00%	\$63,341
2011	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$119,535	100.00%	\$119,535
2012	\$0	0.00%	\$0	0.00%	\$ 0	0.00%	\$0	0.00%	\$0	0.00%	\$11,597	100.00%	\$11,597
TOTAL	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$215,600	100.00%	\$215,600

¹⁴⁰ In addition to the \$2,234,547 accounted for in these P-Card Purchase Tables, there was \$32,915,762 in additional purchases with Non-MFD firms for which GSPC could not match work categories to the firms. It is therefore certain that the MFD figures represented in the tables would be substantially smaller if those firms had been included in the analysis.



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EV	Afri Ame	ican rican	As Ame	sian erican	His Ame	panic erican	Na Ame	tive erican	Wł Fen	nite nale	Non-	MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	\$386	0.29%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$132,260	99.71%	\$132,646
2009	\$o	0.00%	\$0	0.00%	\$0	0.00%	\$ 0	0.00%	\$39	0.02%	\$190,890	99.98%	\$190,929
2010	\$o	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$15	0.01%	\$200,376	99.99%	\$200,391
2011	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$ 0	0.00%	\$3,272	3.178%	\$99,687	96.82%	\$102,959
2012	\$1,730	2.28%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$74,084	97.72%	\$75,814
TOTAL	\$2,117	0.30%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$3,326	0.47%	\$697,295	99.23%	\$702,738

Table 35: Utilization for Services P-Card Purchases

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Table 36: Utilization for Goods P-Card Purchases

	Afri Amei	can rican	Asi Amer	ian rican	His Ame	panic erican	Na Ame	tive erican	Wh Fen	ite nale	Non-N	ИFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	\$0	0.00%	\$830	1.14%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$71,721	98.86%	\$72,550
2009	\$625	0.13%	\$1,275	0.27%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$470,431	99.60%	\$472,331
2010	\$775	0.22%	\$1,653	0.46%	\$0	0.00%	\$0	0.00%	\$188	0.05%	\$353,108	99.26%	\$355,724
2011	\$425	0.17%	\$640	0.26%	\$0	0.00%	\$0	0.00%	\$2,329	0.94%	\$243,315	98.62%	\$246,709
2012	\$550	0.41%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$35,310	26.55%	\$97,137	73.04%	\$132,997
TOTAL	\$2,375	0.19%	\$4,398	0.34%	\$0	0.00%	\$0	0.00%	\$37,826	2.95%	\$1,235,712	96.52%	\$1,280,311

Griffin & Strong, P.C. 2014

The table below provides insight into the firms contained in the P-card Purchase file that could not be identified by work category. These firms were all Non-MFD firms and represented a substantial portion of the P-card purchase amount. However, those firms that had useful data represent an unbiased sample of the entire p-card purchase file and therefore the percentages should hold true for the entire file.



	Af Am	rican erican	As Ame	sian erican	His Am	panic erican	Na Ame	tive rican	W Fe	hite male	Non-	MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$3,545,146	100.00%	\$3,545,146
2009	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$7,764,303	100.00%	\$7,764,303
2010	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$7,042,108	100.00%	\$7,042,108
2011	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$6,438,625	100.00%	\$6,438,625
2012	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$ 0	0.00%	\$8,125,581	100.00%	\$8,125,581
TOTA L	\$0	0.00%	\$o	0.00%	\$0	0.00%	\$ 0	0.00%	\$0	0.00%	\$32,915,76 2	100.00%	\$32,915,762

Table 37: Utilization for Other (No Business Category) P-Card Purchases

Griffin & Strong, P.C. 2014

M. Subcontractor Utilization Analysis from Prime Vendor Questionnaire

1. Subcontractor Utilization by Dollar Amount

The Prime Vendor Questionnaire is used to determine subcontractor utilization. Of the 862 contracts within the Study Period, 510 unique firms were surveyed. Of the 862 contracts surveyed, 165 contracts responded. 96 unique firms responded to the survey during the Study Period. This is a 19.14% contract response rate and an 18.82% unique firm response rate. Table 38 below shows underutilization in every racial and ethnic category for subcontractor work. 91.76% of all subcontractor work in the field of construction, with the same percentages of available firms in each category as in the prime analysis above, goes to Non-MFDs, where their availability is 73%. It is important to note that subcontractor utilization was measured against all subcontracting dollars and not against prime awards. African American, Asian American, Hispanic American, and Female Owned firms were relatively similar in Construction subcontracting utilization, but in total accounted for less than 10% of all Construction subcontracting.



Table 38: Subcontractor Utilization-Construction

From responses to Prime Vendor Questionnaire of

Montgomery County contracts July 1, 2007 and ending June 30, 2012

AFRICAN AMERICAN		ASIAN AMERICAN		HISPANIC AMERICAN		NATIVE AMERICAN		
	\$	%	\$	%	\$	%	\$	%
2008	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$ 0	0.00%
2009	\$o	0.00%	\$380,168	14.29%	\$260,858	9.81%	\$0	0.00%
2010	\$340,680	79.96%	\$0	0.00%	\$ 0	0.00%	\$0	0.00%
2011	\$7,841	8.94%	\$0	0.00%	\$o	0.00%	\$0	0.00%
2012	\$ 0	0.00%	\$0	0.00%	\$ 0	0.00%	\$ 0	0.00%
TOTAL	\$348,521	2.06%	\$380,168	2.25%	\$260,858	1.54%	\$0	0.00%

FY	WHITE FEMALE		NON-M	TOTAL	
	\$	%	\$	%	\$
2008	\$148,040	24.06%	\$467,136	75.94%	\$615,176
2009	\$ 0	0.00%	\$2,019,209	75.90%	\$2,660,234
2010	\$ 0	0.00%	\$85,380	20.04%	\$426,060
2011	\$79,900	91.063%	\$0	0.00%	\$87,741
2012	\$175,000	1.33%	\$12,938,545	98.67%	\$13,113,545
TOTAL	\$402,940	2.38%	\$15,510,270	91.76%	\$16,902,756

Griffin & Strong, P.C. 2014

Table 39 below reveals similar numbers to those in construction subcontracting above. However, in the area of professional services, White Female owned firms account for 18% of all subcontracting work, whereas their availability is slightly over 4%. This is the first category in which Non-MFDs are slightly underutilized, though the difference between their 82% availability and their 81% utilization may not be considered statistically significant.



Table 39: Subcontractor Utilization-Professional Services

From responses to Prime Vendor Questionnaire of Montgomery County contracts July 1, 2007 and ending June 30, 2012

	AFRICAN A	MERICAN	ASIAN AM	ERICAN	HISF AMEI	ANIC RICAN	NA AME	TIVE RICAN
FY	#	%	#	%	#	%	#	%
2008	\$0	0.00%	\$0	0.00%	\$ 0	0.00%	\$0	0.00%
2009	\$194,081	19.04%	\$591,665	58.05%	\$0	0.00%	\$0	0.00%
2010	\$0	0.00%	\$280,583	88.68%	\$0	0.00%	\$0	0.00%
2011	\$0	0.00%	\$36,359	25.53%	\$0	0.00%	\$0	0.00%
2012	\$0	0.00%	\$837,149	44.02%	\$0	0.00%	\$0	0.00%
TOTAL	\$194,081	4.26%	\$1,745,755	38.34%	\$0	0.00%	\$ 0	0.00%

	FEMAL	E	NON-MF	TOTAL	
FY	#	%	#	%	#
2008	\$0	\$0	\$1,173,315	\$1	\$1,173,315
2009	\$39,276	\$0	\$194,237	\$0	\$1,019,258
2010	\$0	\$0	\$35,820	\$0	\$316,403
2011	\$0	\$0	\$106,031	\$1	\$142,389
2012	\$163,420	\$0	\$901,314	\$0	\$1,901,883
TOTAL	\$202,696	\$0	\$2,410,717	\$1	\$4,553,249



In Tables 40 and 41 below, very few contracting dollars were accounted for in Services and Goods. However, these are not traditional areas where there are substantial subcontracting opportunities.

Table 40: Subcontractor Utilization-Services

From responses to Prime Vendor Questionnaire of Montgomery County contracts July 1, 2007 and ending June 30, 2012

FY	AFRICAN AMERICAN		ASIAN AMERICAN		HISPANIC AMERICAN		NATIVE AMERICAN	
	\$	%	\$	%	\$	%	\$	%
2008	\$5,000	1.07%	\$0	0.00%	\$ 0	0.00%	\$0	0.00%
2009	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$ 0	0.00%
2010	\$0	0.00%	\$o	0.00%	\$ 0	0.00%	\$ 0	0.00%
2011	\$0	0.00%	\$2,000	0.80%	\$0	0.00%	\$ 0	0.00%
2012	\$16,349	2.29%	\$0	0.00%	\$0	0.00%	\$0	0.00%
TOTAL	\$21,349	0.78%	\$2,000	0.07%	\$ 0	0.00%	\$0	0.00%

FY	WHITE FEMALE	NON-MFD		TOTAL	
	\$	%	\$	%	\$
2008	\$180	0.04%	\$464,028	98.90%	\$469,208
2009	\$221,119	17.54%	\$1,039,248	82.46%	\$1,260,367
2010	\$0	0.00%	\$58,757	100.00%	\$58,757
2011	\$138,445	55.674%	\$108,224	43.52%	\$248,669
2012	\$136,293	19.12%	\$560,238	78.59%	\$712,880
TOTAL	\$496,037	18.04%	\$2,230,496	81.11%	\$2,749,882


Table 41: Subcontractor Utilization-Goods

From responses to Prime Vendor Questionnaire of Montgomery County contracts July 1, 2007 and ending June 30, 2012

FY	AFRICAN AMERICAN		ASIAN AMERICAN		HISP AMEF	ANIC RICAN	NATIVE AMERICAN	
	\$	%	\$	%	\$	%	\$	%
2008	\$0	0.00%	\$0	0.00%	\$0	#0.00%/0!	\$ 0	0.00%
2009	\$6,967,100	36.89%	\$0	0.00%	\$0	0.00%	\$0	0.00%
2010	\$30,845	30.13%	\$0	0.00%	\$0	0.00%	\$0	0.00%
2011	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%
2012	\$0	0.00%	\$0	0.00%	\$0	0.00%	\$0	0.00%
TOTAL	\$6,997,945	34.93%	\$0	0.00%	\$0	0.00%	\$0	0.00%

FY	WHITE FEMALE		NON-M	AFD	TOTAL
	\$	%	\$	%	\$
2008	\$0	0.00%	\$0	0.00%	\$0
2009	\$784,408	4.15%	\$11,136,407	58.96%	\$18,887,914
2010	\$58,193	56.85%	\$13,329	13.02%	\$102,368
2011	\$509	100.00%	\$0	0.00%	\$509
2012	\$0	0.00%	\$1,044,044	100.00%	\$1,044,044
TOTAL	\$843,110	4.21%	\$12,193,780	60.86%	\$20,034,834



2. Subcontractor Utilization by Firm Number¹⁴¹

Again, GSPC determined utilization by firm number as well as by dollars spent for subcontractors. Unlike in the prime contractor analysis, there is more evidence for high-dollar spending on a few minority firms, namely African American and Asian American owned firms, in the Professional Services category. Non-MFD firms, in all categories other than construction, show totals for the Study Period that indicate that a lower percentage of dollars was spent compared to their percent utilization by number of firms.

