NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

OFFICER SELECTION TEAM OPTIMIZATION: MAXIMIZING MARINE CORPS OFFICER RECRUITING GOALS

by

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March 2020

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** March 2020	**3. REPORT TYPE AND DATES COVERED** Master's thesis

4. TITLE AND SUBTITLE
OFFICER SELECTION TEAM OPTIMIZATION: MAXIMIZING MARINE CORPS OFFICER RECRUITING GOALS

5. FUNDING NUMBERS

6. AUTHOR(S) George E. Getman

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Naval Postgraduate School
Monterey, CA 93943-5000

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
MarineCorpsRecruitingCommand, Quantico, VA

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release. Distribution is unlimited.

12b. DISTRIBUTION CODE
A

13. ABSTRACT (maximum 200 words)

Each fiscal year, the Marine Corps identifies goals to recruit highly qualified applicants for future service as officers. As part of that process, specific diversity goals are given to each Marine recruiting region, district, and recruiting station to ensure specified number of applicants are black, hispanic, or other, along with the requirement to recruit and select a certain number of female applicants. Achievement of this goal/requirement is delegated to the Marine Corps Officer Selection Stations (OSS). Goals are given to each region, district, and recruiting station, and ultimately the respective OSS based on the Qualified Candidate Population (QCP) in an Area of Responsibility (AOR). The QCP is derived from estimates via studies conducted by the Center for Naval Analyses (CNA) to determine by sector of the country those academically eligible to be officers based on elements of race, gender, etc. This research uses data derived from Marine Corps Recruiting Command from 2009–2019 to determine distribution of diverse and female accessions for OSSs, districts, and regions, with comparison of those numbers against what is expected based on QCP, and the quality of those accessions for each district. From this analysis, it is clear that diverse/gender combinations are not spread equally throughout the nation, and that QCP does predict well where diversity resides. However, there is a significant gap by percentage of the numbers of accessions versus the expectation per QCP.

14. SUBJECT TERMS
USMC, OSO, QCP, accessions, diversity, female, black, hispanic, other, OSS, district, recruiting, MCRC, region, CNA

15. NUMBER OF PAGES
119

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	**18. SECURITY CLASSIFICATION OF THIS PAGE**	**19. SECURITY CLASSIFICATION OF ABSTRACT**	**20. LIMITATION OF ABSTRACT**
Unclassified	Unclassified	Unclassified	UU

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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OFFICER SELECTION TEAM OPTIMIZATION: MAXIMIZING MARINE CORPS OFFICER RECRUITING GOALS

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MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
March 2020

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LIST OF ACRONYMS AND ABBREVIATIONS

MCRC	Marine Corps Recruiting Command
RS	Recruiting Station
MCD	Marine Corps District
ERR	Eastern Recruiting Region
WRR	Western Recruiting Region
QCP	Qualified Candidate Population
OSS	Officer Selection Station
OSO	Officer Selection Officer
OCS	Officer Candidate School
CNA	Center for Naval Analyses
MCRISS	Marine Corps Recruiting Information Support System
ORB	Officer Retention Board
DoD	Department of Defense
OCC	Officer Candidate Class
PLC	Platoon Leaders Class
AFQT	Armed Forces Qualification Test
SAT	Scholastic Aptitude Test
ACT	Academic Classification Test
AFQT	Armed Forces Qualification Test
PFT	Physical Fitness Test
NWA	New Working Applicant
NPS	Naval Postgraduate School
RSCO	Recruiting Station Commanding Officer

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ACKNOWLEDGMENTS

I would like to thank my wife, Brandi, who has been with me throughout my twenty-plus years in the Marine Corps and who has been extremely supportive through this tour at the Naval Postgraduate School. I would also like to thank my sons, Hunter, Hayden, and Cody, who are my constant inspiration, purpose, and shining light. I would like to thank my advisors, Dr. Marigee Bacolod and Dr. Daniel Reich. Dr. Bacolod, I observed your efficiency, skill, and positive personality in the classroom, which encouraged me to seek you out as my advisor. Your STATA skills and experience with regression analysis were vital to the success of this thesis—I will forever be grateful. Dr. Reich, thank you for your interest in my research and for providing an objective view through a different lens. Your questions, points, and analysis helped make this thesis what it is today. Finally, I want to acknowledge my father-in-law, Terry Scee, who continually inspires me in this journey through life. As you have battled ALS over this past nine years, we see your resilience, toughness, and will to go on—always know that we all love you!

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I. INTRODUCTION

A. OVERVIEW

This study examines whether the current officer recruiting geographical structure setup is aligned properly to maximize Marine Corps accessions for the key targets of diversity and gender. It is important to note that this study uses data that identifies each observation as either male or female for gender and white, black, hispanic, or other for the purposes of diversity. Diversity goes well beyond those simplified metrics; however, this study extracts data that assigns those titles to each observation. More specifically, the purpose of this research is to determine if the Marine Corps Officer Selection Stations (OSS), six Marine Corps Districts (MCD), and two recruiting regions are organized and positioned to achieve the established accession goals, while considering resource constraints, changing demographics, and past performance.

The analysis explores Qualified Candidate Population (QCP), which is a metric produced by the Center for Naval Analyses (CNA) that uses population demographics to estimate, by region, the number of individuals eligible to become a Marine Corps officer academically, medically, and by their propensity to serve (Malone & Kelley, 2015). This study tests whether the current recruiting structure is aligned properly with QCP by using several models and statistical analysis, which indicate in some cases that QCP is very close to the actual production, considering the observations in this study, which span ten years (May 2009–May 2019). However, there are severe gaps in some diversity/gender categories that could be addressed either by reassessing QCP in that area or applying more officer recruiting resources.

Furthermore, the analysis reveals the spatial distribution of diversity and female accessions and the quality of these accessions, relative to QCP. Overall, this study provides several outputs demonstrating key elements of OSS performance relative to diversity and female accessions. This study does not focus on the performance of individual Officer Selection Officers (OSO), but rather on the performance of the entire OSS over the span of data.

This study has three findings:

1. Current district/OSS structure is not apportioned evenly relative to female/diverse accessions, which is shown in the descriptive statistics via tables, graphs, etc.
2. Current district accessions by percentage for diversity/females across the United States do not match QCP projections.
3. The geographic distribution of quality accessions is unevenly distributed according to the data. The study outlines three key recommendations in the conclusion that relate to the potential for a cost-benefit analysis on QCP, combining of assets, and increasing resources at large.

B. BACKGROUND

Leaders across the Marine Corps, including multiple commandants (Walker, 2011), and leaders such as secretaries of the Navy and Defense (Sandstrom, 2011) have stated the need for diversity in the military officer ranks. In the 1990s, the 12–12–5 plan was proposed outlining the goal of a composition of officers relative to end strength of 12 percent black, 12 percent hispanic, and 5 percent other (Wade, 1995). In the early part of this decade, General Amos stated similar goals for the improvement of diversity with only small movement in the composition of the force (Walker, 2011). Specifically, from 2006–2016, the Marine Corps had very little movement in its composition of diversity and female officers. The proportion of white officers decreased only slightly, from 82.6% to 81%, while black officers also decreased, from 5.6 to 5%; however, there were increases in the proportion of hispanic officers, from 6.3 to 8%, and female officers, from 5.8 to 7.4% (Diversity Portal, 2016). These numbers are nowhere near projections set out by several key leaders in recent decades. While currently the Marine Corps is able to fill its ranks with predominantly white male officers, that population pool is projected to diminish over the coming decades (Cohn & Caumont, 2016). The dramatic projected decline of white males as a percentage of the U. S. population is shown in Figure 1.

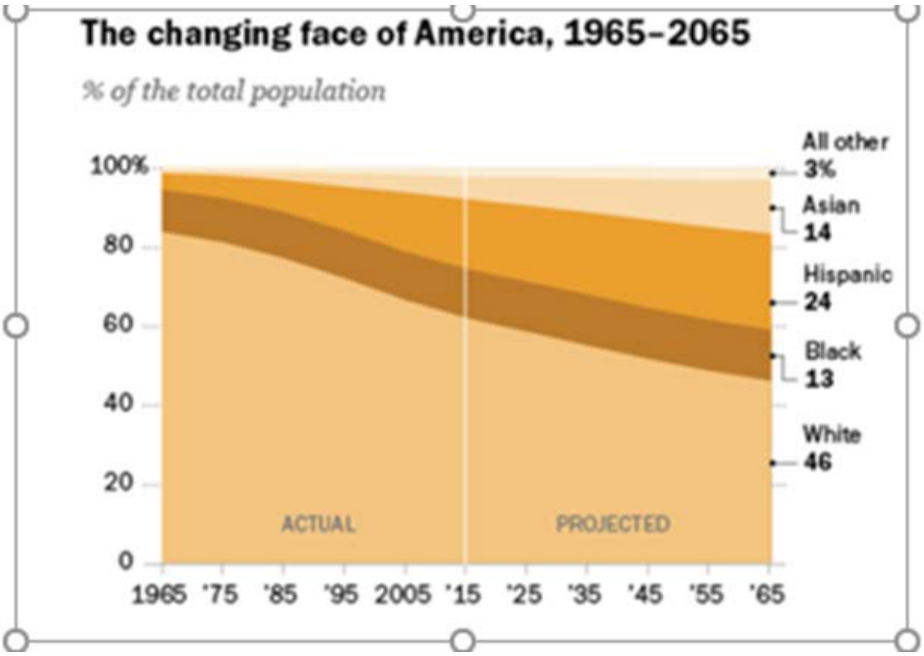

Figure 1. Demographics projection lowers pool of potential white officer candidates over time. Source: Pew Research Center (2016).

C. DATA

Throughout this analysis, diversity refers to four categories that the Marine Corps uses when inputting applicants for officer programs into the Marine Corps Recruiting Information Support System (MCRISS) database: white, black, hispanic, or other; each of those also is associated with male or female (Marine Corps Recruiting Command [MCRC], 2019).[1] This study recognizes that there are many ways to label diversity categories; however, this analysis uses data from MCRISS. This study specifically focuses on the Officer Candidate Class (OCC) and Platoon Leaders Class (PLC) applicants as those are the two programs under the purview of the 74 OSSs across the nation.

The data used in the analysis is of individuals who were declared applicants in MCRISS from 1 May 2009 through the receipt of the data in June 2019. An observation is any applicant who was declared a New Working Applicant in MCRISS during this

[1] The information / data analyzed in this thesis was obtained directly from Marine Corps Recruiting Command (MCRC) in 2019, and is not available for public view.

timeframe who processed through an Officer Selection Officer (OSO) for either the OCC or PLC programs, amounting to 52,234 observations (MCRC, 2019). Districts and regions are a compilation of the OSS in their respective organizations as of June 2019. So, if an OSS was in one district in 2012 for example, total outputs over the period are credited to the district they are in as of 2019. The data must be baselined in some manner and this method allows us to see which OSS contribute in which areas and how that matters to the composition of respective districts currently.

D. FINDINGS

1. FINDING#1: Current District/OSS Structure Is Not Distributed in a Manner that Allows for Equal Diversity Accessions

Table 1 provides an overview of production outputs for the respective districts over the dataset. At first glance, the numbers in the outputs relative to each district seem to match well with QCP. However, as the analysis digs deeper one goal is to demonstrate which regions/districts/OSSs have produced the most diversity by percentage in comparison to what they were expected to produce based on QCP. The QCP known starting point based on the CNA study is the following: Sixth MCD has the most black QCP, Twelfth MCD has the most other QCP, and Twelfth/Eighth MCDs are the highest in terms of hispanic QCP. The detailed analysis has further charts and illustrations breaking down by program, gender/diversity combinations, etc. (Malone & Kelley, 2015).

Across various cuts of the data—including summary statistics, linear regressions, logistical regressions, predicted probabilities, and odds ratios—a consistent theme that emerges is that Sixth MCD should and does produce the highest percentage of black accessions, Twelfth/Eighth MCDs for hispanic accessions, and Twelfth MCD for other accessions (MCRC, 2019). However, simply producing the most by raw number or by percentage does not mean the Marine Corps is maximizing the potential for diversity/female accessions by its current geographical construct—that is why this study is focused on illustrating a comparison against QCP.

Table 1. Overall Accessions. Adapted from MCRC (2019)

Commissions	First	Fourth	Sixth	Eighth	Ninth	Twelfth
female	0.090	0.094	0.088	0.083	0.092	0.101
	(0.286)	(0.291)	(0.284)	(0.276)	(0.289)	(0.302)
black	0.063	0.068	0.113	0.042	0.039	0.058
	(0.244)	(0.252)	(0.317)	(0.200)	(0.194)	(0.234)
hispanic	0.102	0.063	0.096	0.174	0.067	0.173
	(0.303)	(0.243)	(0.295)	(0.380)	(0.251)	(0.379)
other	0.108	0.128	0.088	0.130	0.156	0.233
	(0.310)	(0.334)	(0.284)	(0.337)	(0.363)	(0.423)
Observations	1815	1540	1203	1129	1309	1245

2. FINDING#2: Outputs Are Not Aligned to Proper Scale with QCP

In light of the demographic trends shown in Figure 1, current accessions by percentage do not align well with improving overall end strength of the Marine Corps. For example, in Table 1 the highest percentage of black accessions is 11% by Sixth MCD while the other five districts are only at 6% or below. An important way to view this data is not only by the raw statistics, but by how well the numbers match with the QCP distribution outlined in the CNA report (Malone & Kelley, 2015).

The Marine Corps recruiting structure starts with MCRC, which has two regions—Eastern Recruiting Region (ERR) and Western Recruiting Region (WRR)—and six MCDs. In total, there are three districts in each region with 74 OSSs overall (40 in ERR, 34 in WRR). Some of these districts share states, so any map attempting to mirror these states/ production/QCP are estimates; but, generally speaking, First MCD is the northeast, Fourth MCD is the eastern midwest/south, Sixth MCD is the southeast, Eighth MCD is the southwest, Ninth MCD is the midwest, and Twelfth MCD is the west. Additionally, First, Fourth, Sixth MCDs comprise ERR while Eighth, Ninth, and Twelfth MCDs are WRR (Choike & Zeliff, 2010).

Figures 2 and 3 may be the most telling regarding my research question and key takeaways from this analysis. They show by-district diversity/gender pairing, and program (OCC/PLC) the performance by percentage of production versus QCP expectation or the gap thereof. The darker the area on the map, the better the district is doing against QCP (the lighter area, the larger the gap; the darker the area, the higher the surplus) (MCRC, 2019).

Clearly, in the case of Sixth MCD for black females, although they produce the most in levels of black female accessions, their gap relative to QCP is the highest of all the districts at (-13%). In the case of white female accessions for OCC all the districts in ERR are doing better than WRR with all performing above or even with QCP (3%, 3%, 0), while WRR all have negative numbers (-1%, -2%, -3%). Sixth and Twelfth MCDs access the most black males and other males; however, the QCP gap is -5% and -13%, respectively. Additionally, Ninth MCD struggles in the area of production of other accessions for OCC, but for both male and female they are favorable when compared to QCP (5%, 10%). Similar comparisons are detailed in the results section of the study for both OCC and PLC.

Analysis of this data could mean many things, none of which is necessarily absolute:

1. QCP is accurate and the Marine Corps is simply not being successful in accessions relative to diverse/female applicants,
2. QCP is accurate in terms of identifying which areas have the most of gender/diversity types, but not accurate in terms of the actual numbers,
3. QCP is simply not very accurate and the Marine Corps may consider using previous production data as a better predictor.

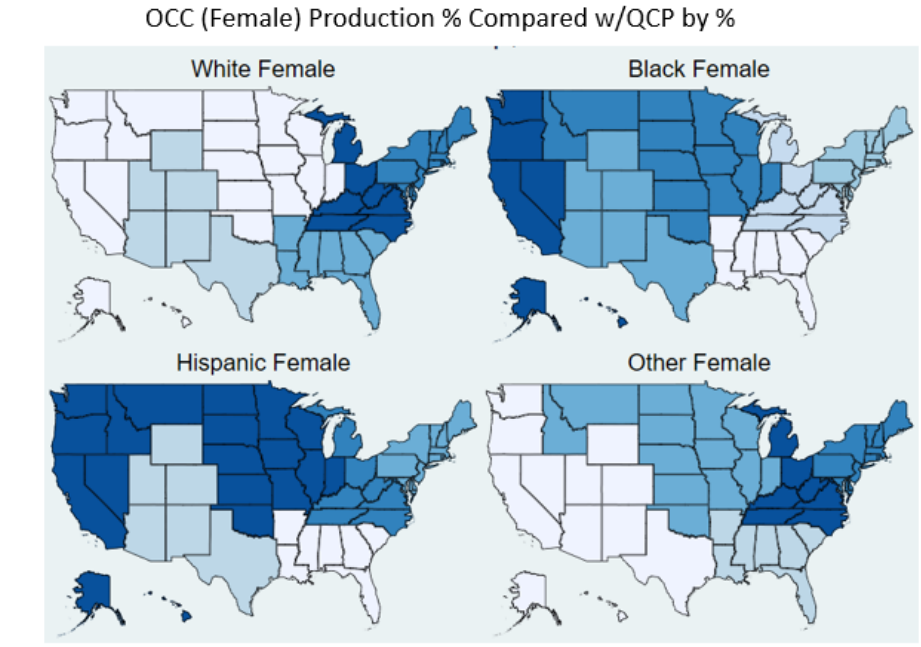

Figure 2. Female OCC Production/QCP Comparison. Adapted from MCRC (2019) data.

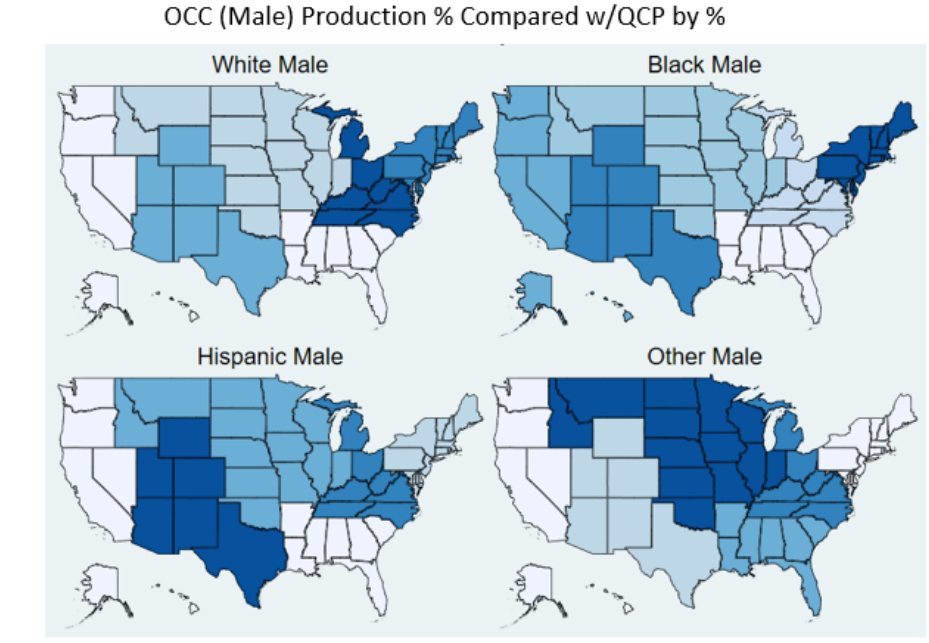

Figure 3. Male OCC Production % Compared with QCP. Adapted from MCRC (2019) data.

3. FINDING#3: Quality Accessions Are Spatially Varied

To define quality, the study assigned a variable for applicants to have either a greater than 28 American College Testing (ACT) score, or a greater than 1200 Scholastic Aptitude Test (SAT) (math/verbal) score, or have earned greater than 90 on Armed Forces Qualification Test (AFQT) and above 280 on the Physical Fitness Test (PFT). Table 2 gives us insight into one of the secondary questions answered in this analysis: what is the spatial breakdown of quality accessions? This is just one table that shows the likelihood of districts to produce a regular accession versus those that are higher quality or have waivers. By diversity, that means an applicant is either black or hispanic or other, which is an additional variable used in this analysis. This table makes it clear that the likelihood of quality accession is considerably higher in Twelfth MCD as well as the likelihood of an observation commissioning at all. This graphic also shows that more than half of the overall observations in the study meet one of the cutoffs in terms of academic testing and a high PFT. In other words, Twelfth MCD yields the most quality, followed by Eighth, Ninth, Sixth, Fourth, and First MCDs. Moreover, there is a clear, positive difference between the likelihood of quality accessions of WRR over ERR, likely due to the ERR's larger number of overall accessions. The same may be true for First MCD as they have the most accessions, but the lowest likelihood of being quality according to the metrics of test scores and physical fitness used in this study (MCRC, 2019). This may be an indication that as raw quantity increases that subjective quality natural decreases.

Table 2. Likelihood with Regular/Quality/Waivers.
Adapted from MCRC (2019) data.

Commission	All	Quality	RS waiver	MCRC waiver
First	0.178***	0.211***	0.106***	0.073***
	(0.004)	(0.005)	(0.015)	(0.015)
Fourth	0.175***	0.213***	0.117***	0.093***
	(0.004)	(0.006)	(0.015)	(0.016)
Sixth	0.187***	0.214***	0.147***	0.099***
	(0.004)	(0.007)	(0.018)	(0.019)
Eighth	0.185***	0.233***	0.118***	0.098***
	(0.005)	(0.007)	(0.019)	(0.021)
Ninth	0.182***	0.228***	0.121***	0.076***
	(0.004)	(0.006)	(0.016)	(0.017)
Twelth	0.198***	0.237***	0.115***	0.111***
	(0.005)	(0.006)	(0.017)	(0.018)
Diversity	-0.032***	-0.024***	-0.004	-0.003
	(0.003)	(0.005)	(0.013)	(0.014)
female	-0.082***	-0.082***	-0.067**	-0.049**
	(0.004)	(0.007)	(0.021)	(0.017)
Observations	52234	29188	2477	1698
R^2	0.166	0.207	0.116	0.087

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

E. POLICY IMPLICATIONS

It is important to determine if the current geographical setup of Marine Corps OSSs is aligned in a way that maximizes the potential to increase diversity and female accessions. Part of this study is to compare the production of these organizations with that of QCP to include factoring in quality factors. Three questions central to making that determination are:

1. Is keeping the number of OSOs at 74 a good idea?
2. Is the cost paid for the QCP analysis worth the benefit received, or is it better suited for other recruiting resource?
3. Is there some limiting factor that is precluding a relatively dramatic combining effort of OSOs to create more space for diversity and female accessions?

The role of QCP is a large part of this study, and there is some value in the QCP metric; however, are the benefits received on scale with the overall accuracy of the cost?

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II. BACKGROUND AND RELATED WORKS

A. MARINE CORPS OFFICER RECRUITING

1. Structure/Maps

Across the United States, the Marine Corps has two recruiting regions, ERR and WRR, and six recruiting districts (First, Fourth, and Sixth MCDs for ERR and Eighth, Ninth, and Twelfth MCDs for WRR). In each of the two recruiting regions, there are three districts; each district has recruiting stations (RS), as depicted in Figure 4 (MCRC, 2019). Figure 5 depicts the standards for officer applications in the Marine Corps (Choike & Zeliff, 2010). These figures provide the reader with an understanding of the minimum requirements for the different officer programs.

MCRC has an accession mission each year, which is delegated to regions, districts, and ultimately an RS. In each RS, the respective OSS is the organization that is responsible for the process of contacting, screening, interviewing, working, and submitting applications on prospective candidates. The OSO submits applicants for ground, aviation, naval flight officer, and law with additional requirements for females and diversity (black, hispanic, other). Once the applicant is selected for a program and assigned to an Officer Candidate School (OCS) class, they need to successfully complete the course and all commissioning requirements. Once commissioned, they will not be counted as an accession until they check into The Basic School (TBS) (Choike & Zeliff, 2010).

Figure 4. MCRD District/Regions. Adapted from Cholke and Zeliff (2010).

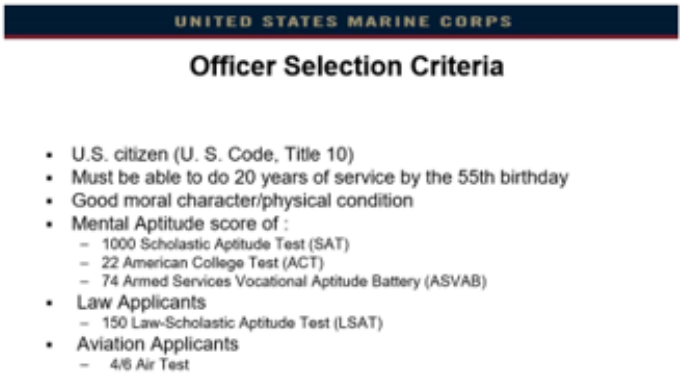


Figure 5. Officer Selection Criteria. Adapted from Cholke and Zeliff (2010).