	A An	frican nerican	Ar	Asian nerican	Hi An	ispanic nerican	N Am	ative erican	v F	White Semale	No	n-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	3.70%	26	96.30%	27
2009	0	0.00%	2	50.00%	1	25.00%	0	0.00%	0	0.00%	1	25.00%	4
2010	2	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2
2011	1	50.00%	0	0.00%	0	0.00%	0	0.00%	1	50.00%	0	0.00%	2
2012	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	2.27%	43	97.73%	44
TOTAL	3	3.95%	2	2.63%	1	1.316%	0	0.00%	3	3.95%	67	88.16%	76

Table 42: Construction Subcontractor Utilization by Firm Number

Griffin & Strong, P.C. 2014

Table 43 below shows African Americans at 1.45% of all firms used, with only one firm subcontracted with during the entire Study Period. However, this single firm makes up over 4% of professional services subcontracting dollars spent. Similarly, eleven Asian American owned firms make up nearly 16% of all firms utilized in this category, but draw 38% of subcontracting dollars spent. Non-MFD firms come in at 75.36% utilization by firm number, totaling 52 firms, whereas they make up 53% of the dollars spent in this category. White Female owned firms are by far the closest percentage-wise in the two utilization analyses, coming out to 5.80% utilization by number, or 4 firms, and 4.45% utilization by dollar amount.

⁴¹ NOTE: Firms are counted in each year they are utilized, however firms are counted only once in the total.



	Af Am	rican erican	A An	lsian Ierican	Hi An	ispanic nerican	N An	lative nerican	V F	White emale	Non	-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	8	100.00 %	8
2009	1	3.57%	3	10.71%	0	0.00%	0	0.00%	1	3.57%	23	82.14%	28
2010	0	0.00%	4	66.67%	0	0.00%	0	0.00%	0	0.00%	2	33.33%	6
2011	0	0.00%	3	37.50%	0	0.00%	0	0.00%	0	0.00%	5	62.50%	8
2012	0	0.00%	6	23.08%	0	0.00%	1	3.85%	3	11.54%	16	61.54%	26
TOTAL	1	1.45%	11	15.94%	0	0.00%	1	1.45%	4	5.80%	52	75.36%	69

Table 43: Professional Services Subcontractor Utilization by Firm Number

Griffin & Strong, P.C. 2014

In Services, subcontractor firm utilization percentages show that African Americans represent 2 total firms used or 1.27% of all firms, and bring in .78% of the dollars spent. Asian American owned firms also represent this same number and percentage but a low dollar amount of \$2,000 or .07% of dollars spent. Hispanic American firms show no payment data but, apparently, the hiring of a sole entity over the entire Study Period and White Female owned firms make up only 4% of the total firms used in any category over the entire Study Period, totaling only 6 firms, but draw 18% of the overall dollars.

	Af Am	frican lerican	A Am	sian erican	His Am	spanic erican	N Am	ative erican	F	White emale	No	n-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	1	20.00%	0	0.00%	0	0.00%	0	0.00%	1	20.00%	3	60.00%	5
2009	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	1.87%	105	98.13%	107
2010	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	4	100.00%	4
2011	0	0.00%	1	10.00%	0	0.00%	0	0.00%	2	20.000%	7	70.00%	10
2012	1	3.03%	1	3.03%	1	3.03%	0	0.00%	2	6.06%	28	84.85%	33
TOTAL	2	1.27%	2	1.27%	1	0.63%	0	0.00%	6	3.80%	147	93.04%	158

Table 44: Services Subcontractor Utilization by Firm Number

Griffin & Strong, P.C. 2014

In Goods subcontracting, two African American owned firms over the course of the Study Period have drawn 35% of the County's dollars spent in this category. On the other hand, we see no Asian



American, Hispanic American, or Native American owned utilization in this category. Four White Female owned firms earned 4% of dollars spent.

	Af Am	rican erican	A Am	sian erican	Hi An	ispanic nerican	N Am	ative erican	V Fe	Vhite emale	Nor	n-MFD	TOTAL
FY	#	%	#	%	#	%	#	%	#	%	#	%	#
2008	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0
2009	1	2.44%	0		0	0.00%	0	0.00%	2	4.88%	38	92.68%	41
2010	1	33.33%	0	0.00%	0	0.00%	0	0.00%	1	33.33%	1	33.33%	3
2011	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	1
2012	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	8	100.00%	8
TOTAL	2	3.77%	0	0.00%	0	0.00%	0	0.00%	4	7.55%	47	88.68%	53

Table 45: Goods Subcontractor Utilization by Firm Number

Griffin & Strong, P.C. 2014

3. Disabled Subcontractor Utilization

Identification of Disabled owned subcontractor utilization was also requested from the Prime Vendor Questionnaire. There was no Disabled owned utilization in any work category other than Construction. In that area \$268,405 was spent in one year of the Study Period.

Const	ruction - Disab	led Owned Sul	bcontractors
	Disabl	ed	TOTAL
FY	#	%	#
2008	\$0	0.00%	\$126,882,922
2009	\$0	0.00%	\$218,225,142
2010	\$0	0.00%	\$170,485,322
2011	\$0	0.00%	\$378,415,198
2012	\$268,405	0.10%	\$277,384,404
TOTAL	\$268,405	0.02%	\$1,171,392,989



N. Prime Vendor Disparity Indices and Analysis

To assess the existence and extent of disparity, GSPC compared the MFD utilization percentages to the percentage of the total pool of MFD firms in the relevant geographic area. The actual disparity derived as a result of employing this approach is measured by

The Disparity Index is defined as the ratio of the percentage of MFD firms utilized (U) divided by the percentage of such firms available in the marketplace, (A):

- Let: U =Utilization percentage for the MFD group
 - *A* =Availability percentage for the MFD group
 - *DI* = Disparity Index for the MFD group
 - DI = U/A or Utilization divided by Availability

When the *DI* is one, which indicates that the utilization percentage equals the availability percentage, there is parity or an absence of disparity. In situations where there is availability, but no utilization, the corresponding disparity index will be zero. In cases where there is utilization, but no availability, the resulting disparity index is designated by the infinity (∞) symbol. Finally, in cases where there is neither utilization nor availability, the corresponding disparity index is undefined and designated by a dash (-) symbol. Disparity analyses are presented separately for each procurement category and for each ethnicity/race, gender, and disabled status group. They are also broken out by year, for each year of the Study Period.

The results obtained by a disparity analysis will result in one of three conclusions: overutilization, underutilization or parity. Underutilization is when the Disparity Index is below one. Overutilization is when the Disparity Index is over one. Parity is when the Disparity Index is one.

O. Determining the Significance of Disparity Indices

The determination that a particular ethnic or gender group has been over-utilized or underutilized is not, standing alone, proof of discrimination. This section discusses how GSPC determines whether a measured disparity is statistically significant and not just an artifact of randomness with no causal explanation across groups.



Typically the determination of whether a disparity is "statistically significant" can be based on the depth of the disparity in that any disparity index that is less than .80 is considered to be a statistically significant underutilization and any disparity index over 1.10 is considered to be a statistically significant overutilization. The disparity indexes impact as designated in the following tables as "overutilization", "underutilization", or "parity" have been bolded to indicate such statistically significant impact.

Our approach to determining whether a measured disparity is statistically significant in the general population versus being merely an artifact of our sample is nonparametric, meaning that we do not assume the data or population have a distribution. In particular, we use for each contracting category across the relevant years of analysis, a Wilcoxon test that considers whether or not the typical disparity index across all vendor categories is equal to unity.⁴² This constitutes a null hypothesis of "parity" and the Wilcoxon test estimates the probability that the typical disparity index departs from unity, and the magnitude of the calculated z-score indicates whether there is typically underutilization (z < o) or overrepresentation (z > o For all instances of the estimated disparity indices reported in the tables below, the Wilcoxon test rejected the null hypothesis of parity, As such, the measured disparities are statistically significant. Disparity Indices for Purchases Over \$10,000+ from PO Data (including Disabled Owned Firms)

In Table 46 below, Hispanic American owned firms show statistically significant overutilization in the Construction category every year of the Study Period, African American and Native American owned firms are severely underutilized. Asian American owned firms show one instance of overutilization, in FY 2012, but are otherwise underutilized. White Female owned firms were overutilized in 2008 and 2009, at parity in 2010, but on average were underutilized over the entire Study Period. Non-MFD owned firms show underutilization once, in 2009, and were at parity in 2010. On average during the Study Period, Non-MFDs; were overutilized. Every race/ethnic/gender category is underutilized in total except for Hispanic American and Non-MFD owned firms. African American owned firms are extremely underutilized in every year, in every category.

¹⁴² For an overview of the Wilcoxon test see: Bradley R. A. (2001) "Frank Wilcoxon' in *Statisticians of the Centuries*, (eds.) C.C Heyde and E. Seneta, pp. 420 – 424, Wiley, New York, NY. The Wilcoxon signed-rank test is a non-parametric statistical hypothesis test used when comparing two related samples, matched samples, or repeated measurements on a single sample to assess wheth er their population mean ranks differ.



Table 46: Disparity Indices for Construction-Prime Contracting
(P.O.'s over \$10,000)

ETHNICITY/RACE AND GENDER GROUP	UTILIZATION % (U)	AVAILABILITY % BASED ON MASTER VENDOR FILE (AMV)	DISPARITY INDEX (U/AMV)	DISPARATE IMPACT OF UTILIZATION FOR U/AMV
FY 2008	tenten alle tententen f	HINE V.		
AFRICAN AMERICAN	0.81	11.00	0.07	Underutilized
ASIAN AMERICAN	2.53	3.29	0.77	Underutilized
HISPANIC AMERICA	20.66	6.14	3.36	Overutilized
NATIVE AMERICAN	0.29	0.49	0.59	Underutilized
WHITE FEMALE	6.28	5.54	1.13	Overutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MFD	69.43	73.54	0.94	Underutilized
FY 2009				
AFRICAN AMERICAN	0.65	11.00	0.06	Underutilized
ASIAN AMERICAN	2.45	3.29	0.74	Underutilized
HISPANIC AMERICA	12.46	6.14	2.03	Overutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	7.08	5.54	1.28	Overutilized
DISABLED	1.11	1.00	1.11	Overutilized
NON-MFD	77.36	73.54	1.05	Overutilized
FY 2010	認識者の知識なの必要認識			
AFRICAN AMERICAN	0.81	11.00	0.07	Underutilized
ASIAN AMERICAN	1.93	3.29	0.59	Underutilized
HISPANIC AMERICA	18.03	6.14	2.94	Overutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	5.53	5.54	1.00	Parity
DISABLED	1.39	1.00	1.39	Overutilized
NON-MFD	73.70	73.54	1.00	Parity
FY 2011				
AFRICAN AMERICAN	0.08	11.00	0.01	Underutilized
ASIAN AMERICAN	2.57	3.29	0.78	Underutilized
HISPANIC AMERICA	9.40	6.14	1.53	Overutilized
NATIVE AMERICAN	0.03	0.49	0.06	Underutilized
WHITE FEMALE	2.16	5.54	0.39	Underutilized
DISABLED	0.61	1.00	0.61	Underutilized
NON-MFD	85.77	73.54	1.17	Overutilized
FY 2012	With the second second	The second second second		
AFRICAN AMERICAN	4.95	11.00	0.45	Underutilized
ASIAN AMERICAN	4.35	3.29	1.32	Overutilized
HISPANIC AMERICA	10.86	6.14	1.77	Overutilized
NATIVE AMERICAN	0.01	0.49	0.02	Underutilized
WHITE FEMALE	3.42	5.54	0.62	Underutilized
DISABLED	1.33	1.00	1.33	Overutilized
NON-MFD	76.41	73.54	1.04	Overutilized
TOTALS				
AFRICAN AMERICAN	1.52	11.00	0.14	Underutilized
ASIAN AMERICAN	2.87	3.29	0.87	Underutilized
HISPANIC AMERICA	12.79	6.14	2.08	Overutilized
NATIVE AMERICAN	0.04	0.49	0.08	Underutilized
WHITE FEMALE	TE FEMALE 4.31 5.54		0.78	Underutilized
DISABLED	0.92	1.00	0.92	Underutilized
NON-MFD	78.46	73.54	1.07	Overutilized