2. OSS Breakdown by MCD

In each RS, there are typically one or two OSSs, each having an OSO who oversees all officer recruiting. There is one RS in the current structure who has three OSSs which is RS Pittsburgh. It is important to understand the structure of the OSSs in each district as much of the analysis later in the study is done based on district performance. In Figures 6–11 First MCD has 17 OSSs, Fourth MCD has 13, Sixth MCD has 10, Eighth MCD has 10, Ninth MCD has 13, and Twelfth MCD has 11. In total, out of the 74 OSSs in MCRC, 40 of them are in ERR while only 34 in WRR. This is an important distinction when

attempting to understand the production data, which will be discussed later and especially when compared with QCP. These figures were developed based on a spreadsheet received detailing the current OSS locations across the nation (MCRC, 2019).

RS ALBANY	OSS Syracuse, OSS Albany
RS PORTSMOUTH	OSS Portsmouth, OSS Boston
RS HARRISBURG	OSS Philadelphia, OSS Reading
RS New Jersey	OSS Jersey City, OSS New Brunswick
RS New York	OSS Manhattan, OSS Garden City
RS PITTSBURGH	OSS Buffalo, OSS Pittsburgh, OSS State College
RS BALTIMORE	OSS Newark, OSS Hyattsville
RS SPRINGFIELD	OSS Amherst, OSS Providence

Figure 6. 1st MCD 17 OSS Locations. Adapted from MCRC (2019) data.

RS CLEVELAND	OSS Kent
RS CHARLESTON	OSS Columbus, OSS Roanoke
RS DETROIT	OSS Ann Arbor
RS FREDERICK	OSS Fairfax
RS LANSING	OSS Lansing
RS LOUISVILLE	OSS Lexington, OSS Cincinnati
RS NASHVILLE	OSS Nashville
RS RALEIGH	OSS Raleigh East, OSS Raleigh West
RS RICHMOND	OSS Richmond, OSS Norfolk

Figure 7. 4th MCD 13 OSS Locations. Adapted from MCRC (2019) data.

RS ATLANTA	OSS Kennesaw, OSS Atlanta
RS BATON ROUGE	OSS Baton Rouge
RS COLUMBIA	OSS Columbia, OSS Charlotte
RS FORT LAUDERDALE	OSS Miami
RS JACKSONVILLE	OSS Tallahassee, OSS Gainesville
RS MONTGOMERY	OSS Tuscaloosa
RS ORLANDO	OSS Orlando

Figure 8. 6th MCD 10 OSS Locations. Adapted from MCRC (2019) data.

RS ALBUQUERQUE	OSS Lubbock
RS DALLAS	OSS Dallas
RS DENVER	OSS Denver, OSS Fort Collins
RS FORT WORTH	OSS Fort Worth
RS Houston	OSS Houston, OSS College Station
RS Phoenix	OSS Phoenix
RS Salt Lake City	OSS Salt Lake City
RS San Antonio	OSS Austin

Figure 9. 8th MCD 10 OSS Locations. Adapted from MCRC (2019) data.

RS Chicago	OSS Chicago
RS DES MOINES	OSS Lincoln, OSS Iowa City
RS INDIANAPOLIS	OSS Bloomington, OSS W. Lafayette
RS KANSAS CITY	OSS Kansas City, OSS Springfield
RS MILWAUKEE	OSS Milwaukee
RS OKLAHOMA	OSS Norman
RS St. LOUIS	OSS St. Louis, OSS Champaign
RS Twin Cities	OSS Twin Cities, OSS Fargo

Figure 10. 9th MCD 13 OSS Locations. Adapted from MCRC (2019) data.

RS LOS ANGELES	Los Angeles, S.Barbara
RS ORANGE	OSS Orange
RS PORTLAND	OSS Corvallis
RS SACRAMENTO	OSS Sacramento
RS SAN DIEGO	OSS San Diego, OSS Riverside
RS SAN FRANCISCO	OSS Berkley, OSS San Jose
RS SEATTLE	OSS Seattle, Spokane

Figure 11. 12th MCD 11 OSS Locations. Adapted from MCRC (2019) data.

B. LITERATURE REVIEW

1. Diversity Importance at Large

A review of the literature did not yield any studies that specifically focused on analyzing the construct of OSSs and how its geographical distribution impacted quality and female/diversity accessions. However, there are three primary areas of study that relate to this research: (1) diversity as a whole and how it impacts retention; (2) the factors that determine quality of accessions; and (3) how the QCP for respective OSSs is currently determined.

In 1976–1977, the Marine Corps developed a plan to achieve equal opportunity and affirmative action goals, but it failed to meet them. In the mid-1980s, the Department of Defense (DoD) position responsible for effectively tracking affirmative action topics/ metrics was disbanded. In the mid-1990s, the Marine Corps began highlighting its lack of diversity, specifically in the officer community (Wade, 1995). At the same time, they were attempting to become a more viable option for officers from diverse backgrounds, which is a desire that still exists today. However, some may argue that compared to the 1960s, the Marine Corps has made significant progress in encouraging diversity. Consider that in 1967 only .67% of all officers were black; in 1995, that number had grown to 6%. Although that was significant improvement in the number of black officers over the decades, 6% was not representative of the distribution of blacks in society in 1995, and the same discrepancy exists today (Wade, 1995).

In March 1995, the Marine Corps officially formalized a system to make diversity in the officer ranks an institutional policy (Wade, 1995). In the 1995 study by Wade, fifteen black officers were interviewed, most of whom grew up in stable homes, had family associated with the military, or were in some way attracted to the military at large before being approached by a recruiter. However, their choice of the Marine Corps as their branch of service was normally tied with their personal connection to their recruiter or OSO (Wade, 1995). Additionally, some of the main reasons cited for black officers joining were education, employment, and job opportunities, and most of those interviewed had the plan to serve until becoming retirement eligible. The topic of racism was discussed with those interviewed and while not reported as an overt occurrence in any of the fifteen officer's careers, all had encountered it at least indirectly at some point. Based on the interviews, all of the black officers believed in large part they needed to do more to succeed. Many officers were skeptical about the 12–12–5 plan of that time, which was a stated goal of accessing 12% black, 12% hispanic, and 5% other as officers' composition in the Marine Corps. Many of the officers interviewed realized that achieving numbers in the short term would not solve the deeper issue of finding a way to sustain an end strength that is representative of the population at large. The consensus was that a more comprehensive approach to making the military more attractive and attainable to all of society would go further in solving the long-term end strength dilemma (Wade, 1995).

Meanwhile, Habel (1997), concluded that discrimination was a problem in the Marine Corps. While senior leadership recognized and communicated as much, the majority of mid-level leadership did not relate the issue to an unfair environment (Habel, 1997). Habel summarizes that senior leaders of the time, both Navy and Marine Corps, discussed that the success of institutions is not based on quantity, but the makeup and/or composition of the individuals serving. Going further, diversity requirements were directed for officers in the Navy and Marine Corps to better represent the composition of society at large with a specific policy of recruiting with the result of end strength being 12% black, 12% hispanic, and 5% other (Habel, 1997). This approach included an attempt to make Marines truly understand the importance of diversity. Habel states that, for the purpose of his thesis, the term diversity relates to race and gender. As he alludes to, and what will be

true for this thesis, is that military accessions have several discriminatory practices already embedded to maintain good order, discipline, and health of the force. These practices include, but are not limited to, fitness, appearance, and mental aptitude. In Habel's study, he discusses the fact that companies who require certain degrees for specific high-level positions where minority representation is very low are fostering a climate that at least indirectly results in a less-than-fair environment for all involved. The same can be argued for standardized test scores, impact of type of college, or degree achieved being factors in the candidate application and accession process.

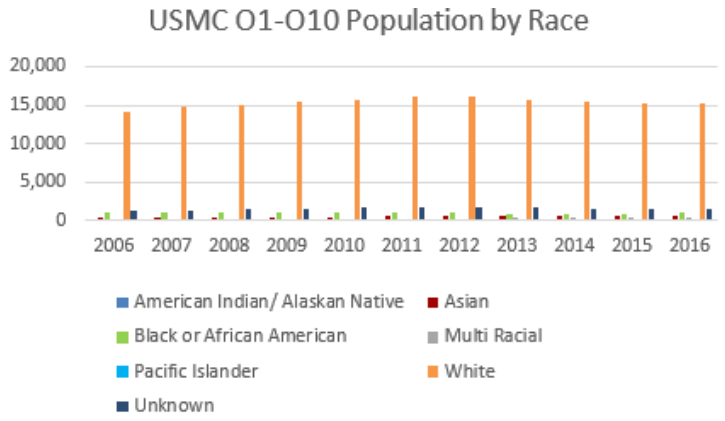
To make his point, Habel pointed to an interview with the then Commandant of the Marine Corps who summarized that minority officers do not do as well simply because of lower performance on certain things than peer counterparts. However, Habel points out that the institution knowing that fact and not adapting accordingly is having an unlevel playing field. Later in the 1990s, the Marine Corps implemented a plan of action that promoted increasing diversity; in effect, acknowledging that discrimination and failures of equal opportunity detract from overall proficiency/effectiveness (Habel, 1997).

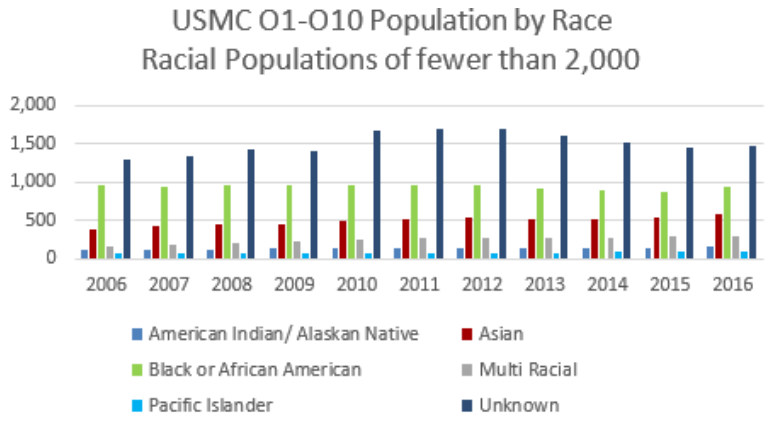
At the time augmentations (now known as career designation), promotion to Captain, Major, and Lieutenant Colonel had minorities promoted at lower rates. Additionally, at that time females got promoted at relatively the same rates as their male counterparts but left the service at much higher rates. Interestingly, Habel discusses a survey taken in 1996 that consisted of Captains/Majors where the conclusions were the majority believed that there was equal opportunity to earn accessions and success as an officer regardless of race, gender, etc. Habel refers to Wade's research to allude to the fact that the black officers interviewed by Wade cited several examples of indirect discrimination and that they needed to outperform their white counterparts for the same or similar recognition (Habel, 1997).

2. Current Gender/Diversity Breakdowns

The research of both Wade and Habel suggest the Department of Navy and Marine Corps were focused on making the composition of officers more diverse as far back as the mid-1990s. The following figures (12–16) provide a distribution of USMC Officers for all

ranks by race, for O1–O3, O4–O6, O7–O10 (Diversity Portal, 2016). These figures demonstrate that although the percentage of the total minority officer composition stays relatively consistent it is not close to the goals set forth back in the mid- to late-1990s. For example, the highest representation of black officers was in 2006 at 5.6%. In contrast, there have been steady gains in gender representation, with data for females from 2006–2016 consistently increasing as a percentage of the overall force. Of note, the sharp percentage decrease in female officers for the paygrades of O4–O6 when compared to O1–O3 is a clear illustration of the struggle to keep female officers in the Marine Corps for their career. This struggle existed 20 years ago and remains today, but one hopeful message is those numbers, although still relatively low, have improved in recent years (Diversity Portal, 2016).