Griffin & Strong, P.C. 2014

NOTE: Disparities indicated in Tables 46-61 as "overutilization", "underutilization", or "parity" have been bolded to indicate that such disparities are statistically significant impact.



Table 47 demonstrates substantial underutilization of all MFDs in all years, except Hispanic American owned firms that were overutilized all years of the Study Period except 2010 and White Female owned firms which were overutilized in 2012.

		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008				
AFRICAN AMERICAN	2.15	8.25	0.26	Underutilized
ASIAN AMERICAN	0.01	4.11	0.00	Underutilized
HISPANIC AMERICAN	2.73	1.24	2.20	Overutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	1.68	4.26	0.39	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MFD	93.42	82.03	1.14	Overutilized
FY 2009				
AFRICAN AMERICAN	2.31	8.25	0.28	Underutilized
ASIAN AMERICAN	0.07	4.11	0.02	Underutilized
HISPANIC AMERICAN	2.10	1.24	1.69	Overutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	1.01	4.26	0.24	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MFD	94.51	82.03	1.15	Overutilized
FY 2010				
AFRICAN AMERICAN	2.46	8.25	0.30	Underutilized
ASIAN AMERICAN	0.12	4 11	0.03	Underutilized
	0.06	1.24	0.05	Understilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE EEMALE	1.52	4.26	0.36	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON MED	05.94	82.02	1.17	Overstilized
	53.04	62.03	L. L/	Overutilizeu
	1.66	9.75	0.20	Undomitilized
	0.53	0.23	0.12	Underutilized
	6.39	4.11	0.15 E 1E	Overstilized
	0.00	0.11	0.00	Understillized
	0.00	0.11	0.00	Underutilized
	2.29	4.20	0.04	Underutilized
DISABLED	0.00	0.80	0.00	Onderutilized
	89.15	82.03	1.09	Overutilized
	0.44	0.35	0.05	Lindom Milling of
AFRICAN AMERICAN	0.41	8.43	0.05	Underutilized
	1.03	4.11	0.25	Onderutilized
HISPANIC AMERICAN	7.46	1.24	6.02	Understillered
NATIVE AMERICAN	0.00	0.11	0.00	Onderutilized
WHITE FEMALE	4.35	4.20	1.02	Understilling d
DISABLED	00.0	0.80	0.00	Onderutilized
NON-MED	86.74	82.03	1.06	Overutilized
INTALS		0.25	0.34	Lindon altra d
AFRICAN AMERICAN	1.//	8.25	0.21	Underutilized
ASIAN AMERICAN	0.35	4.11	0.09	Underutilized
HISPANIC AMERICAN	3.63	1.24	2.93	Overutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	2.20	4.26	0.52	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MFD	92.04	82.03	1.12	Overutilized

Table 47: Disparity Indices for Professional Services-Prime Contracting
(P.O.'s over \$10,000)



Table 48 below shows a large spike in Native American utilization in 2011, putting them at a disparity index of 5.36%. Asian American, Hispanic American and Non-MFD owned firms also reflect overutilization. African American and White Female owned firms were underutilized.

		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROLIP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2000				
AFRICAN AMERICAN	0.30	12.57	0.02	Underutilized
ASIAN AMERICAN	2.63	3.49	0.75	Underutilized
HISPANIC AMERICAN	3.70	2.58	1.43	Overutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	1.94	5.46	0.36	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MFD	91.42	75.82	1.21	Overutilized
FY 2009	Children of	Section section w	States In Manager	HIER HERE
AFRICAN AMERICAN	0.50	12.57	0.04	Underutilized
ASIAN AMERICAN	5.83	3.49	1.67	Overutilized
HISPANIC AMERICAN	1.85	2.58	0.72	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	1.88	5.46	0.34	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MFD	89.94	75.82	1.19	Overutilized
FY 2010		The second second	nter en la contra de la contra d	The state of the state
AFRICAN AMERICAN	1.27	12.57	0.10	Underutilized
ASIAN AMERICAN	7.59	3.49	2.17	Overutilized
HISPANIC AMERICAN	3.81	2.58	1.48	Overutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.38	5.46	0.07	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MFD	89.95	75.82	1.19	Overutilized
FY 2011		and the second second	I ALLER STREET	States States Billing Street
AFRICAN AMERICAN	2.92	12.57	0.23	Underutilized
ASIAN AMERICAN	11.70	3.49	3.35	Overutilized
HISPANIC AMERICAN	1.25	2.58	0.48	Underutilized
NATIVE AMERICAN	8.71	0.08	108.88	Overutilized
WHITE FEMALE	17.05	5.46	3.12	Overutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MED	58.37	75.82	0.77	Underutilized
FY 2012	No. of The Second Second	I WANTER STREET	Rest of the state	
AFRICAN AMERICAN	3.13	12.57	0.25	Underutilized
ASIAN AMERICAN	6.06	3.49	1.74	Overutilized
HISPANIC AMERICAN	0.22	2.58	0.09	Underutilized
NATIVE AMERICAN	1.33	0.08	16.63	Overutilized
WHITE FEMALE	8.06	5.46	1.48	Overutilized
DISABLED	0.03	0.62	0.05	Underutilized
NON-MFD	81.20	75.82	1.07	Overutilized
TOTALS		A Real Property and the second		BERGERSON AND
AFRICAN AMERICAN	0.94	12.57	0.07	Underutilized
ASIAN AMERICAN	5.42	3.49	1.55	Overutilized
HISPANIC AMERICAN	2.82	2.58	1.09	Overutilized
NATIVEAMERICAN	0.43	0.08	5.38	Overutilized
WHITE FEMALE	2.60	5.46	0.48	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MFD	87.79	75.82	1.16	Overutilized

Table 48: Disparity Indices for Services-Prime Contracting
(P.O.'s over \$10,000)



Below, in Table 49 there is underutilization in every category for every fiscal year for each race/ethnicity/gender category other than Non-MFD owned firms, except a non-statistically significant overutilization of Hispanic American owned firms in 2008.

		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008				
AFRICAN AMERICAN	0.02	5.79	0.00	Underutilized
ASIAN AMERICAN	0.02	2.01	0.01	Underutilized
HISPANIC AMERICAN	1.65	1.51	1.09	Overutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	2.75	4.50	0.61	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	95.55	86.08	1.11	Overutilized
FY 2009	STOCKED STOCKED	With the second s	CALIFORNIA STREET	
AFRICAN AMERICAN	0.61	5.79	0.11	Underutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	1.00	1.51	0.66	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	2.44	4.50	0.54	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	95.96	86.08	1.11	Overutilized
FY 2010				ALC: HE REAL PROPERTY
AFRICAN AMERICAN	0.99	5.79	0.17	Underutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	0.58	1.51	0.38	Underutilized
NATIVEAMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	1.57	4.50	0.35	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MED	98.86	86.08	1.15	Overutilized
FY 2011			California - Party and a	Underutilized
AFRICAN AMERICAN	0.89	5.79	0.15	Underutilized
ASIAN AMERICAN	0.04	2.01	0.02	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	1.57	4.50	0.35	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	96.86	86.08	1.13	Overutilized
FY 2012				
AFRICAN AMERICAN	0.43	5.79	0.07	Underutilized
ASIAN AMERICAN	0.04	2.01	0.02	Underutilized
HISPANIC AMERICAN	0.07	1.51	0.05	Underutilized
NATIVEAMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	2.00	4.50	0.44	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	97.46	86.08	1.13	Overutilized
TOTALS				
AFRICAN AMERICAN	0.54	5.79	0.09	Underutilized
ASIAN AMERICAN	0.03	2.01	0.01	Underutilized
HISPANIC AMERICAN	0.52	1.51	0.34	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	2.28	4.50	0.51	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	96.64	86.08	1.12	Overutilized

Table 49: Disparity Indices for Goods-Prime Contracting (P.O.'s over \$10,000)



P. Disparity Indices for Direct Purchases Under \$10,000k from DPO Data (including Disabled Owned Firms)

Table 50 below shows an average underutilization of all MFDs during the Study Period except White Female owned firms that were overutilized. Hispanic American owned firms were also slightly overutilized during 2011, but underutilized as an average during the Study Period.

		AVAILABILITY		
	1. 1. 1. 1. 1. 1. 1.	% BASED ON		
	- Der La	MASTER		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION	VENDOR FILE	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	% (U)	(AMV)	(U/AMV)	U/AMV
FY 2011		的运行时间的		
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	2.51	3.29	0.76	Underutilized
HISPANIC AMERICAN	20.76	6.14	3.38	Overutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	5.31	5.54	0.96	Underutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MFD	71.43	73.54	0.97	Underutilized
FY 2012	建建筑的存储			
AFRICAN AMERICAN	5.00	11.00	0.45	Underutilized
ASIAN AMERICAN	0.90	3.29	0.27	Underutilized
HISPANIC AMERICAN	1.56	6.14	0.25	Underutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	5.92	5.54	1.07	Overutilized
DISABLED	0.10	1.00	0.10	Underutilized
NON-MFD	86.63	73.54	1.18	Overutilized
TOTALS				和当時期提供主要不可
AFRICAN AMERICAN	4.29	11.00	0.39	Underutilized
ASIAN AMERICAN	1.13	3.29	0.34	Underutilized
HISPANIC AMERICAN	4.28	6.14	0.70	Underutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	5.83	5.54	1.05	Overutilized
DISABLED	0.09	1.00	0.09	Underutilized
NON-MFD	84.47	73.54	1.15	Overutilized

Table 50: Disparity Index, Construction (DPO's under \$10,000)



Similarly, in Professional Services, all MFD firms were underutilized on average throughout the Study Period, although Hispanic American owned firms were overutilized in 2011.

ETHNICITY/RACE AND GENDER GROUP	UTILIZATION % (U)	AVAILABILITY % BASED ON MASTER VENDOR FILE (AMV)	DISPARITY INDEX (U/AMV)	DISPARATE IMPACT OF UTILIZATION FOR U/AMV
FY 2011	的影响了这些			
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilized
ASIAN AMERICAN	0.00	4.11	0.00	Underutilized
HISPANIC AMERICAN	5.15	1.24	4.15	Overutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.14	4.26	0.03	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MFD	94.71	82.03	1.15	Overutilized
FY 2012				
AFRICAN AMERICAN	0.23	8.25	0.03	Underutilized
ASIAN AMERICAN	0.01	4.11	0.00	Underutilized
HISPANIC AMERICAN	0.64	1.24	0.52	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	1.85	4.26	0.43	Underutilized
DISABLED	0.03	0.80	0.04	Underutilized
NON-MFD	97.27	82.03	1.19	Overutilized
TOTALS				自然になって、三川県的な
AFRICAN AMERICAN	0.20	8.25	0.02	Underutilized
ASIAN AMERICAN	0.01	4.11	0.00	Underutilized
HISPANIC AMERICAN	1.22	1.24	0.98	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	1.63	4.26	0.38	Underutilized
DISABLED	0.02	0.80	0.03	Underutilized
NON-MFD	96.94	82.03	1.18	Overutilized

Table 51: Disparity Index, Professional Services (DPO's under \$10,000)



In Tables 52 and 53 below, the Services and Goods categories respectively, there is no Native American Utilization, and almost no utilization of Hispanic American Owned firms. Disabled owned firms are substantially overutilized in 2012. Non-MFD owned firms are overutilized, and Asian American owned firms show almost no utilization compared to their availability. African American owned firms are underutilized in both years.

ETHNICITY/RACE AND GENDER GROUP	UTILIZATION % (U)	AVAILABILITY % BASED ON MASTER VENDOR FILE (AMV)	DISPARITY INDEX (U/AMV)	DISPARATE IMPACT OF UTILIZATION FOR U/AMV
FY 2011	就是可以回答			
AFRICAN AMERICAN	4.75	12.57	0.38	Underutilized
ASIAN AMERICAN	0.00	3.49	0.00	Underutilized
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	1.00	5.46	0.18	Underutilized
DISABLED	0.30	0.62	0.48	Underutilized
NON-MFD	94.25	75.82	1.24	Overutilized
FY 2012	管理的 上三 马			
AFRICAN AMERICAN	1.40	12.57	0.11	Underutilized
ASIAN AMERICAN	0.02	3.49	0.01	Underutilized
HISPANIC AMERICAN	0.07	2.58	0.03	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.45	5.46	0.08	Underutilized
DISABLED	20.28	0.62	32.71	Overutilized
NON-MFD	98.08	75.82	1.29	Overutilized
TOTALS				
AFRICAN AMERICAN	1.59	12.57	0.13	Underutilized
ASIAN AMERICAN	0.02	3.49	0.01	Underutilized
HISPANIC AMERICAN	0.07	2.58	0.03	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.45	5.46	0.08	Underutilized
DISABLED	18.70	0.62	30.16	Overutilized
NON-MFD	97.87	75.82	1.29	Overutilized

Table 52: Disparity Index, Services (DPO's under \$10,000)



Table 53: Disparity Index, Goods (DPO's under \$10,000)

		AVAILABILITY % BASED ON MASTER		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION	VENDOR FILE	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	% (U)	(AMV)	(U/AMV)	U/AMV
FY 2011				
AFRICAN AMERICAN	0.00	5.79	0.00	Underutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	6.92	4.50	1.54	Overutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	93.08	86.08	1.08	Overutilized
FY 2012	在12月 3日の			
AFRICAN AMERICAN	0.03	5.79	0.01	Underutilized
ASIAN AMERICAN	0.78	2.01	0.39	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	3.39	4.50	0.75	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	95.80	86.08	1.11	Overutilized
TOTALS				
AFRICAN AMERICAN	0.03	5.79	0.01	Underutilized
ASIAN AMERICAN	0.72	2.01	0.36	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	3.67	4.50	0.82	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	95.58	86.08	1.11	Overutilized



Q. Disparity Indices for P-Card Purchases¹⁴³

For P-Card purchases, the overutilization of Non-MFD owned firms is glaring in Construction where there is no utilization of MFDs except White Females in 2011. There was no utilization of MFDs in Professional Services during the Study Period. In both Services and Goods, there is very little MFD utilization with all MFDs underutilized in all years. Please see tables 54 through 57 below.

				1
		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008	india	- Ital Brand Brand Brand	Second Contractions	and the second
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	0.00	3.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	0.00	5.54	0.00	Underutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MFD	100.00	73.54	1.36	Overutilized
FY 2009	and the second se			
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	0.00	3.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	0.00	5.54	0.00	Underutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MFD	100.00	73.54	1.36	Overutilized
FY 2010		Distant and the second s	ENGLARY STREET, STR	
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	0.00	3.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	0.00	5.54	0.00	Underutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MED	100.00	73.54	1.36	Overutilized
FY 2011	and the second sec	A DESCRIPTION OF THE PARTY OF T	Real Property of	CONTRACTOR CONTRACTOR
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	0.00	3.79	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE EEMALE	2.68	5.54	0.48	Underutilized
DISARIED	0.00	1.00	0.00	Underutilized
NON MED	0.00	72.54	1.27	Ownutilized
		73.54	1.JA	
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	0.00	3.79	0.00	Linderutilized
	0.00	5.25	0.00	Underutilized
NATIVE AMEDICAN	0.00	0.14	0.00	Underutilized
WATTY E AIVIENCAN	0.00	5.4.0	0.00	Understilized
	0.00	1.00	0.00	Understilized
NON MED	100.00	72.54	1.36	Ownutilized
NUN-MFD	100.00	/3.54	1.30	Overuunzed
	0.00	11.00	0.00	Understilized
ACIAN AMERICAN	0.00	2.20	0.00	Understillized
ASIAN AMERICAN	0.00	5.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	0.14	0.00	Understilling
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	1.69	5.54	0.31	Underutilized
DISABLED	0.00	1.00	0.00	Underutilized
INON-MED	98.31	/3.54	1.34	Uverutilized

Table 54: Construction P-Card Disparity Index

¹⁴³ There are no P-card purchases from disabled firms during the Study Period.



				DISDADATE MADACT
ETUNICITY/DACE AND		AVAILADILITT 70	DICDADITI/INIDCV	
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITYINDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008			위한의 것은 것은 지배로 한 것이.	
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilized
ASIAN AMERICAN	0.00	4.11	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.26	0.00	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MFD	100.00	82.03	1.22	Overutilized
FY 2009				
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilized
ASIAN AMERICAN	0.00	4.11	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.26	0.00	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MFD	100.00	82.03	1.22	Overutilized
FY 2010				MERCE ALCON
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilized
ASIAN AMERICAN	0.00	4.11	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilized
NATIVEAMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.26	0.00	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MED	100.00	82.03	1.22	Overutilized
EV 2011	100.00	02.03		Overacinzed
AFRICAN AMERICAN	0.00	8 25	0.00	Underutilized
ASIAN AMERICAN	0.00	4.11	0.00	Underutilized
	0.00	1.24	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
	0.00	4.26	0.00	Underutilized
DISABLED	0.00	4.20	0.00	Undorutilized
	100.00	0.00	0.00	Onderutilized
EV 3012	100.00	02.05	1.22	Overuunzeu
	0.00	20.0	0.00	Undomitilized
	0.00	6.25	0.00	Underutilized
	0.00	4.11	0.00	Underutilized
	0.00	1.24	0.00	Underutilized
	0.00	0.11	0.00	Underutilized
	0.00	4.26	0.00	Underutilized
	100.00	0.80	0.00	Onderutilized
NUN-IVIED	100.00	82.03	1.22	Overutilized
ACDICAN ANTOION	0.00		0.00	Under stilles of
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilized
ASIAN AMERICAN	0.00	4.11	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.26	0.00	Underutilized
DISABLED	0.00	0.80	0.00	Underutilized
NON-MFD	100.00	82.03	1.22	Overutilized

Table 55: Professional Services P-Card Disparity Index



	- N. I	AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(1)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008		E BERGENBARNARMENTER		
AFRICAN AMERICAN	0.29	12.57	0.02	Underutilized
ASIAN AMERICAN	0.00	3.49	0.00	Underutilized
HISPANIC AMERICAN	0.00	2 58	0.00	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.00	5.46	0.00	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MED	99 71	75.82	1 32	Overutilized
FY 2009	The second second	1 J. CE	LIVE I	
AFRICAN AMERICAN	0.00	12.57	0.00	Underutilized
ASIAN AMERICAN	0.00	3.49	0.00	Underutilized
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilized
NATIVEAMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.02	5.46	0.00	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MED	99.98	75.82	1 32	Overatilized
FY 2010				
AFRICAN AMERICAN	0.00	12 57	0.00	Underutilized
ASIAN AMERICAN	0.00	3.49	0.00	Underutilized
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.10	5.46	0.02	Underutilized
DISABLED	0.00	0.62	0.02	Underutilized
NON-MED	99.99	75.82	1 32	Overutilized
FY 2011		73.02	1.02	Company and the second
AFRICAN AMERICAN	0.00	12.57	0.00	Underutilized
ASIAN AMERICAN	0.00	3.49	0.00	Underutilized
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	3.18	5.46	0.58	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MED	96.82	75.82	1.28	Overutilized
FY 2012			CONTRACTOR OF THE OWNER	
AFRICAN AMERICAN	2.28	12.57	0.18	Underutilized
ASIAN AMERICAN	0.00	3.49	0.00	Underutilized
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.00	5.46	0.00	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MFD	97.72	75.82	1.29	Overutilized
TOTALS	Canal Part Internet State		A STATE OF A	
AFRICAN AMERICAN	0.30	12.57	0.02	Underutilized
ASIAN AMERICAN	0.00	3.49	0.00	Underutilized
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilized
NATIVE AMERICAN	0.00	0.08	0.00	Underutilized
WHITE FEMALE	0.47	5.46	0.09	Underutilized
DISABLED	0.00	0.62	0.00	Underutilized
NON-MFD	99.23	75.82	1.31	Overutilized