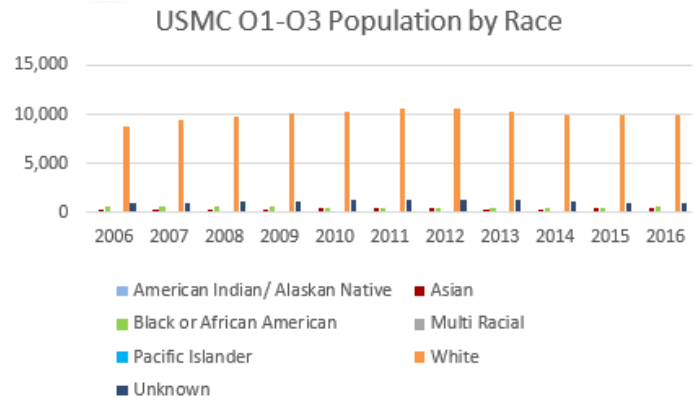


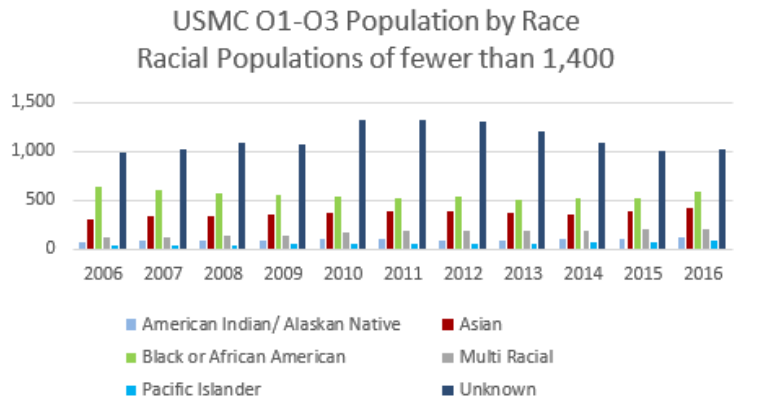


USMC Officer Race Data - All Officers (Hispanic Ethnicity Included as Reference Only)

Year	American Indian/ Alaskan Native		Asian		Black or African American		Multi Racial		Pacific Islander		White		Unknown		Total Count	Hispanic Ethnicity	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		Count	%
2006	112	0.7%	374	2.2%	954	5.6%	167	1.0%	63	0.4%	14,134	82.6%	1,298	7.6%	17,102	1,070	6.3%
2007	122	0.7%	419	2.4%	942	5.3%	184	1.0%	67	0.4%	14,733	82.8%	1,337	7.5%	17,804	1,121	6.3%
2008	122	0.7%	443	2.4%	954	5.2%	202	1.1%	66	0.4%	15,076	82.4%	1,434	7.8%	18,297	1,182	6.5%
2009	138	0.7%	458	2.4%	964	5.1%	222	1.2%	71	0.4%	15,468	82.6%	1,412	7.5%	18,733	1,226	6.5%
2010	147	0.8%	491	2.5%	964	5.0%	250	1.3%	67	0.3%	15,721	81.4%	1,681	8.7%	19,321	1,272	6.6%
2011	148	0.7%	517	2.6%	968	4.9%	268	1.4%	80	0.4%	16,111	81.4%	1,691	8.5%	19,783	1,324	6.7%
2012	141	0.7%	531	2.7%	954	4.8%	269	1.4%	80	0.4%	16,122	81.5%	1,692	8.6%	19,789	1,355	6.8%
2013	132	0.7%	523	2.7%	922	4.8%	281	1.5%	78	0.4%	15,647	81.5%	1,606	8.4%	19,189	1,387	7.2%
2014	142	0.8%	522	2.8%	895	4.8%	277	1.5%	89	0.5%	15,372	81.7%	1,508	8.0%	18,805	1,409	7.5%
2015	143	0.8%	547	2.9%	881	4.7%	287	1.5%	97	0.5%	15,172	81.7%	1,452	7.8%	18,579	1,449	7.8%
2016	155	0.8%	588	3.1%	943	5.0%	286	1.5%	105	0.6%	15,235	81.1%	1,481	7.9%	18,793	1,505	8.0%

Figure 12. O1-O10 Population. Source: USMC Race, Gender, Ethnicity Diversity Portal PDF (2016).

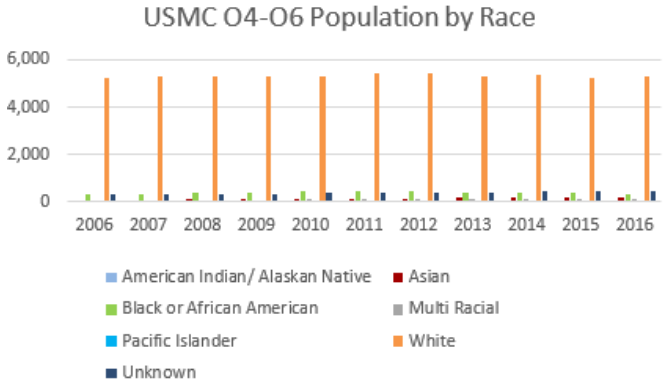


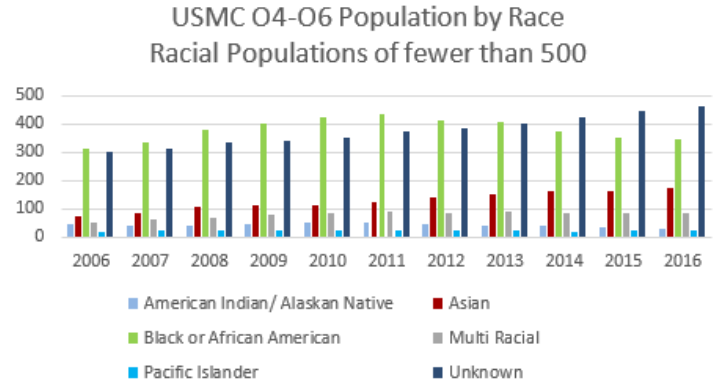


USMC O1-O3 Race Data (Hispanic Ethnicity Included as Reference Only)

Year	American Indian/ Alaskan Native		Asian		Black or African American		Multi Racial		Pacific Islander		White		Unknown		Total Count	Hispanic Ethnicity	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		Count	%
2006	68	0.6%	303	2.8%	637	5.8%	114	1.0%	43	0.4%	8,839	80.4%	993	9.0%	10,997	815	7.4%
2007	81	0.7%	337	2.9%	602	5.2%	120	1.0%	42	0.4%	9,352	80.9%	1,023	8.9%	11,557	849	7.3%
2008	82	0.7%	338	2.8%	568	4.8%	134	1.1%	42	0.4%	9,687	81.1%	1,094	9.2%	11,945	870	7.3%
2009	94	0.8%	346	2.8%	555	4.5%	145	1.2%	49	0.4%	10,079	81.7%	1,068	8.7%	12,336	880	7.1%
2010	97	0.8%	376	2.9%	534	4.1%	167	1.3%	46	0.4%	10,326	80.2%	1,328	10.3%	12,874	905	7.0%
2011	97	0.7%	391	3.0%	527	4.0%	180	1.4%	58	0.4%	10,577	80.5%	1,316	10.0%	13,146	922	7.0%
2012	93	0.7%	392	3.0%	533	4.0%	183	1.4%	59	0.4%	10,625	80.6%	1,303	9.9%	13,188	939	7.1%
2013	92	0.7%	371	2.9%	512	4.0%	193	1.5%	57	0.4%	10,290	80.9%	1,203	9.5%	12,718	954	7.5%
2014	104	0.8%	357	2.9%	516	4.2%	193	1.6%	71	0.6%	9,913	81.0%	1,083	8.9%	12,237	973	7.9%
2015	110	0.9%	385	3.2%	522	4.3%	203	1.7%	76	0.6%	9,887	81.1%	1,001	8.2%	12,184	1,003	8.2%
2016	124	1.0%	416	3.4%	593	4.8%	199	1.6%	82	0.7%	9,877	80.2%	1,017	8.3%	12,308	1,045	8.6%

Figure 13. USMC O1-O3 Population by Race. Source: USMC Race, Gender, Ethnicity Diversity Portal PDF (2016).

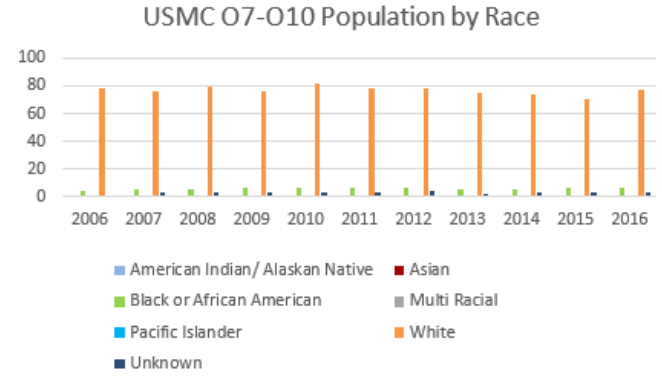


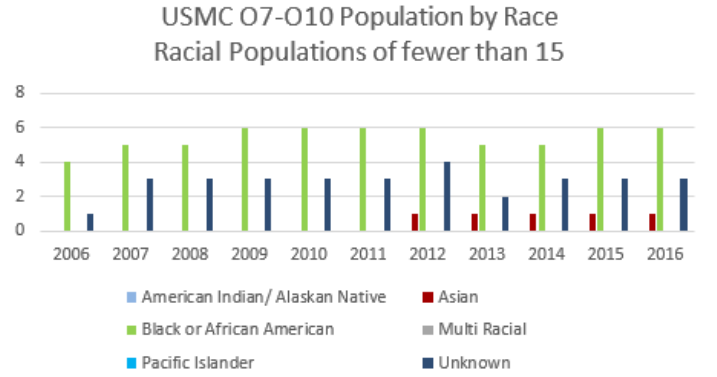


USMC O4-O6 Race Data (Hispanic Ethnicity Included as Reference Only)

	American Indian/ Alaskan Native		Asian		Black or African American		Multi Racial		Pacific Islander		White		Unknown		Total	Hispanic Ethnicity	
Year	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	Count	%
2006	44	0.7%	71	1.2%	313	5.2%	53	0.9%	20	0.3%	5,217	86.6%	304	5.0%	6,022	253	4.2%
2007	41	0.7%	82	1.3%	335	5.4%	64	1.0%	25	0.4%	5,305	86.1%	311	5.0%	6,163	269	4.4%
2008	40	0.6%	105	1.7%	381	6.1%	68	1.1%	24	0.4%	5,310	84.8%	337	5.4%	6,265	309	4.9%
2009	44	0.7%	112	1.8%	403	6.4%	77	1.2%	22	0.3%	5,313	84.2%	341	5.4%	6,312	344	5.4%
2010	50	0.8%	115	1.8%	424	6.7%	83	1.3%	21	0.3%	5,313	83.6%	350	5.5%	6,356	364	5.7%
2011	51	0.8%	126	1.9%	435	6.6%	88	1.3%	22	0.3%	5,456	83.3%	372	5.7%	6,550	399	6.1%
2012	48	0.7%	138	2.1%	415	6.4%	86	1.3%	21	0.3%	5,419	83.2%	385	5.9%	6,512	412	6.3%
2013	40	0.6%	151	2.4%	405	6.3%	88	1.4%	21	0.3%	5,282	82.7%	401	6.3%	6,388	430	6.7%
2014	38	0.6%	164	2.5%	374	5.8%	84	1.3%	18	0.3%	5,385	83.0%	422	6.5%	6,485	432	6.7%
2015	33	0.5%	161	2.5%	353	5.6%	84	1.3%	21	0.3%	5,214	82.6%	448	7.1%	6,314	442	7.0%
2016	31	0.5%	171	2.7%	344	5.4%	87	1.4%	23	0.4%	5,281	82.5%	461	7.2%	6,398	457	7.1%

Figure 14. USMC O4-O6 Population by Race. Source: USMC Race, Gender, Ethnicity Diversity Portal PDF





USMC O7-O10 Race Data (Hispanic Ethnicity Included as Reference Only)

Year	American Indian/ Alaskan Native		Asian		Black or African American		Multi Racial		Pacific Islander		White		Unknown		Total Count	Hispanic Ethnicity	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		Count	%
2006	0	0.0%	0	0.0%	4	4.8%	0	0.0%	0	0.0%	78	94.0%	1	1.2%	83	2	2.4%
2007	0	0.0%	0	0.0%	5	6.0%	0	0.0%	0	0.0%	76	90.5%	3	3.6%	84	3	3.6%
2008	0	0.0%	0	0.0%	5	5.7%	0	0.0%	0	0.0%	79	90.8%	3	3.4%	87	3	3.4%
2009	0	0.0%	0	0.0%	6	7.1%	0	0.0%	0	0.0%	76	89.4%	3	3.5%	85	2	2.4%
2010	0	0.0%	0	0.0%	6	6.6%	0	0.0%	0	0.0%	82	90.1%	3	3.3%	91	3	3.3%
2011	0	0.0%	0	0.0%	6	6.9%	0	0.0%	0	0.0%	78	89.7%	3	3.4%	87	3	3.4%
2012	0	0.0%	1	1.1%	6	6.7%	0	0.0%	0	0.0%	78	87.6%	4	4.5%	89	4	4.5%
2013	0	0.0%	1	1.2%	5	6.0%	0	0.0%	0	0.0%	75	90.4%	2	2.4%	83	3	3.6%
2014	0	0.0%	1	1.2%	5	6.0%	0	0.0%	0	0.0%	74	89.2%	3	3.6%	83	4	4.8%
2015	0	0.0%	1	1.2%	6	7.4%	0	0.0%	0	0.0%	71	87.7%	3	3.7%	81	4	4.9%
2016	0	0.0%	1	1.1%	6	6.9%	0	0.0%	0	0.0%	77	88.5%	3	3.4%	87	3	3.4%