Table 56: Services P-Card Disparity Index



				1
		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008	NU 한번 11 - 14			
AFRICAN AMERICAN	0.00	5.79	0.00	Underutilized
ASIAN AMERICAN	1.14	2.01	0.57	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.50	0.00	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	98.86	86.08	1.15	Overutilized
FY 2009				
AFRICAN AMERICAN	0.13	5.79	0.02	Underutilized
ASIAN AMERICAN	0.27	2.01	0.13	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVEAMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.50	0.00	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	99.60	86.08	1.16	Overutilized
FY 2010			Madda and Marson	
AFRICAN AMERICAN	0.22	5.79	0.04	Underutilized
ASIAN AMERICAN	0.46	2.01	0.23	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVEAMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.05	4.50	0.01	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MED	99.26	86.08	1 15	Overutilized
EV 2011				
AFRICAN AMERICAN	0.17	5 79	0.03	Underutilized
	0.26	2.01	0.13	Underutilized
HISPANIC AMERICAN	0.00	1 51	0.00	Underutilized
NATIVEAMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.50	0.00	Underutilized
DISABLED	0.00	0.75	0.00	Underutilized
NON-MED	98.67	86.08	1 15	Overutilized
EX 2012	50.02			A STATE OF A STATE AND A STATE OF
AFRICAN AMERICAN	0.41	5 79	0.07	Underutilized
	0.00	2.01	0.00	Underutilized
	0.00	1 51	0.00	Underutilized
	0.00	0.11	0.00	Underutilized
	26 55	4.50	5.00	Overutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON MED	72.04	95.09	0.00	Overstilized
TOTALC	75.04			Overatinzed
	0.10	5 70	0.02	Underutilized
	0.15	2.01	0.05	Understilized
	0.34	1.01	0.1/	Understillized
	0.00	0.11	0.00	Understilized
MATTVE AIVIEKICAN	0.00	0.11	0.00	Underutilized
	2.95	4.50	0.66	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NUN-MED	96.52	86.08	1.12	Overutilized

Table 57: Goods P-Card Disparity Index



R. Subcontractor Disparity Indices and Analysis

The disparity indices for Construction subcontracting on County contracts in Table 58 demonstrate consistent underutilization by MFDs for all years except in 2008 and 2011, White Female owned firms were over utilized and Asian American owned firms were overutilized in 2011. On average all MFDs were underutilized during the Study Period and Non-MFDs were overutilized.

For Professional Services, Table 59 shows that Asian American and Female owned firms, along with Non-MFDs were consistently overutilized. White Female owned firms were overutilized only in 2012 but on average over the 5-year Study Period that overutilization caused an average overutilization during the Study Period. In contrast, African American owned firms were overutilized in 2008, but averaged underutilization over the term of the Study Period. Other MFD groups were consistently underutilized.

In Services, Table 60 as subcontractors, White Females were overutilized in all years except 2010 and averaged overutilization for the Study Period, while all other MFD groups were underutilized throughout the Study Period. Non-MFDs were consistently overutilized as subcontractors in the Services category

In Goods, Table 61 African American owned firms averaged overutilization and White Females were overutilized in 2010 and 2011 but averaged underutilization for the Study Period.



ETHNICITY/RACE AND GENDER GROUP	UTILIZATION % (U)	AVAILABILITY % BASED ON MASTER VENDOR FILE (AMV)	DISPARITY INDEX (U/AMV)	DISPARATE IMPACT OF UTILIZATION FOR U/AMV
FY 2008				
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	0.00	3.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	24.06	5.54	4.34	Overutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MFD	75.94	73.54	1.03	Overutilized
FY 2009			经生产和利用的产生的	Charles and the
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	14.29	3.29	4.34	Overutilized
HISPANIC AMERICAN	9.81	6.14	1.60	Overutilized
NATIVE AMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	0.00	5.54	0.00	Underutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MFD	79.90	73.54	1.09	Overutilized
FY 2010		and the second second second		and the second second second
AFRICAN AMERICAN	79.96	11.00	7.27	Overutilized
ASIAN AMERICAN	0.00	3.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVEAMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	0.00	5.54	0.00	Underutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MFD	20.04	73.54	0.27	Underutilized
FY 2011	tre- Allahan and the	a la compañía de la compañía	enand in the second second	
AFRICAN AMERICAN	8.94	11.00	0.81	Underutilized
ASIAN AMERICAN	0.00	3.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVEAMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	91.06	5.54	16.44	Overutilized
DISABLED	0.00	1.00	0.00	Underutilized
NON-MED	0.00	73.54	0.00	Underutilized
FY 2012		PERSONAL PROPERTY INCOMENT		Ball and a second state
AFRICAN AMERICAN	0.00	11.00	0.00	Underutilized
ASIAN AMERICAN	0.00	3.29	0.00	Underutilized
HISPANIC AMERICAN	0.00	6.14	0.00	Underutilized
NATIVEAMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	1.33	5.54	0.24	Underutilized
DISABLED	0.10	1.00	0.10	Underutilized
NON-MFD	98.67	73.54	1.34	Overutilized
TOTALS				
AFRICAN AMERICAN	2.06	11.00	0.19	Underutilized
ASIAN AMERICAN	2.25	3.29	0.68	Underutilized
HISPANIC AMERICAN	1.54	6.14	0.25	Underutilized
NATIVEAMERICAN	0.00	0.49	0.00	Underutilized
WHITE FEMALE	2.38	5.54	0.43	Underutilized
DISABLED	0.02	1.00	0.02	Underutilized
NON-MFD	91.76	73.54	1.25	Overutilized

Table 58: Disparity Indices for Construction Subcontracting



		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008	and a state of the state of the	Shiese and the set		
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilization
ASIAN AMERICAN	0.00	4.11	0.00	Underutilization
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilization
NATIVE AMERICAN	0.00	0.11	0.00	Underutilization
WHITE FEMALE	0.00	4.26	0.00	Underutilization
DISABLED	0.00	0.80	0.00	Underutilization
NON-MFD	100.00	82.03	1.22	Overutilization
FY 2009			and the second second	
AFRICAN AMERICAN	19.04	8.25	2.31	Overutilization
ASIAN AMERICAN	58.05	4.11	14.12	Overutilization
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilization
NATIVE AMERICAN	0.00	0.11	0.00	Underutilization
WHITE FEMALE	3.85	4.26	0.90	Underutilization
DISABLED	0.00	0.80	0.00	Underutilization
NON-MED	19.06	82.03	0.23	Underutilization
FY 2010			Martin State	Contraction of the second second
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilization
ASIAN AMERICAN	88.68	4.11	21.58	Overutilization
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilization
NATIVEAMERICAN	0.00	0.11	0.00	Underutilization
WHITE FEMALE	0.00	4.26	0.00	Underutilization
DISABLED	0.00	0.80	0.00	Underutilization
NON-MFD	11.32	82.03	0.14	Underutilization
FY 2011	Report Consumer			
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilization
ASIAN AMERICAN	25.53	4.11	6.21	Overutilization
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilization
NATIVE AMERICAN	0.00	0.11	0.00	Underutilization
WHITE FEMALE	0.00	4.26	0.00	Underutilization
DISABLED	0.00	0.80	0.00	Underutilization
NON-MED	74.47	82.03	0.91	Underutilization
FY 2012	Call Marine Balance		a margane and a state of the st	State Street - Lawrence
AFRICAN AMERICAN	0.00	8.25	0.00	Underutilization
ASIAN AMERICAN	44.02	4.11	10.71	Overutilization
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilization
NATIVE AMERICAN	0.00	0.11	0.00	Underutilization
WHITE FEMALE	8.59	4.26	2.02	Overutilization
DISABLED	0.00	0.80	0.00	Underutilization
NON-MFD	47.39	82.03	0.58	Underutilization
TOTALS	Manada kara depini	A STATISTICS OF A STATISTICS		Berth Constant State of the
AFRICAN AMERICAN	4.26	8.25	0.52	Underutilization
ASIAN AMERICAN	38.34	4.11	9.33	Overutilization
HISPANIC AMERICAN	0.00	1.24	0.00	Underutilization
NATIVE AMERICAN	0.00	0.11	0.00	Underutilization
WHITE FEMALE	4.45	4.26	1.04	Overutilization
DISABLED	0.00	0.80	0.00	Underutilization
NON-MFD	52.94	82.03	0.65	Underutilization

Table 59: Disparity Indices for Professional Services-Subcontracting

Griffin & Strong, P.C (2014)



		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008	no a canto de la			
AFRICAN AMERICAN	1.07	12.57	0.09	Underutilization
ASIAN AMERICAN	0.00	3.49	0.00	Underutilization
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilization
NATIVEAMERICAN	0.00	0.08	0.00	Underutilization
WHITE FEMALE	0.04	5.46	0.01	Underutilization
DISABLED	0.00	0.62	0.00	Underutilization
NON-MFD	98.90	75.82	1.30	Overutilization
FY 2009				And the second states and
AFRICAN AMERICAN	0.00	12.57	0.00	Underutilization
ASIAN AMERICAN	0.00	3.49	0.00	Underutilization
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilization
NATIVE AMERICAN	0.00	0.08	0.00	Underutilization
WHITE FEMALE	17.54	5.46	3.21	Overutilization
DISABLED	0.00	0.62	0.00	Underutilization
NON-MFD	82.46	75.82	1.09	Overutilization
FY 2010			STATISTICS CONTRACTOR	and the second second second
AFRICAN AMERICAN	0.00	12.57	0.00	Underutilization
ASIAN AMERICAN	0.00	3.49	0.00	Underutilization
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilization
NATIVE AMERICAN	0.00	0.08	0.00	Underutilization
WHITE FEMALE	0.00	5.46	0.00	Underutilization
DISABLED	0.00	0.62	0.00	Underutilization
NON-MFD	100.00	75.82	1.32	Overutilization
FY 2011				-
AFRICAN AMERICAN	0.00	12.57	0.00	Underutilization
ASIAN AMERICAN	0.80	3.49	0.23	Underutilization
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilization
NATIVE AMERICAN	0.00	0.08	0.00	Underutilization
WHITE FEMALE	55.67	5.46	10.20	Overutilization
DISABLED	0.00	0.62	0.00	Underutilization
NON-MFD	43.52	75.82	0.57	Underutilization
FY 2012	and the second state of the			
AFRICAN AMERICAN	2.29	12.57	0.18	Underutilization
ASIAN AMERICAN	0.00	3.49	0.00	Underutilization
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilization
NATIVE AMERICAN	0.00	0.08	0.00	Underutilization
WHITE FEMALE	19.12	5.46	3.50	Overutilization
DISABLED	0.00	0.62	0.00	Underutilization
NON-MFD	78.59	75.82	1.04	Overutilization
TOTALS				
AFRICAN AMERICAN	0.78	12.57	0.06	Underutilization
ASIAN AMERICAN	0.07	3.49	0.02	Underutilization
HISPANIC AMERICAN	0.00	2.58	0.00	Underutilization
NATIVE AMERICAN	0.00	0.08	0.00	Underutilization
WHITE FEMALE	18.04	5.46	3.30	Overutilization
DISABLED	0.00	0.62	0.00	Underutilization
NON-MFD	81.11	75.82	1.07	Overutilization

Table 60: Disparity Indices for Services Subcontracting

Griffin & Strong, P.C. (2014)

Table 61: Disparity Indices for Goods Subcontracting

		AVAILABILITY %		DISPARATE IMPACT
ETHNICITY/RACE AND	UTILIZATION %	BASED ON MASTER	DISPARITY INDEX	OF UTILIZATION FOR
GENDER GROUP	(U)	VENDOR FILE (AMV)	(U/AMV)	U/AMV
FY 2008				
AFRICAN AMERICAN	no data	5.79		n/a
ASIAN AMERICAN	no data	2.01		n/a
HISPANIC AMERICAN	no data	1.51		n/a
NATIVEAMERICAN	no data	0.11		n/a
WHITE FEMALE	no data	4.50		n/a
DISABLED	no data	0.76		n/a
NON-MFD	no data	86.08		n/a
FY 2009				Sector States and the
AFRICAN AMERICAN	36.89	5.79	6.37	Overutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	4.15	4.50	0.92	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	58.96	86.08	0.68	Underutilized
FY 2010	E - HELLER - Manual-	AND THE REAL PROPERTY OF	The second second	Ministration of Concellant
AFRICAN AMERICAN	30.13	5.79	5.20	Overutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	56.85	4.50	12.63	Overutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MED	13.02	86.08	0.15	Underutilized
FY 2011				
AFRICAN AMERICAN	0.00	5.79	0.00	Underutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	100.00	4.50	22.22	Overutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MED	0.00	86.08	0.00	Underutilized
FY 2012			STORE THE MARKET BEEK	1 Million States and Million
AFRICAN AMERICAN	0.00	5,79	0.00	Underutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	0.00	4.50	0.00	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	100.00	86.08	1.16	Overutilized
TOTALS		I a second and the	Call Contraction of the	
AFRICAN AMERICAN	34.93	5.79	6.03	Overutilized
ASIAN AMERICAN	0.00	2.01	0.00	Underutilized
HISPANIC AMERICAN	0.00	1.51	0.00	Underutilized
NATIVE AMERICAN	0.00	0.11	0.00	Underutilized
WHITE FEMALE	4.21	4.50	0.94	Underutilized
DISABLED	0.00	0.76	0.00	Underutilized
NON-MFD	60.86	86.08	0.71	Underutilized
		1		



S. Analysis of Disparities In Montgomery County

1. Introduction

In this section GSPC considers the relative self-employment, public contracting and subcontracting outcomes of business firms owned by MFDs in Montgomery County's relevant market area. Our analysis utilizes data from firms that are either willing, able, or have actually contracted/subcontracted with Montgomery County, with the aim of determining if the likelihood of successful self-employment, and the ability to contract/subcontract with Montgomery County is conditioned in a statistically significant manner on the race, ethnicity, gender and disability status of business owners. Such an analysis is a useful and important complement to estimating disparity indexes, which assume all things important for success and failure are equal among business firms competing for public contracts, and are based on unconditional moments—statistics that do not necessarily inform causality or the source of differences across such statistics. As disparity indexes do not condition on possible confounders of self-employment, and success and failure in public sector contracting/subcontracting by business firms, they are only suggestive of disparate treatment, and their implied likelihood of success/failure could be biased.

Our analysis posits that there are indeed confounders of success and failure in self-employment and public sector contracting/subcontracting that are sources of heterogeneity among business firms that lead to heterogeneity in success and failure. Failure to condition on sources of heterogeneity in success/failure in self-employment and public sector contracting/subcontracting can leave simple disparity indexes devoid of substantive policy implications as they could possibly reflect in part or in whole disparate outcomes driven by disparate business firm characteristics that matter fundamentally for success/failure in business start-ups and public sector contracting by MFD firms. Controlling for confounders that are presumably independent of the race, ethnicity, gender, and disability status of business firm owners, and important for differences in the success/failure rate of business firms competing for public sector contracts/subcontract, if race, ethnicity, gender, or disability status conditions a lower likelihood of success/failure, this would be suggestive of such status causing observed disparities.`



2. Data

Our analysis is based on survey data compiled by GSPC, and constitutes a two-stage cluster sample of approximately 60,000 firms from the bidder and vendor lists provided by Montgomery County. Clusters were constructed on the basis of assigned categories for a firm's primary line of business. The GSPC survey categorized five primary lines of business: Building Construction, Special Trade Contractor, Professional Services, General/Personal Services, and Supplies and Equipment. Given a cost-based constraint of a total sample of 500, a random sample from each cluster was selected, and the cluster share of total observation was used to approximate probability weights for the individual observations in the cluster.

The GSPC survey was an 86 item questionnaire, that captured data on firm and individual owner characteristics that approximates the content of the SPUMS on which we based our private sector analysis in an earlier part of this report. The interest in this section is in the extent to which a business firm owner's race, ethnicity, gender and disability status conditions success/failure in Montgomery County public contracting opportunities. As such, our use of the data in the GSPC survey is limited to the measured covariates that in our view are best suited for evaluating the extent to which a business firms owner's race, ethnicity and disability status are a possible cause of public contracting disparities.

Table 62 reports a summary on the description, mean and standard deviation of the covariates from the GSPC survey that are relevant to the analysis of this section. The first three listed covariates measure the public contracting activities and outcomes of the business firms in the market area relevant to Montgomery County since July 2007. Their unconditional variation—given by the standard deviation—in the sample presumably reflects unconditional variation in each business firm's propensity to seek public contracting opportunities and success securing such opportunities. However, the other covariates also have unconditional variation and they measure business firm and owner characteristics that could be important for the variation in seeking and being successful in obtaining public contracting opportunities in Montgomery County.



Table 62: Covariate Summary

Covariate	Description	Mean	Standard	Number of	
			Deviation	Observations	
Number of Submitted	Categorical Variable:	2.15	1.54	407	
Prime Contractor	I = Zero bids				
Bids Since July 2007	2 = 1 - 10 bids				
	3 = 11 - 25 bids				
	4 = 26 - 50 bids				
	5 = 51 - 100 bids				
	6 = More than 100 bids				
Performed Work	Binary Variable:	.289	.454	407	
As a Prime Contractor	1 = Yes				
Since July 2007					
Performed Work	Binary Variable:	.251	.434	407	
As a Subcontractor	1 = Yes				
Since July 2007					
Number of	Numeric:	29.59	19.97	407	
Employees	Number of full				
	and part time				
	employees				
Number of	Numeric:	22.73	20.12	407	
Years in Business	Number of years				
	Business has been				
	Operating				
Business Owner has a	Binary:	.415	.493	407	
Baccalaureate Degree	1 = College Graduate				
Minority owned	Binary:	.329	.471	407	
Business Enterprise (MB	E) $1 = Business has MBE$				
	Certification				
Women owned	Binary:	.152	.359	407	

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	Certification			
Disabled owned	Binary:	.088	.284	407
Business Enterprise (DBE)	1 = Business has DBE			
	Certification			
Firm Owner	Binary:	.289	.454	407
Is Female	1 = More than 50 percent			
	Of Firm is Owned			
	By a Female or Females			
Firm Owner	Binary:	.027	.162	407
Is Disabled	I = More than 50 percent			
	Of Firm is Owned			
	By a Disabled individual o individuals	r		
Firm Owner	Binary:	.172	.378	407
Is African American	1 = More than 50 percent			
	Of Firm is Owned			
	By a African American individual or individuals			
Firm Owner	Binary:	.086	.281	407
Is Hispanic American	1 = More than 50 percent			
	Of Firm is Owned			
	By a Hispanic American individual or individuals			
Firm Owner	Binary:	.106	.308	407
Is American American American	1 = More than 50 percent			
	Of Firm is Owned			
	By an Asian American individual or individuals			
Firm Owner	Binary:	.042	.201	407
Is Other race (non-white)	1 = More than 50 percent			
	Of Firm is Owned			



	By an Other race individua or individuals	al			
Newly self-employed	Binary:	.167	.373	407	
Since 2007	1 = Firm entered market				
	After 2007				
	By an Other race individuation or individuals	al			

Griffin & Strong, P.C. 2014

3. Statistical and Econometric Framework

Methodologically, GSPC's statistical and econometric analysis of public contracting disparities in Montgomery County conditioned on race, ethnicity, gender and disability status generalizes the binary regression (BRM) model framework utilized in the public sector analysis. The generalization in this section is that of the categorical regression model (CRM) framework.¹⁴⁴ As the covariates measuring public contracting activity and success in Table 62 are indeed categorical (e.g. public contracting bid ranges, yes, no), a CRM views the categories as latent variables with likelihood thresholds that are conditioned on other covariates. In the case where there are more than two categories and the succession of categories have a natural ranking, a CRM permits a determination as to how particular covariates condition the likelihood/probability of being in the highest valued category relative to the lower-valued categories. In the case of just two categorical but not naturally ordered categories, the CRM reduces to the BRM.¹⁴⁵

4. The Relative Self-Employment Propensities of MFD Business Owners in Montgomery County

We first examine the effects of MFD status on an individual's participation in the private sector as a selfemployed business operators in Montgomery County. To the extent that MFD business owners have self-

¹⁴⁴ See: Richard D. McKelvey and William Zavoina. 1975. "A Statistical Model for the Analysis of Ordinal Level Dependent Variables," *Journal of Mathematical Sociology*, 4: pp. 103 - 120.

¹⁴⁵ More formally, if the latent realization of an outcome is Y_i^* , ranging from $-\infty$ to ∞ , a structural and conditional specification for Y_i^* is $Y_i^* = \mathbf{x}_i \ \beta + \varepsilon_i$, where **X** is a vector of exogenous covariates. β is a vector of coefficients measuring the effects of particular covariates on the realization of Y_i^* , and ε_i is a random error. For categorical and ordinal outcomes $\mathcal{M} = 1 \dots J$, $Y_i = \mathcal{M}$ if $\tau_{m-1} \leq Y_i^* < \tau_m$, where the τ_i are thresholds for the particular realizations of $Y_i^* = \mathcal{M}$. Conditional on **X** the likelihood/probability hat Y_i takes on ε_i particular realization is $\mathcal{P}_i \cdot (Y_i = \mathcal{M} \mid \mathbf{X}) = \Phi(\tau_m - \mathbf{X} \beta) - \Phi(\tau_{m-1} - \mathbf{X} \beta)$, where Φ is the cumulative density function of ε_i .



employment disparities relative to Non-MFD business owners, it would suggest that discrimination against minorities is sufficiently present to warrant consideration of public sector legal remedies such as affirmative action and minority set-aside contracting. Such a perspective on discrimination suggests that entry barriers faced by MFD firms in private markets can rationalize targeted contracting programs by political jurisdictions, as the counterfactual is that in the absence of such discrimination, they would be able to enter the market at business owners, and compete with other firms in bidding for public contracts.