Figure 15. USMC O7-O10 Population by Race. Source: USMC Race, Gender, Ethnicity Diversity Portal PDF

	Count		%	
Year	Male	Female	Male	Female
2006	16,118	984	94.2%	5.8%
2007	16,775	1,029	94.2%	5.8%
2008	17,225	1,072	94.1%	5.9%
2009	17,632	1,101	94.1%	5.9%
2010	18,212	1,165	94.0%	6.0%
2011	18,562	1,222	93.8%	6.2%
2012	18,541	1,248	93.7%	6.3%
2013	17,930	1,259	93.4%	6.6%
2014	17,506	1,307	93.1%	6.9%
2015	17,243	1,336	92.8%	7.2%
2016	17,323	1,375	92.6%	7.4%

O1-O3				
	Count		%	
Year	Male	Female	Male	Female
2006	10,172	825	92.5%	7.5%
2007	10,697	860	92.6%	7.4%
2008	11,076	869	92.7%	7.3%
2009	11,440	896	92.7%	7.3%
2010	11,929	942	92.7%	7.3%
2011	12,175	971	92.6%	7.4%
2012	12,211	977	92.6%	7.4%
2013	11,734	984	92.3%	7.7%
2014	11,222	1,023	91.6%	8.4%
2015	11,148	1,036	91.5%	8.5%
2016	11,152	1,062	91.3%	8.7%

O4-O6				
	Count		%	
Year	Male	Female	Male	Female
2006	5,866	156	97.4%	2.6%
2007	5,997	166	97.3%	2.7%
2008	6,065	200	96.8%	3.2%
2009	6,109	203	96.8%	3.2%
2010	6,194	221	96.6%	3.4%
2011	6,300	250	96.2%	3.8%
2012	6,242	270	95.9%	4.1%
2013	6,114	274	95.7%	4.3%
2014	6,202	283	95.6%	4.4%
2015	6,015	299	95.3%	4.7%
2016	6,085	312	95.1%	4.9%

O7-O10				
	Count		%	
Year	Male	Female	Male	Female
2006	80	3	96.4%	3.6%
2007	81	3	96.4%	3.6%
2008	84	3	96.6%	3.4%
2009	83	2	97.6%	2.4%
2010	89	2	97.8%	2.2%
2011	87	1	98.9%	1.1%
2012	88	1	98.9%	1.1%
2013	82	1	98.8%	1.2%
2014	82	1	98.8%	1.2%
2015	80	1	98.8%	1.2%
2016	86	1	98.9%	1.1%

Figure 16. Officers by Gender. Source: USMC Race, Gender, Ethnicity Diversity Portal PDF (2016)

3. Reasons Diversity Representation Does Not Match Society's Current Racial Composition

Why is minority representation in the officer corps not an adequate representation of society at large? A RAND study conducted in 2009 attempts to answer this question (Asch, Buck, Klerman, Kleykamp, & Loughran, 2009). Their focus is on the underrepresentation of hispanics on military entrance compared to black and white applicants. This study uses polling data to attempt to understand propensity relative to military accessions determining that 12.6% of hispanic respondents state that they will likely join the military compared with 10.1% of black and 6.6% of white. This work goes on to discuss how applicants are screened for entrance: mental (aptitude/education), moral (drugs/legal), and physical (medical/fitness). Only 35% of white, 22% black, and 24% hispanic males are eligible for enlistment (more stringent for officers) in the Marine Corps. For females, the percentages are identical. For hispanics, education, aptitude, and being overweight were some of the primary reasons for being unqualified. The study also talks about how the increases in childhood and adult obesity impact the pool for military recruits. For hispanics, this impact is greater as a hispanic male on average weighs 10 more pounds than his white male counterpart. However, hispanics typically have less major medical conditions that are disqualifying compared to whites. Dependents are a factor for hispanics as 20% of hispanic females aged 17–21 have a child while that number is only 9% for whites. As a solution for increasing the hispanic population of the military, the study offers two fairly basic solutions: relax the standards or recruit more aggressively from the minorities who are actually qualified (Asch et al., 2009).

In 2012, to address the issue of a lack of diversity in its officer ranks, the Marine Corps started an advertising campaign focusing on a black lieutenant and female captain and how their service impacts people and their community (Dao, 2012). From a gender perspective the Marine Corps has the smallest representation of women around 7% compared with approximately 15% for the rest of the military. The Marine Corps also has the lowest proportion of black officers with approximately 6%, which is considerably lower than the Army at 13%, and the DoD at large with 10%. The Marine Corps however has the highest level by percentage of hispanic officers (Dao, 2012). This advertising campaign

follows a directive in 2011 by then Commandant General James Amos to double the number of black officers in the Marine Corps to reach an overall percentage of 13% (Walker, 2011). The goal of this campaign was to truly match the percentage of officers with the racial makeup of the population of society at large, which aligns with previous discussion. The goal delivered by Amos was to change the entire approach to officer recruiting by focusing more on outreach and relationships with minority communities and organizations, in an expansive styled way without reducing and/or lowering standards (Walker, 2011). However, as discussed with Figures 12–16 this campaign plan has yet to yield significant results when viewing through the lens of force composition or end strength.

4. Center for Naval Analyses (Qualified Candidate Population)

An estimator known as Qualified Candidate Population (QCP) is the Marine Corps method, using geographical location, that determines who is eligible to become a Marine Corps Officer. This estimation is done via a study by CNA (Malone & Kelley, 2015). The QCP is estimated based on test score requirements by college to assist in PLC and OCC missions. The goal is to locate where high concentrations of qualified diverse applicants reside. Before this 2015 study, MCRC only assigned mission based on male QCP in an area not the gender/QCP combination. This study uses the Barons Profile of Colleges to determine an estimated number of students who are test score eligible. Furthermore, it breaks down QCP by region and district by gender/race based on non-adjusted, medical, and propensity QCP. The most recent study places special consideration of the fact that in recent years the DoD has requested services expand opportunities in occupational specialties to women. It was also used as an advisement tool for MCRC to determine if the OSO locations were aligned properly, whereas my study will attempt to determine the productivity of locations over time from a diversity quantity and quality perspective as well as comparing those to QCP.

The school level QCP is derived from four places: (1) the Integrated Postsecondary Education Database (IPEDS), which provides test score, graduation, and enrollment type information; (2) the Barron’s Profile, which provides a more detailed test score breakdown

for accredited colleges and universities; (3) the Joint Advertising Market Research and Studies (JAMRS) is used to make modifications based on propensity to the QCP; lastly, (4) the Behavioral Risk Factor Surveillance System (BRFSS) is used to factor QCP based on medical issues faced by a segment of a population. All schools are not included in QCP analysis; only those that have a majority of students in full-time status, not distance learning, have data available to measure QCP, can be public or private, and grant degrees with graduation/enrollment information (Malone & Kelley, 2015). Additionally, this QCP analysis provides the estimated numbers per county based on gender of qualified college graduates for men and women. The results also show unadjusted QCP is higher for women; while both the medically adjusted and propensity QCP is higher for men (Malone & Kelley, 2015).

The following Figures provide a snapshot of what the QCP is when adjusted for medical and propensity for those in college for overall, female, and male. Additionally, the figures breakdown female QCP by diversity categories of white, black, hispanic, and other and with the same breakdown for males. The data by diversity categories for both male and female is also included for OCC, which has a much higher raw number, but I focus on the percentages by district as a metric to compare with the actual data later in my thesis. Figure 17 illustrates that First, Sixth, Ninth, Fourth, Twelth, and Eighth MCDs are the order of the most overall QCP in the colleges and universities from top to bottom. In the female adjusted category the order from top to bottom is Sixth, Fourth, First, Ninth, Twelth, and Eighth MCDs whereas for males adjusted overall QCP the order is First, Ninth, Sixth, Fourth, Twelth, and Eighth MCDs. The percentages in the figures represent the MCDs share of QCP by percentage when considering the overall amount of QCP in the study. When looking at the percentages one way the data in the study tested is by looking at how well the accessions for each district match QCP percentages (Malone & Kelley, 2015).

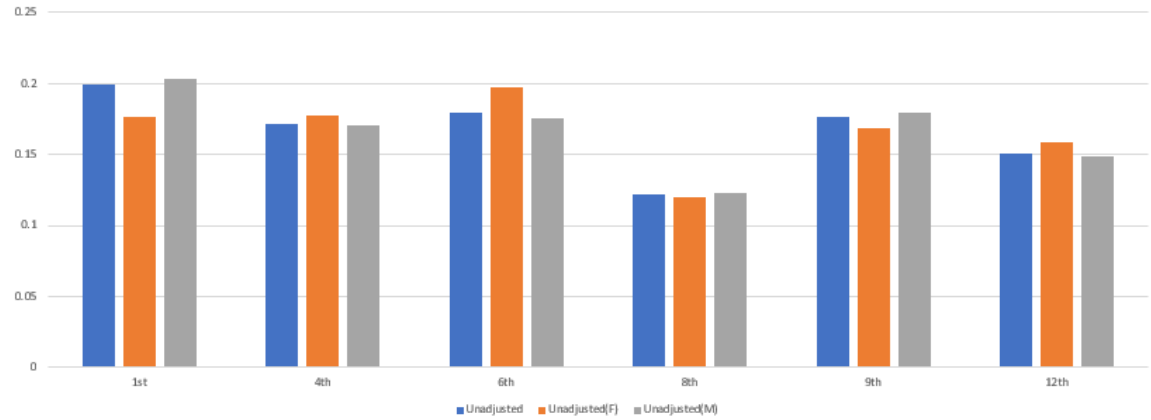


Figure 17. Unadjusted District Level QCP Overall/Male/Female. Adapted from CNA (2015).

Figure 18 illustrates the amount of female QCP by the diversity categories of white, black, hispanic, and other. Of note: Sixth MCD has a significant advantage in black female QCP while Twelfth MCD has a similar edge in the other diversity category (Malone & Kelley, 2015).

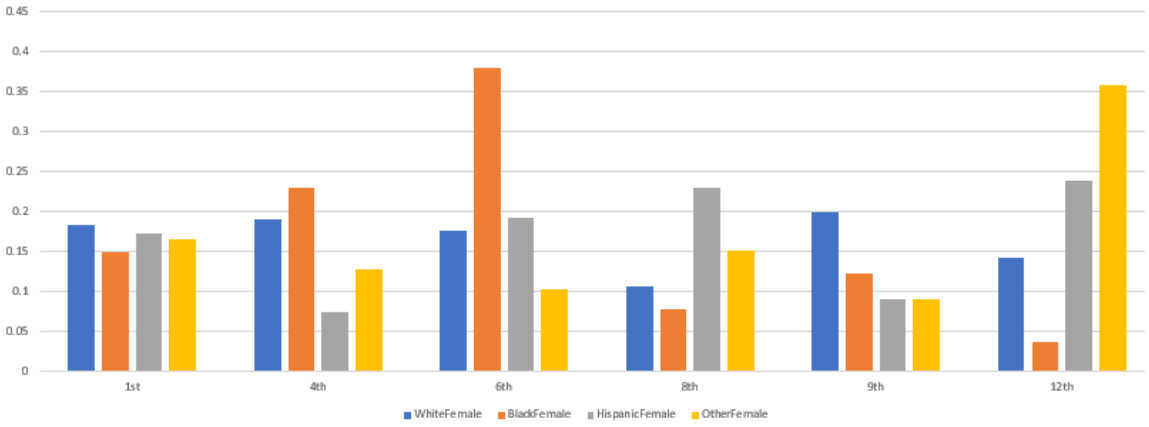


Figure 18. Adjusted District Level Female QCP by Diversity. Adapted from CNA (2015).

Figure 19 illustrates the amount of male QCP by the diversity categories of white, black, hispanic, and other. Of note: Sixth MCD has a significant advantage in black male QCP while Twelfth MCD has a large proportional disadvantage. Twelfth MCD has a large advantage in both the hispanic and other categories while Ninth MCD is last in both (Malone & Kelley, 2015).