To determine if MFD status is a barrier to market entry in Montgomery County, we estimate the parameters of a Probit CRM with the a binary variable for a firm establishing itself since July 2007 as the dependent variable. As standard control covariates we include the number of employees the business employs, and whether or not the owner has a baccalaureate degree—to approximate entry barriers associated with firm size and an individual's business acumen/ability. To determine if MFD business owners' propensity to be self-employed differs from Non-MFD business owners, we exclude the binary covariate measuring being a Non-MFD business in the Probit parameter estimates. We report Pseudo- R^2 as a goodness-of-fit measure for our estimated Probit specifications.¹⁴⁶

Table 63 reports Probit parameter estimates where the conditioning on the number of new business owners in Montgomery County since 2007 is on whether the MFD businesses have official certification as being a Minority Business Enterprise (MBE), Women Business Enterprise (WBE), or Disabled Business Enterprise (DBE). The estimated coefficients on the control covariates measuring entry barriers are statistically significant, and consistent with incumbent business owner size and individual business acumen/ability serving as entry barriers. With respect to the MFD status of individuals, the estimated coefficients are statistically significant and positive for DBE, and statistically significant and negative for MBE. This suggests that in Montgomery County, relative to Non-MFD business owners, business owners with DBE certification had a higher propensity to be self-employed since 2007, and business owners with MBE certification had a lower propensity. This suggests that at least for new market entrants since 2007, only minority owned businesses faced relative barriers to self-employment in Montgomery county, whereas female and Disabled owned businesses faced no barriers relative to Non-MFD owned businesses. For business owners with WBE certification, the estimated odds ratio is statistically significant and less than unity

¹⁴⁶ Pseudo- R^2 is not to be interpreted as the R^2 in standard Ordinary Least Squares (OLS) estimation, as OLS proceeds my

minimizing variance to get parameter estimates. Probit specifications are likelihood-based, and higher values of Pseudo-R 2 indicate that the specified model is an increasingly better alternative to a null model with only an intercept.



suggesting that relative to Non-MFD business owner, they are less likely to compete for public contracting opportunities.

Table 63: Probit Parameter Estimates :

Business Enterprise Ownership Status and Self-Employment Propensities

In Montgomery County Market Area

	Coefficient	Standard Error	t-Statistic
Regressand: Newly Self- Employed Since 2007			
Since July 1, 2007 (Binary)			
Regressors:			
Number of	001	.0004	2.5 ^{<i>b</i>}
Employees			
Owner has a	.074	.027	2.74 ^{<i>b</i>}
Baccalaureate Degree			
Minority owned	206	.047	4.38 ^{<i>a</i>}
Business Enterprise			
Women owned	.052	.070	.743
Business Enterprise			
Disabled owned	.157	.029	5.41 ^{<i>a</i>}
Business Enterprise			
Number of	88		
Observations	407		
$Pseudo - R^2$.058		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

- ^{*a*} Significant at the .01 level
- ^b Significant at the .05 level



5. Are MFD Business Owners Less Likely To Compete for Prime Contracts in Montgomery County?

One possible reason for the existence of disparities between Non-MFD owned and MFD owned businesses in public contracting awards 'is that relative to Non-MFD owned businesses, MFD owned businesses are less likely to submit bids for public contracts. To determine if this is the case in Montgomery County, we estimate the parameters of a CRM with the number of prime subcontracting bids submitted since July 2007 as the dependent variable. As standard control covariates we include the number of employees the business employs, and the number of years the business has been in operation. These standard controls measure sources of heterogeneity that could explain differential success in public contracting among business owners. As covariates of interest we use several measures of the business owner's race, ethnicity, gender, disability, and certification status. To determine if MFD business owners are less likely to compete for prime contracting opportunities with Montgomery County relative to Non-MFD business owners, we exclude a binary covariate measuring being a Non-MFD business owner in all our GRM parameter estimates.

GSPC parameterizes its specification of the cumulative density function as normal—hence our CRM is commonly known as an Ordinal Probit specification. To enable a clear interpretation of our Ordinal Probit parameter estimates, we report them as odds ratios. The odds ratio represents the odds that an outcome measured by the dependent variable–will will occur given a particular covariate, compared to the odds of the outcome occurring in the absence of that covariate. The estimated odds ratio enables a determination of how a particular covariate affects the likelihood/probability of an outcome of interest measured by the dependent variable. In particular, the covariate decreases the likelihood/probability of the outcome of interest if the odds ratio is less than one, does not affect the likelihood/probability if the odds ratio is one, and increases the likelihood/probability if the odds ratio is greater than one. We also report Pseudo- R^2 as a goodness-of-fit measure for our estimated Ordinal Probit specifications.¹⁴⁷

¹⁴⁷ Pseudo- R^2 is not to be interpreted as the R^2 in standard Ordinary Least Squares (OLS) estimation, as OLS proceeds my minimizing variance to get parameter estimates. GRM specification are likelihood-based, and higher values of Pseudo-R² indicate that the specified model is an increasingly better alternative to a null model with only an intercept.



Table 64 reports Ordinal Probit parameter estimates where the conditioning on the number of project bid submissions to Montgomery County is on whether the MFD businesses have official certification as being

a Minority Business Enterprise (MBE), Women Business Enterprise (WBE), or Disabled Business Enterprise (DBE). The estimated odds ratio is statistically significant only in the case of WBE. This suggests that in Montgomery county relative to Non-MFD business owners, business owners with MBE and DBE certification are no more or less likely than Non-MFD business owners to compete for public contracting opportunities. For business owners with WBE certification, the estimated odds ratio is statistically significant and less than unity suggesting that relative to Non-MFD business owner, they are less likely to compete for public contracting opportunities.

Table 64: Ordinal Probit Parameter Estimates (Odds ratio):

Business Enterprise Ownership Status and Prime Bid Submissions

In Montgomery County Market Area

	Odds Ratio	Standard Error	t-Statistic
Regressand: Number of			
Submitted Prime Contractor Bids			
Since July 1, 2007			
(Categorical/Ordinal)			
Pageassons			
Kegi essoi s.			
Number of	1.01	.488	2.07 ^{<i>b</i>}
Employees			
Number of Vears	1.01	116	a
Number of Tears	1.01	.110	8.70
In Business			
Minority owned	1.06	1.43	.740
Business Enterprise			

Women owned	.673	.164	4.11 ^a
Business Enterprise			
Disabled owned	1.27	.961	1.22
Business Enterprise			
Number of	407		
Observations	407		
$Pseudo - R^2$.019		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

^{*a*} Significant at the .01 level

^b Significant at the .05 level

To the extent that all minority, women and disabled business owners are not certified as such, the estimated parameters in Table 64 could be biased estimates of the effects of having such status on competing for public contracting opportunities in Montgomery County. To consider this, in Table 65 we condition the number of project bid submissions on disaggregated measures of MFD business owner status. The parameter estimates suggests that Female owned, Disabled owned, and Hispanic American owned businesses are no different from Non-MFD business owners in competing for public contracting opportunities as the estimated odds ratio is statistically significant in these instances. For businesses owned by Asian Americans, and Others, the estimated odds ratio suggest that relative to Non-MFD owned businesses, they are less likely to compete for public contracting opportunities. In the case of African American owned businesses, the estimated odds ratio suggest that relative to Non-MFD owned businesses, they are less likely to compete for public contracting opportunities.

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Table 65: Ordinal Probit Parameter Estimates (Odds ratio):

Business Enterprise Status and Prime Bid Submissions

In Montgomery County Market Area

	Coefficient	Standard Error	t-Statistic	
Regressand: Number of				
Submitted Prime Contractor Bids				
Since July 1, 2007				
(Categorical/Ordinal)				
Regressors:				
Number of	1.01	.435	2.32 ^{<i>b</i>}	
Employees				
Number of Years	1.01	.124	8.17 ^{<i>a</i>}	
In Business				
Business Owner has a	1.22	.382	3.19 ^{<i>a</i>}	
Baccalaureate degree				
Business is	1.36	.424	3.21 ^{<i>a</i>}	
Certified				
Firm Owner	.816	.808	1.01	
Is Female				
Firm Owner	.773	.750	1.03	
Is Disabled				
Firm Owner	1.20	.591	2.03 ^{<i>b</i>}	

Is African American

		(STRONG PC
Firm Owner	.738	.731	1.01
Is Hispanic American			
Firm Owner	.490	.064	7.67 ^{<i>a</i>}
Is Asian American			
Firm Owner	.310	.049	6.23 ^{<i>a</i>}
Is Other Race (non-White)			
Number of	407		
Observations			
$Pseudo-R^2$.028		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

- ^{*a*} Significant at the .01 level
- ^b Significant at the .05 level

That the largest statistically significant estimated odds ratio is for simply having business certification for the parameter estimates in Table 66 suggests that being certified by itself substantially increases the likelihood/probability of certified business owners competing for public contracting opportunities in Montgomery county relative to Non-MFD business owners. Indeed, it seems plausible that the achievement of certification equips holders with advantages such as gaining new knowledge about public contracting that results in a higher level of bid submissions. As such, not accounting for this could also lead to biased estimates of the effect of being a MFD business owner on competing for public contracting opportunities relative to Non-MFD business owners.

In Table 66 we report parameter estimates when conditioning on the status of MFD business owners with certification. As the excluded group now also includes in addition to Non-MFD business owners, MFD business owners without certification, the interpretation of the estimated coefficients is not the same as those estimated in Tables 66 and 67.. The odds ratio is now the likelihood/probability of certified MFD

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business owners competing for public contracts relative to Non-MFD business owners and non-certified MFD business owners. The estimated odds ratio suggest that certification does not necessarily matter for relative success in competing for public contracting opportunities for businesses owned by Females, African- and Hispanic Americans, as the odds ratio is statistically insignificant for them. In contrast, for businesses owned by the Disabled, Asian Americans, and Others, certification reduces relative success in competing for public contracting is statistically significant and less than one.

Table 66: Ordinal Probit Parameter Estimates (Odds ratio):

Business Enterprise Ownership Status and Prime Bid Submissions

In Montgomery County Market Area

	Coefficient	Standard Error	t-Statistic
Regressand: Number of			
Submitted Prime Contractor Bids			
Since July 1, 2007			
(Ordinal/Categorical)			
Regressors:			
Number of	1.01	440	b
Number of	1.01	.447	2.25"
Employees			
Number of Years	1.01	.063	16.09.4
			10.08
In Business			
Business Owner has a	1.25	.414	3.02^{a}
Baccalaureate degree			
Firm Owner	1.02	5.67	.180
Is Female and Certified			
Firm Owner	.623	.196	3.17 ⁴
---	------	------	---------------------------
Is Disabled and Certified			
Firm Owner	1.20	.869	1.38
Is African American and Certified	I		
Firm Owner	1.33	1.56	.850
Is Hispanic American and Certified			
Firm Owner	.489	.036	13.69 ^{<i>a</i>}
Is Asian American and Certified			
Firm Owner	.389	.071	5.47 ^{<i>a</i>}
Is Other Race (non-White) and Certified			
Number of	407		
Observations			
Pseudo-R ²	.023		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

- ^{*a*} Significant at the .01 level
- ^{*b*} Significant at the .05 level

To the extent that disparities between Non-MFD owned and MFD owned businesses in successfully securing public contracting opportunities can be explained by the fact MFD owned businesses are less likely to submit bids for public contracts, our analysis provides no evidence for this as a general rule. Our parameter estimates of the likelihood/probability of conditional on being a MFD business relative to a Non-MFD business owner reveal that in no specification estimated are the majority of distinct MFD business owner classification associated with being less likely to compete for public contracting opportunities relative to Non-MFD business owners. In those instances where MFD business owners were found to be less likely to submit bids for public contracts relative to Non-MFDs, our results suggest that if this is indeed

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driving disparities, policy interventions that encourage submissions and certification could in principle increase bid submissions and decrease project award disparities between MFD and Non-MFD business owners.

6. Are MFD Business Owners Less Likely To Secure Public Contracts From Montgomery County?

Given that the GSPC data provides covariates measuring success in securing public contracting opportunities with Montgomery County since July 2007, we now seek to determine if there are success disparities conditioned on a business owner's MFD status. As the covariate measuring success in securing public contracting opportunities are binary with two categories—Yes and No—we specify the CRM as a simple Probit specification. We consider success in two types of public contracting opportunities, as a prime contractor and as a subcontractor. As the effect of changing covariate on the probability of success depends upon the value of the covariate in Probit parameter estimates, we report the Probit parameter estimates as marginal effects—which captures how changes in the covariate change the probability of success at the mean values of the covariates. We estimate the marginal effects parameters across the same exogenous variable specifications utilized in Tables 67-69. As was the case in the Ordinal Probit parameter estimates, the comparison group is Non-MFD business owners.

Table 67: Probit Parameter Estimates (Marginal Effects):

Business Enterprise Ownership Status and Successful Prime Contracting

In Montgomery County Market Area			
	Coefficient	Standard Error	t-Statistic
Regressand: Performed work as	a		
prime contractor for			
Montgomery County since July 1			
2007 (Binary)			
Decreace			
Kegressors.			
Constant	-1.22	.147	8.29 ^{<i>a</i>}
Number of	.002	.0002	10.0 ^{<i>a</i>}



Employees

Number of Years	.004	.001	4.0 ^{<i>a</i>}
In Business			
Business Owner has a	.047	.033	1.41
Baccalaureate degree			
Minority owned	.026	.024	1.10
Business Enterprise			
Women owned	.098	.059	1.66 ^{<i>b</i>}
Business Enterprise			
Disabled owned	019	.037	.510
Business Enterprise			
Number of	407		
Observations			
$Pseudo-R^2$.048		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

- ^{*a*} Significant at the .01 level
- ^b Significant at the .10 level

For success in securing prime contract awards relative to Non-MFD business owners in Montgomery County, Tables 68-69 report Probit marginal effects parameter estimates across different aggregations of MFD business owner status and certification. A comparison of the estimates across Tables 68-69 permit some generalization about the relative success of MFD business owners in securing prime contracting opportunities. Based upon the frequency of statistical significance and sign on the marginal effects, there



appear to be success disparities for businesses owned by African Americans and Asian Americans, as a negative and statistically significant estimated parameter dominates across the specifications. In contrast, the pattern of statistical significance and sign for the estimated parameter on businesses owned by females and the disabled suggest they have higher success in securing prime contracts relative to businesses owned by Non-MFDs.

Table 68: Probit Parameter Estimates (Marginal Effects):

Business Enterprise Ownership Status and Successful Prime Contracting

	Coefficient	Standard Error	t-Statistic
Regressand: Performed work as a	a		
prime contractor for			
Montgomery County since July 1.	•		
2007 (Binary)			
Regressors:			
Constant	-1.20	.097	12.32 ^{<i>a</i>}
		0001	
Number of	.002	.0001	20.0 ^{<i>a</i>}
Employees			
Number of Years	.004	.0009	A A A ^G
			4.44
In Business			
Business Owner has a	.049	.033	1.48
Raccalaureate degree			
Dattaiduitait ütgitt			
Business is	.051	.031	1.64 ^c

In Montgomery County Market Area

Certified

			G GRIFFIN& STRONG PC
Firm Owner	.032	.820	.039
Is Female			
Firm Owner	.084	.048	1.73 ^c
Is Disabled			
Firm Owner	092	.051	1.79 ^c
Is African American			
Firm Owner	013	.027	.480
Is Hispanic American American			
Firm Owner	051	.022	2.32 ^{<i>b</i>}
Is Asian American			
Firm Owner	121	.060	2.01 ^{<i>b</i>}
Is Other Race (non-White)			
Number of	407		
Observations			
$Pseudo - R^2$.050		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

- ^{*a*} Significant at the .01 level
- ^b Significant at the .05 level
- ^c Significant at the .10 level

Tables 69-72 report Probit marginal effects parameter estimates across different aggregations of MFD business owner status and certification for the relative success of MFD business owners securing subcontracting opportunities. A comparison of the estimates across Tables 66-68 permit some generalization about the relative success of MFD business owners in securing subcontracting opportunities.



Based upon the frequency of statistical significance and sign on the marginal effects, there appear to be success disparities for businesses owned by African Americans and females, as a negative and statistically significant estimated parameter dominates across the specifications. In contrast, the pattern of statistical insignificance and sign for the estimated parameter on businesses owned by females and the disabled suggest there success in securing subcontracts relative to businesses owned by Non-MFDs is no different.

Table 69: Probit Parameter Estimates (Marginal Effects):

Business Enterprise Ownership Status and Successful Prime Contracting

In Montgomery County Market Area

	Coefficient	Standard Error	t-Statistic
Regressand: Performed work as a	1		
prime contractor for			
Montgomery County since July 1,			
2007 (Binary)			
-			
Regressors:			
Constant	-1.20	.157	
			/.64
Number of	.002	.0001	20.0 ^{<i>a</i>}
Employees			
Number of Years	.004	.001	4.0 ^{<i>a</i>}
In Dusinges			
III DUSIIICSS			
Business Owner has a	.048	.033	1.45
Baccalaureate degree			
-			
Firm Owner	.091	.053	1.72 ^c
Is Female and Certified			
Firm Owner	.135	.067	2.01 ^b



Is Disabled and Certified

Firm Owner	067	.037	1.81 ^c
Is African American and Certified	I		
Firm Owner	.062	.036	1.72 ^c
Is Hispanic American and Certified			
Firm Owner	055	.006	9.17 ^{<i>a</i>}
Is Asian American and Certified			
Firm Owner	049	.064	.766
Is Other Race (non-White) and Certified			
Number of	407		
$Pseudo-R^2$.054		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

- ^{*a*} Significant at the .01 level
- ^b Significant at the .05 level
- ^c Significant at the .10 level

In general, GSPC's Probit parameter estimates on the the effects of being a MFD business owner on the probability of successfully securing prime contracts or subcontracts from Montgomery County suggest that any observed disparities in Montgomery County are in many instances conditioned on the race, ethnicity, gender and disability status of business owners in market area relevant for contracting and subcontracting opportunities in Montgomery County.



Table 70: Probit Parameter Estimates (Marginal Effects):

Business Enterprise Ownership Status and Successful Subcontracting

In Montgomery County Market Area

	Coefficient	Standard Error	t-Statistic	
Regressand: Performed				
work as a subcontractor f	or			
Montgomery County since	ce			
July 1, 2007 (Binary)				
Regressors:				
Constant	-1.05	.305	3.45 ^{<i>a</i>}	
Number of	.0013	.0010	1.30	
Employees				
Number of Years	.0027	.0016	1.69 ^b	
In Business				
Business Owner has a	.011	.050	.220	
Baccalaureate degree				
Minority owned	.004	.030	.133	
Business Enterprise				
Women owned	066	.035	1.88 ^b	
Business Enterprise				

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.600	

Disabled owned .021

.035

Business Enterprise

Number of 407

Observations

 $Pseudo - R^2 \qquad .023$

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

- ^{*a*} Significant at the .01 level
- ^{*b*} Significant at the .10 level

 Table 71:
 Probit Parameter Estimates (Marginal Effects):

Business Enterprise Ownership Status and Successful Subcontracting

In Montgomery County Market Area

Coefficient

Standard Error

t-Statistic

Regressand: Performed work as a subcontractor for

Montgomery County since July 1, 2007 (Binary)

Regressors:



Constant	871	.214	4.07 ^{<i>a</i>}
Number of	.0014	.0008	1.75 ^c
Employees			
Number of Years	.0017	.0015	1.13
In Business			
Business Owner has a	.015	.052	.288
Baccalaureate degree			
Business is	.031	.110	.282
Certified			
Firm Owner	061	.011	5.54 ^{<i>a</i>}
Is Female			
Firm Owner	.016	.157	.102
Is Disabled			
Firm Owner	150	.014	10.71 ^{<i>a</i>}
Is African American			
Firm Owner	009	.069	.130
Is Hispanic American			
Firm Owner	048	.022	2.18 ^{<i>b</i>}
Is Asian American			
Firm Owner	118	.071	1.66 ^c
Is Other Race (non-White)			

Number of 407

Observations



Pseudo - R^2 .037

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported.

^{*a*} Significant at the .01 level

- ^{*b*} Significant at the .05 level
- ^c Significant at the .10 level

 Table 72:
 Probit Parameter Estimates (Marginal Effects):

Business Enterprise Ownership Status and Successful Subcontracting

In Montgomery County Market Area

	Coefficient	Standard Error	t-Statistic
Regressand: Performed work as a			
subcontractor for			
Montgomery County since July 1,			
2007 (Binary)			
Regressors:			
Constant	947	.264	3.59 ^{<i>a</i>}

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Number of	.0013	.0008	1.62
Employees			
Number of Years	.0022	.0016	1.37
In Business			
Business Owner has a	.009	.051	.176
Baccalaureate degree			
Firm Owner	012	.026	.462
Is Female and Certified			
Firm Owner	.105	.190	.553
Is Disabled and Certified			
Firm Owner	145	.041	3.54 ^{<i>a</i>}
Is African American and Certified			
Firm Owner	.029	.059	.491
Is Hispanic American and Certified			
Firm Owner	0081	.0080	1.01
Is Asian American and Certified			
Number of	407		
Observations			
<i>Pseudo</i> - R^2	.031		

Notes: Parameter estimates are weighted with the probability of an individual firm being in the sample and cluster. The absolute value of the t-Statistic is reported. Certified firm owners classified as "other race" perfectly predicted failure (e.g. not subcontracting) and were dropped from the estimation of the parameters.

^{*a*} Significant at the .01 level



7. Conclusion

GSPC's analysis of disparities in public contracting and subcontracting in Montgomery County aimed to provide some policy relevant insight to observed unconditional disparity indexes. Our analysis explicitly links a business owner's race, ethnicity, gender and disability status to outcomes that can inform the magnitude of observed disparity indexes. Our focus on MFD business owners success relative to Non-MFD business owners in entering the market as new business owners, competing for public contracting opportunities, and actually securing them provides a framework to rationalize observed disparity indexes. Indeed we find that, a business owner's race, ethnicity, gender and disability status has a statistically significant and adverse effect on becoming newly self-employed as a business owner, and on securing public contracting and subcontracting opportunities relative to Non-MFD business owners. We also find that being a MFD business owner does not necessarily reduce the likelihood or probability of pursuing public contracting opportunities relative to Non-MFD business owners. Our results suggest that the disparities measured by the ratio of utilization to availability are explained by the race, ethnicity, gender and disability status of business owners.