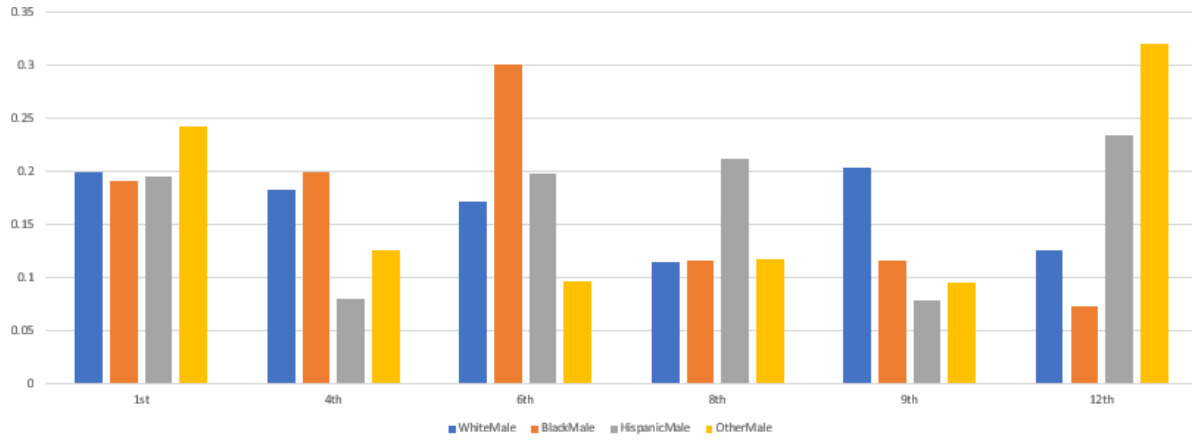


Figure 19. Adjusted District Level Male QCP by Diversity. Adapted from CNA (2016).

Figure 20 illustrates the amount of female QCP by the diversity categories of white, black, hispanic, and other for OCC. Of note: Sixth MCD has a significant advantage in black female QCP while Twelfth MCD has a large proportional disadvantage. Twelfth MCD has a large advantage in both the hispanic and other categories while Ninth MCD is either at or toward the bottom in all categories. The overall numbers of QCP are substantially greater for the OCC QCP analysis, but the percentage per district is what this study focuses on (Malone & Kelley, 2015).

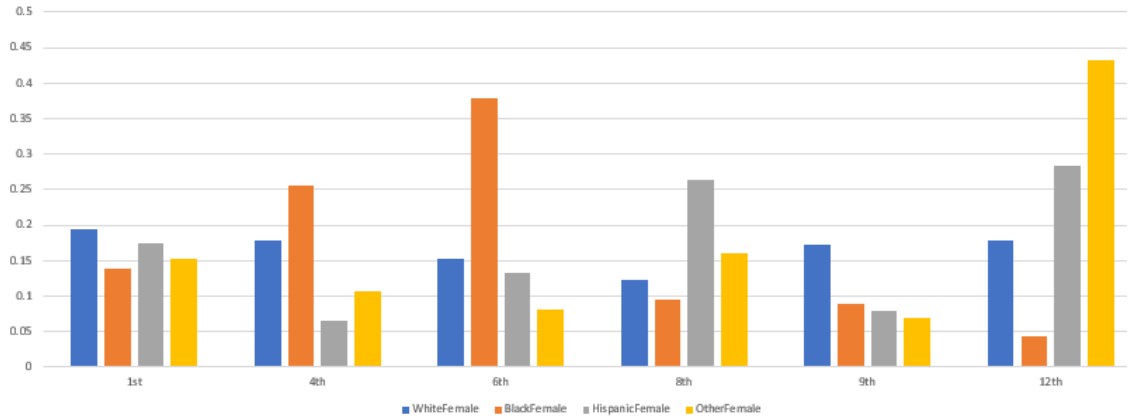


Figure 20. Adjusted OCC Female QCP by Diversity. Adapted from CNA (2015).

Figure 21 illustrates the amount of male QCP by the diversity categories of white, black, hispanic, and other for OCC. Of note: Sixth MCD still has a significant advantage in black male QCP while Eight, Ninth, and Twelfth MCDs have a large proportional disadvantage. Twelfth MCD has a large advantage in both the hispanic and other categories while Sixth, Ninth, and Fourth MCDs are either at or toward the bottom in all categories. The overall numbers of QCP are substantially greater for the OCC QCP analysis, but the percentage per district is what the study focuses on. In both the cases for male and female white QCP First MCD is at the top, which goes a long way in determining overall contracts and accessions (Malone & Kelley, 2015).

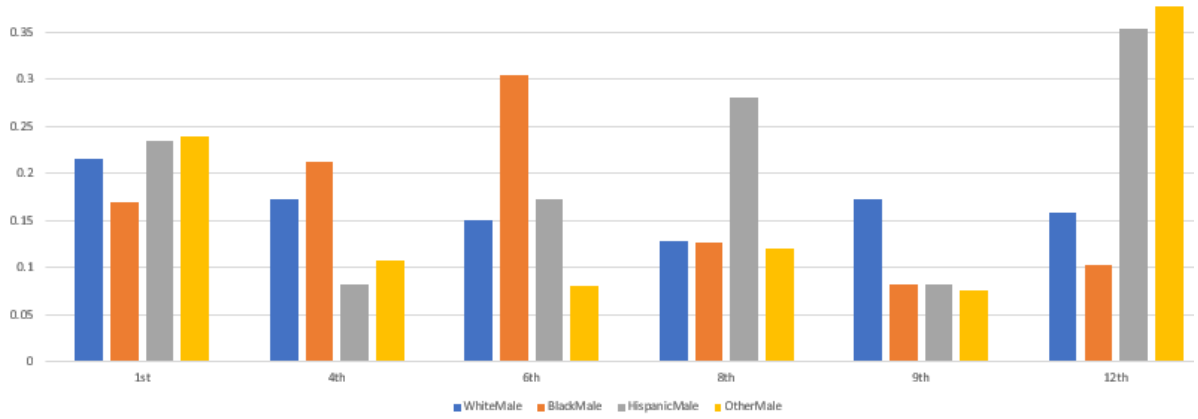


Figure 21. Adjusted OCC Male QCP by Diversity. Adapted from CNA (2015).

5. Pre-accession Factors

Jacob Johnson (2015) focuses his thesis on pre-accession factors that may predict the likelihood of success for officers. He discusses some reasons why leadership at the highest levels tend not to be very diverse, and how that problem starts with initial accessions, type of career fields for majority of gender and racially diverse officers, and the trouble of retaining females who are mid-level officers (Johnson, 2015).

Johnson's purpose was to determine what pre-service qualities lead to success and in this case selection for career designation, which is the term formally referred to as augmentation when referencing Wade and Habel's studies. He uses data from those selected on the fiscal year (FY) 2011 through FY 2014 Officer Retention Boards (ORB) since those boards had lower selection rates when compared to future boards. In turn, the data is for those commissioned from fiscal years FY 2008 to FY 2011 since they are the group that would fall under the purview of those career designation boards (Johnson, 2015).

Johnson's literature review discusses the two forms of commissioning that my study is based on, which are OCC and PLC, two programs under the purview of an OSS. OCC is designed for enrollment by college seniors or those who have already graduated to attend a 10-week course at OCS. The PLC program is focused on full time college students who can either be selected for a two times 6-week OCS curriculum: one after the freshmen

or sophomore year and then the second after the junior year. Additionally, the PLC is offered as one times 10-week (called PLC combined), which is completed after the junior year. With OCC, officer candidates are generally commissioned and then immediately accessed after successful completion, whereas the PLC candidates are commissioned by their respective OSS after completion of all degree requirements and then accessed once they check into TBS (Johnson, 2015).

In Johnson's study, it seems as if all the variables in the dataset regressed against an observations career designation success; I believe this approach could potentially provide biased coefficients. I understand most regressions have biased coefficients at some level, so my intent is to only highlight this element not to criticize it. As in many cases the explanatory variables, key independent variables should not be all included in the same regression if significant positive or negative bias exists (Johnson, 2015). The Raul Garza study of 2015 also focuses on what factors determine an officer's likelihood of career designation. In both Johnson and Garza's studies the dependent variable is career designation. Like Johnson's study, Garza concludes that white, male, and married Marines were selected at much higher rates than their gender and diversity counterparts and/or peers. However, the career designation by percentage alone does not tell the whole story: the dataset at large is mostly male and white, and thus in the pool to be screened (Garza, 2014). In Garza's study he analyzed the likelihood based on MOS and category, which is different from Johnson. In some cases, females had higher rates of selection than their male counterparts when viewed from this optic (Garza, 2014).

Michael Sandstrom's thesis research, completed in 2011, is the closest work that relates to my study. He analyzed minority officer recruiting, with a focus on OSOs (Sandstrom, 2011). His approach and question were different than mine, but I would argue a similar end state. He starts by discussing the stance of the Secretary of Defense of that time (Robert Gates) which was effectively that the military needs to better represent society, which is indicative of statements, interviews, and sentiment of several key leaders discussed throughout this review (Sandstrom, 2011). The core of my thesis question relates to the location of OSSs.

Sandstrom discusses the idea of adding a propensity element to QCP, which is in place by the time of my study (Sandstrom, 2011). In this study the QCP already has a propensity element, which results in the adjusted QCP (Malone & Kelley, 2015). He discusses how OSO's are selected and how missions are dictated. With a key focus on the fact that diversity is not a mission, but a goal as part of the other components (Aviation, Naval Flight Officer, Law, Ground, and Reserve) and that they are based on submission at the OSS level. He also addresses the 12–12–5 plan alluded to earlier in my literature review. One critical point made by Sandstrom is when MCDs started competitive selection boards for applicant's black officer accessions dropped from 9.6% to 3.4% in a period of ten years 1998–2008. To clarify once again the OSS goal is to meet submission goals regarding diversity, so unless they are selected at the MCD level and sent to OCS there is no chance of being accessed (Sandstrom, 2011). The fair and equitable answer here is not fully clear, but the non-selection of diverse submissions must be considered when discussing how to raise diversity accessions and how this ultimately impacts end strength of the Marine Corps.

6. Enlisted Data Perspective

Johnathan Fergerson study of 2016 is not one focused on officer accessions but enlisted based on data from 2010–2014. Although it is a significantly different dataset than the focus of this thesis research, there are important points outlined here that are relevant to all military accessions. First the issue of propensity is of course measured as part of QCP for officer recruiting, but Fergerson points to the actual desire to serve. He emphasizes that while most Americans are patriotic, more than 60% would not want to join the military even if additional capacity was required. This issue of human desire coupled with current labor factors make it very difficult for military recruiters to separate themselves in a positive way from other rewarding opportunities, programs, etc. (Fergerson, 2016).

7. Similar Study in Terms of Data

Lastly, the Sandberg study of 2018 most mirrors my study in terms of the dataset. I am dealing with data from 2009–2019 whereas his study analyzes data from 2009–2017. He is trying to determine if more competitive boards lead better officers for the institution

in the long run while much of his work is focused on the two programs I study OCC and PLC since they are the programs that OSSs impact on overall accessions (Sandberg, 2018). Sandberg's regressions include variables such as GPA, SAT, region, district, and component. These are some of the same variables I will be using, but my focus is on maximizing diversity via race and gender. His study concluded that when the selection rates decreased GPAs were higher and at large OCC boards were more competitive than PLC. Sandberg points to some omitted variables in the data such as leadership and experience. This is interesting as they are not easily quantifiable and something I will have to consider when analyzing my data (Sandberg, 2018).

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III. DATA AND VARIABLES

A. DATA/SAMPLE SELECTION

The data for this study derives from MCRC via multiple iterations that resulted in my ability to analyze 52, 234 observations covering a period from approximately May 2009 through June 2019. The data is directly from Marine Corps Recruiting Information Support System (MCRISS), which is the database that an OSS uses to track all NWAs, contracts, and accessions (MCRC, 2019). This database is accurate only based on the reliability of the information entered. The data received includes those observations with an NWA declared date of May 1, 2009 and later. This allowed me to determine out of those observations who was contracted, and ultimately commissioned. This data is enough to determine by OSS, district, and region the percentage and total number of NWA's, contracts, and accessions by component, gender, and diversity. Additionally, this data includes variables such as SAT, ACT, AFQT, PFT and waiver information. Additionally, MCRC provided some QCP data, which is also summarized in the CNA study of 2015 (Malone & Kelley, 2015). Based on their construct, this work could then compare the districts actual contributions to the QCP suggests it should be.

B. TEST SCORE INFORMATION

The test score information is extremely useful as it is one of the primary factors used to determine quality of applicants. For each contract an observation must either have a 22 ACT or 1000 (combined math/verbal) SAT or 74 AFQT. The test score information required significant merging as in many cases applicants had only one of these tests, so the observation identification numbers were matched with the scores. In some instances, records had no test scores entered or incorrect numbers. For example, SAT and ACT input in wrong place, SAT with three numbers, etc., so the test score information that goes into the quality variable is not perfect; however, since I am choosing out of three the likelihood of accuracy is good. This is an example of how critical the proper input of MCRISS information at time of NWA is to all current and future studies.

C. PFT SCORE INFORMATION

In some of the observations multiple PFT scores were entered, so for the purposes of standardization, clarity and quality analysis, this study uses the highest score provided.

D. WAIVER INFORMATION

The waiver information received from MCRC was exceptional; however, that is not the primary focus of this study. The reality is that the types of waivers and requirements for each change often. This study analyzes waivers solely by whether an observation has an RS level waiver, district waiver, region waiver, or MCRC waiver. In the case of some of the record identification numbers they may have each of these types of waivers or none. This study does not focus as much on waivers as the data allows, so in the future that can be a separate research question.

E. QUALITY VARIABLE

This study uses an interaction variable that measures the quality of observations. If an applicant has a better than 280 PFT and one of the following (greater than 28 ACT, greater than 1200 SAT, greater than 90 AFQT) they are considered quality. It is recognized that some may argue that this does not determine quality, or the numbers should be higher or lower. However, this framing method best fits the available data.

F. DEPENDENT VARIABLES

The dependent variables for the purposes of this study are either commissioned or contract. Out of the 52, 234 observations, the goal is to determine how many contracted and how many commissioned. In this study if an observation has the MCRISS commissioned status that is translated to an accession. An observation is that an individual applicant is declared an NWA. The analysis measures the likelihood of those observations either becoming a contract or commission.

G. INDEPENDENT VARIABLES

The study has independent variables for each OSS, each district, and each region. This allows the regressions to indicate an estimated effect for each on the likelihood of

contract or commissioning. In each of the regressions, OSSs are grouped by District and Region for determining the true effect on commissioning. It is important to highlight that the district variables are the combination of all the OSSs that reside within that district as of June 2019 not the overall performance over the whole dataset. In effect, the district collective outputs are the individual OSSs contributions over the dataset. This is an important distinction, because one may view this analysis and argue that there has been OSS movement between districts over the dataset, which is true. However, this study is measuring whether the current construct is setup to maximize diversity and female accessions, so a baselining decision is required. To reiterate, the overall goal of this study is to determine the success of the current structure and how to adjust going forward. Additionally, there were 76 OSSs listed in the dataset with two being relatively temporary OSS South Chicago and OSS Tucson. In both of those cases the results for OSS South Chicago were added to OSS Chicago and Tucson were added to OSS Phoenix for purposes of clarity/standardization.

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IV. METHODOLOGY: GROUPING BY DISTRICT

A. BASELINE

Since OSS locations may change over time, I first describe how I group locations. The purpose of this study is to determine if the current laydown via structure of the OSSs is best suited to maximize diversity and female accessions. One of the best ways to do this is to determine individual OSS performance over time and the performance of districts (as a compilation of OSS performance) compared with QCP. The study uses variables for each of the six MCDs in order to display the relative performance of the OSSs in those districts today by percentage with that of the QCP. Initially, the dataset had 76 OSS names, so recognizing the short-term nature of two of them (OSS Tucson, OSS South Chicago) their observations were added to OSS Chicago and OSS Phoenix, respectively, for purposes or standardization and clarity. In this study there are individual variables for each OSS and collectively they are assigned to one of the six MCD variables based on where they currently reside as of June 2019. In effect, when observing MCD variables in this analysis they are simply a summary of the performance of their current OSSs over the span of the data. For further understanding one must realize that the OSS makeup per district is not the same now as it was in 2009, so a baseline had to be established. The QCP analysis for this study uses the baseline 2015 CNA study for comparisons with actual outputs and performance. In this study, regions (ERR, WRR) are a compilation of the OSSs and districts over the span of the data.

B. UNITS OF OBSERVATION

Observations for this study are applicants who were declared an NWA from 1 May 2009 and beyond. The study measures which observations made it to contract, and then who made it all the way to commissioning. The contract and commission variables included are important as throughout the study the likelihood of making to either one of those results is measured by OSS, district, and region. The preeminent measurement of this study is whether an observation makes it all the way to commissioning, and of those which are black, hispanic, other, female, and quality.

C. DIVERSITY INTERACTIONS

The variables for black, hispanic, other, and female are used throughout the study. The data provided by MCRC via MCRISS identifies each NWA as either white, black, hispanic, or other for race and either male or female for gender (MCRC, 2019). To provide more detailed clarification the study includes several combination/interaction terms: black female, hispanic female, other female, white female, black male, hispanic male, other male, and white male. These interaction terms allow for direct comparison of the production data against QCP. The study shows the contributions of each OSS over the period of data analyzed relative to their district via bar graphs as an instant snapshot. The regressions where diversity is discussed are being compared to non-diversity for the entire dataset.

D. METHODICAL APPROACH TO ANALYSIS

To answer the research question, I start out with a descriptive analysis and statistics that provide an overall perspective for diversity and female accessions, then a breakdown for QCP, and finally, estimate several multivariate regression models. The summary tables display breakdowns by district and then within each OSS. After the tables several bar graphs show the data in different ways, for example, instead of showing black, hispanic, and other individually a combined term is utilized (diversity), which means applicants were black or hispanic or other. Additionally, there is a table showing the OSSs that are the top performers from an overall, OCC, and PLC perspective. One can gain insight from the descriptive analysis using summary statistics, tables, and graphs alone. After the summary statistics the actual performance of the Districts by percentage is shown compared to the percentage of QCP for that District. This information is displayed via map and data table. The next approach uses logistical and multivariate linear regression analysis to show the likelihood of making it to commissioning for OSSs from an overall, female, quality, and diversity perspective, which is shown from a district and region perspective. As an additional means odds ratio and predicted probabilities are used to reinforce and question previous assumptions based on initial analysis.

E. METHODOLOGY GOAL

It is understood with this approach all questions will not be answered. The goal is to show via multiple ways of statistical and regression analysis, which districts are producing the most and least of key diversity and female accessions. Furthermore, within those districts, which OSSs are consistently providing the most, and conversely, which are not providing as much of an input. The district perspective of this analysis is easily comparable to QCP, so one can see which districts are producing more or less of what in theory they should be. This study does not compare each individual OSS to their own QCP as that would be a tremendously detailed study and is not readily apparent based on the 2015 study. Furthermore, the QCP information in MCRISS would require more accuracy and consistency of input at the OSS level for it to be considered relevant, accurate, and useable for a study of this magnitude. This study does, however, determine which OSSs are producing the most in each area as to recommend an increase or decrease in resources.

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V. ANALYSIS/RESULTS

A. FINDING#1: CURRENT DISTRICT/OSS STRUCTURE IS NOT DISTRIBUTED IN A MANNER THAT ALLOWS FOR EQUAL DIVERSITY ACCESSIONS

1. Summary Statistics Overall Observations/Contracts/Accessions

The purpose of Tables 3, 4, and 5 are to provide an immediate illustration of how many observations, contracts, and accessions there are by percentage for each district. It is important to note as you read and interpret the table you read the number of observations from left to right: First (11815), Fourth (10190), Sixth (7469), Eighth (7045), Ninth (8293), and Twelfth (7422) that is the number for that district, which sums up to the total of 52,234 (MCRC, 2019). As you read from top to bottom, realize that those are the percentages of that category out of the total number of observations for that district. Those percentages do not equal 1, as white male is not included.

a. Overall Observations

In the case of female accessions there is nothing that stands out dramatically in Table 3. In the case of black Accessions, Sixth MCD has the highest percentage with 17.4%, hispanic accessions Eighth & Twelfth MCD's have the most with approximately 20%, and for other accessions Twelfth MCD has the highest at 24% (MCRC, 2019).

Table 3. Summary of Overall Observations. Adapted from MCRC (2019) data.

Total Observations	First	Fourth	Sixth	Eighth	Ninth	Twelfth
female	0.159 (0.366)	0.172 (0.378)	0.172 (0.377)	0.152 (0.359)	0.168 (0.374)	0.176 (0.381)
black	0.113 (0.316)	0.130 (0.336)	0.174 (0.379)	0.074 (0.262)	0.091 (0.287)	0.069 (0.254)
hispanic	0.109 (0.311)	0.065 (0.247)	0.106 (0.307)	0.196 (0.397)	0.090 (0.287)	0.200 (0.400)
other	0.121 (0.326)	0.101 (0.301)	0.082 (0.274)	0.125 (0.330)	0.135 (0.342)	0.239 (0.426)
Observations	11815	10190	7469	7045	8293	7422

b. Overall Contracts

The overall contracts for this dataset are 28,256. The totals by district are First MCD (6371), Fourth MCD (5090), Sixth MCD (4086), Eighth MCD (3936), Ninth MCD (4449), and Twelfth MCD (4324) (MCRC, 2019). The same theme holds true from the analysis of overall observations. Sixth MCD has the highest number by percentage of black, Eighth and Twelfth MCD's for hispanics, and Twelfth MCD by far for other contracts. Fourth MCD has the lowest for hispanic contracts and Eighth and Twelfth MCD's for black contracts.

Table 4. Summary Overall Contracts. Adapted from MCRC (2019)

Contracts	First	Fourth	Sixth	Eighth	Ninth	Twelfth
female	0.137	0.144	0.145	0.134	0.151	0.147
	(0.344)	(0.351)	(0.352)	(0.341)	(0.358)	(0.354)
black	0.094	0.107	0.150	0.065	0.074	0.064
	(0.292)	(0.309)	(0.357)	(0.246)	(0.262)	(0.244)
hispanic	0.112	0.067	0.116	0.197	0.086	0.194
	(0.315)	(0.250)	(0.320)	(0.398)	(0.280)	(0.396)
other	0.129	0.123	0.093	0.142	0.152	0.264
	(0.335)	(0.329)	(0.291)	(0.349)	(0.359)	(0.441)
Observations	6371	5090	4086	3936	4449	4324

c. Overall Accessions

Table 5 summarizes the overall accessions which total 8241 for the dataset. The overall accessions in this dataset by district are First MCD (1815), Fourth MCD (1540), Sixth MCD (1203), Eighth MCD (1129), Ninth MCD (1309), and Twelfth MCD (1245) (MCRC, 2019). The same themes hold true Sixth MCD is the leader for black accessions, Eighth and Twelfth MCD's for hispanic accessions, and Twelfth MCD for other accessions. As for the lowest performers: Ninth MCD for black accessions, Ninth and Fourth MCD's for hispanic accessions, and Sixth MCD for other accessions.

Table 5. Summary of Overall Accessions. Adapted from MCRC (2019)

Commissions	First	Fourth	Sixth	Eighth	Ninth	Twelfth
female	0.090	0.094	0.088	0.083	0.092	0.101
	(0.286)	(0.291)	(0.284)	(0.276)	(0.289)	(0.302)
black	0.063	0.068	0.113	0.042	0.039	0.058
	(0.244)	(0.252)	(0.317)	(0.200)	(0.194)	(0.234)
hispanic	0.102	0.063	0.096	0.174	0.067	0.173
	(0.303)	(0.243)	(0.295)	(0.380)	(0.251)	(0.379)
other	0.108	0.128	0.088	0.130	0.156	0.233
	(0.310)	(0.334)	(0.284)	(0.337)	(0.363)	(0.423)
Observations	1815	1540	1203	1129	1309	1245

d. Summary of Overall Accessions by Gender/Race

The following table breaks down the overall number of accessions by race and gender category, which allows a direct comparison to QCP later in the analysis. The data that stand out are the black female and male accessions for Sixth MCD, hispanic female and male accessions for Eighth MCD, hispanic female and male accessions for Twelfth MCD, and other female and male accessions for Twelfth (MCRC, 2019). These only reflect overall outputs, not in comparison to QCP.

Table 6. Summary Accessions by Gender/Race. Adapted from MCRC (2019)

Commissions by gender / race	First	Fourth	Sixth	Eighth	Ninth	Twelfth
whitefemale	0.062	0.066	0.062	0.049	0.064	0.049
	(0.241)	(0.249)	(0.242)	(0.215)	(0.245)	(0.216)
blackfemale	0.006	0.009	0.012	0.006	0.007	0.009
	(0.074)	(0.095)	(0.107)	(0.079)	(0.083)	(0.094)
hispanicfemale	0.009	0.006	0.005	0.017	0.008	0.020
	(0.096)	(0.076)	(0.070)	(0.129)	(0.091)	(0.140)
otherfemale	0.013	0.012	0.009	0.012	0.012	0.023
	(0.114)	(0.110)	(0.095)	(0.107)	(0.110)	(0.151)
whitemale	0.664	0.675	0.640	0.605	0.674	0.487
	(0.472)	(0.469)	(0.480)	(0.489)	(0.469)	(0.500)
blackmale	0.058	0.059	0.101	0.035	0.032	0.049
	(0.234)	(0.236)	(0.302)	(0.185)	(0.176)	(0.216)
hispanicmale	0.093	0.057	0.091	0.158	0.059	0.153
	(0.291)	(0.232)	(0.288)	(0.365)	(0.235)	(0.361)
othermale	0.095	0.116	0.079	0.119	0.144	0.210
	(0.293)	(0.320)	(0.270)	(0.324)	(0.351)	(0.407)
Observations	1815	1540	1203	1129	1309	1245

e. Summary of OCC Accessions by Gender/Race

This table summarizes OCC Accessions with First MCD (1080), Fourth MCD (894), Sixth MCD (683), Eighth MCD (646), Ninth MCD (734), and Twelfth MCD (757) for a total of 4794 (MCRC, 2019). So, out of the 8241 total accessions in this dataset 4794 are from OCC. The percentages are smaller, but Sixth MCD still has the most for black Accessions, Eighth and Twelfth MCD's for hispanic accessions, and Twelfth MCD for other accessions.

Table 7. Summary OCC Commission by Gender/Race. Adapted from MCRC (2019)

OCC-Commission	First	Fourth	Sixth	Eighth	Ninth	Twelfth
whitefemale	0.070	0.079	0.073	0.056	0.069	0.063
	(0.256)	(0.271)	(0.261)	(0.230)	(0.254)	(0.244)
blackfemale	0.006	0.011	0.018	0.006	0.010	0.012
	(0.074)	(0.105)	(0.131)	(0.079)	(0.097)	(0.108)
hispanicfemale	0.008	0.006	0.006	0.020	0.012	0.028
	(0.091)	(0.075)	(0.076)	(0.141)	(0.110)	(0.164)
otherfemale	0.016	0.017	0.009	0.014	0.012	0.028
	(0.125)	(0.129)	(0.093)	(0.117)	(0.110)	(0.164)
whitemale	0.635	0.648	0.600	0.587	0.653	0.444
	(0.482)	(0.478)	(0.490)	(0.493)	(0.476)	(0.497)
blackmale	0.064	0.062	0.102	0.031	0.034	0.052
	(0.245)	(0.240)	(0.304)	(0.173)	(0.182)	(0.221)
hispanicmale	0.100	0.057	0.098	0.166	0.060	0.169
	(0.300)	(0.232)	(0.298)	(0.372)	(0.238)	(0.375)
othermale	0.101	0.121	0.094	0.121	0.150	0.205
	(0.301)	(0.326)	(0.292)	(0.326)	(0.357)	(0.404)
Observations	1080	894	683	646	734	757

f. Summary of PLC Accessions for Gender/Race

This table summarizes the overall PLC accessions for gender/race. The results include First MCD (734), Fourth MCD (646), Sixth MCD (520), Eighth MCD (483), Ninth MCD (575), and Twelfth MCD (488). This means that out of the 8241 accessions in this dataset 3446 are PLC (MCRC, 2019). This is the first case where the normal associations of Sixth MCD (black), Eighth and Twelfth MCD's (hispanic), and Twelfth MCD (other) are challenged. This still holds true for the male categories, but when viewing the female categories Sixth MCD is not alone at the top, Ninth and Fourth MCD's have the highest

hispanic females accessions, while other female accessions are still led by Twelfth, but the margin is much closer.

Table 8. Summary PLC Accessions by Gender/Race. Adapted MCRC (2019)

PLC Commissions	First	Fourth	Sixth	Eighth	Ninth	Twelfth
whitefemale	0.049	0.048	0.048	0.039	0.057	0.027
	(0.216)	(0.214)	(0.214)	(0.195)	(0.233)	(0.161)
blackfemale	0.005	0.006	0.004	0.006	0.003	0.004
	(0.074)	(0.079)	(0.062)	(0.079)	(0.059)	(0.064)
hispanicfemale	0.011	0.006	0.004	0.012	0.003	0.008
	(0.104)	(0.079)	(0.062)	(0.111)	(0.059)	(0.090)
otherfemale	0.010	0.006	0.010	0.008	0.012	0.016
	(0.097)	(0.079)	(0.098)	(0.091)	(0.110)	(0.127)
whitemale	0.707	0.712	0.692	0.629	0.701	0.553
	(0.455)	(0.453)	(0.462)	(0.483)	(0.458)	(0.498)
blackmale	0.049	0.056	0.100	0.041	0.030	0.045
	(0.216)	(0.230)	(0.300)	(0.199)	(0.170)	(0.208)
hispanicmale	0.083	0.057	0.083	0.147	0.057	0.129
	(0.276)	(0.233)	(0.276)	(0.354)	(0.233)	(0.336)
othermale	0.086	0.108	0.060	0.116	0.136	0.217
	(0.280)	(0.311)	(0.237)	(0.320)	(0.343)	(0.413)
Observations	734	646	520	483	575	488

2. Summary Statistics by MCD/OSS

a. First MCD Accessions/Contract by OSS (Diversity and Gender)

This table has total accessions (independent of diversity or gender), total diversity (that means black or hispanic or other), and black, hispanic, other, and female. The first column reinforces that First MCD has a total of 1815 accessions in this dataset, with AMHERST containing the largest percentage (MCRC, 2019). This is the total number of accessions for each OSS during this dataset, which is a piece of the district number. This is just a snapshot of each OSS within that district, as some of these OSSs may have moved to this district during this time period, so this does not necessarily reflect the district over the entire time period. In the case of diversity accessions from an overall perspective, Manhattan is the overall highest, with black accessions highest in College Park, hispanic accessions highest in Garden City and Manhattan, other accessions highest in Boston, and female accessions are highest in College Park. In Table 10 the same breakdown is given,

but this time by contracts. Manhattan leads in every category except for female contracts where Amherst and College Park have the highest percentage. This is a consideration to the process of NWA declared to contract to commission—the most contracts do not necessarily result in the most accessions, which is an important takeaway.

Table 9. Summary of 1st District by Diversity/Gender.
Adapted from MCRC (2019) data.

Commissions (1st)	Total	Diversity	Black	Hispanic	Other	Female
OSS ALBANY	0.050	0.044	0.035	0.065	0.031	0.043
	(0.218)	(0.206)	(0.184)	(0.246)	(0.173)	(0.203)
AMHERST	0.085	0.082	0.043	0.097	0.092	0.086
	(0.280)	(0.275)	(0.205)	(0.296)	(0.290)	(0.281)
BOSTON	0.078	0.091	0.078	0.081	0.107	0.092
	(0.269)	(0.287)	(0.270)	(0.273)	(0.310)	(0.290)
BUFFALO	0.047	0.028	0.052	0.032	0.010	0.018
	(0.213)	(0.166)	(0.223)	(0.177)	(0.101)	(0.135)
COLLEGE PARK	0.073	0.097	0.139	0.081	0.087	0.147
	(0.260)	(0.296)	(0.348)	(0.273)	(0.282)	(0.355)
GARDEN CITY	0.056	0.078	0.061	0.102	0.066	0.061
	(0.230)	(0.269)	(0.240)	(0.304)	(0.249)	(0.241)
JERSEY CITY	0.039	0.068	0.078	0.075	0.056	0.049
	(0.194)	(0.253)	(0.270)	(0.265)	(0.231)	(0.217)
MANHATTAN	0.073	0.103	0.122	0.108	0.087	0.061
	(0.260)	(0.304)	(0.328)	(0.311)	(0.282)	(0.241)
READING	0.046	0.038	0.017	0.065	0.026	0.025
	(0.209)	(0.192)	(0.131)	(0.246)	(0.158)	(0.155)
PROVIDENCE	0.056	0.038	0.035	0.022	0.056	0.031
	(0.230)	(0.192)	(0.184)	(0.145)	(0.231)	(0.173)
NEW BRUNSWICK	0.054	0.066	0.043	0.065	0.082	0.055
	(0.226)	(0.249)	(0.205)	(0.246)	(0.275)	(0.229)
NEWARK	0.051	0.034	0.035	0.027	0.041	0.067
	(0.219)	(0.182)	(0.184)	(0.162)	(0.198)	(0.252)
PHILADELPHIA	0.068	0.070	0.087	0.054	0.077	0.067
	(0.252)	(0.256)	(0.283)	(0.226)	(0.267)	(0.252)
PITTSBURGH	0.053	0.038	0.061	0.016	0.046	0.031
	(0.225)	(0.192)	(0.240)	(0.126)	(0.210)	(0.173)
PORTSMOUTH	0.072	0.064	0.035	0.059	0.087	0.080
	(0.258)	(0.246)	(0.184)	(0.237)	(0.282)	(0.272)
STATE COLLEGE	0.052	0.030	0.052	0.022	0.026	0.043
	(0.222)	(0.171)	(0.223)	(0.145)	(0.158)	(0.203)
SYRACUSE	0.046	0.028	0.026	0.032	0.026	0.043
	(0.210)	(0.166)	(0.160)	(0.177)	(0.158)	(0.203)
Observations	1815	497	115	186	196	163

Table 10. Summary First District Contracts by OSS. Adapted from MCRC (2019) data.

Contracts (1st)	Total	Diversity	Black	Hispanic	Other	Female
ALBANY	0.064	0.056	0.053	0.056	0.058	0.063
	(0.244)	(0.230)	(0.225)	(0.230)	(0.235)	(0.243)
AMHERST	0.075	0.080	0.080	0.088	0.073	0.091
	(0.264)	(0.271)	(0.272)	(0.284)	(0.260)	(0.288)
BOSTON	0.063	0.064	0.048	0.052	0.085	0.066
	(0.242)	(0.244)	(0.215)	(0.222)	(0.279)	(0.249)
BUFFALO	0.057	0.048	0.053	0.042	0.049	0.049
	(0.232)	(0.213)	(0.225)	(0.201)	(0.215)	(0.216)
COLLEGE PARK	0.062	0.075	0.093	0.062	0.073	0.096
	(0.242)	(0.263)	(0.291)	(0.241)	(0.260)	(0.295)
GARDEN CITY	0.059	0.088	0.087	0.101	0.079	0.058
	(0.236)	(0.284)	(0.282)	(0.301)	(0.270)	(0.234)
JERSEY CITY	0.045	0.072	0.068	0.091	0.057	0.057
	(0.208)	(0.258)	(0.253)	(0.288)	(0.232)	(0.232)
MANHATTAN	0.084	0.118	0.130	0.125	0.105	0.074
	(0.277)	(0.323)	(0.337)	(0.331)	(0.306)	(0.262)
READING	0.057	0.042	0.023	0.069	0.032	0.045
	(0.231)	(0.200)	(0.151)	(0.253)	(0.175)	(0.206)
PROVIDENCE	0.056	0.043	0.043	0.036	0.049	0.038
	(0.230)	(0.203)	(0.204)	(0.187)	(0.215)	(0.191)
NEW BRUNSWICK	0.064	0.079	0.065	0.087	0.083	0.070
	(0.244)	(0.270)	(0.247)	(0.282)	(0.276)	(0.255)
NEWARK	0.049	0.036	0.050	0.034	0.028	0.048
	(0.215)	(0.186)	(0.218)	(0.180)	(0.165)	(0.214)
PHILADELPHIA	0.059	0.048	0.072	0.028	0.047	0.065
	(0.237)	(0.213)	(0.258)	(0.165)	(0.213)	(0.247)
PITTSBURGH	0.055	0.037	0.033	0.018	0.056	0.049
	(0.228)	(0.189)	(0.180)	(0.134)	(0.230)	(0.216)
PORTSMOUTH	0.053	0.043	0.032	0.041	0.052	0.041
	(0.224)	(0.202)	(0.175)	(0.198)	(0.223)	(0.199)
STATE COLLEGE	0.051	0.034	0.042	0.035	0.027	0.038
	(0.221)	(0.181)	(0.200)	(0.184)	(0.161)	(0.191)
SYRACUSE	0.047	0.038	0.027	0.036	0.047	0.053
	(0.211)	(0.191)	(0.161)	(0.187)	(0.213)	(0.223)
Observations	6371	2136	600	714	822	876

b. Fourth MCD Accessions and Contracts by OSS

Tables 11 and 12 illustrate that Fourth MCD has a total of 1540 accessions and 5090 contracts in the dataset. From the perspective of overall accessions Roanoke has the most by percentage and for contracts Fairfax has the highest proportion (MCRC, 2019). In the case of accessions and contracts Fairfax has the highest proportion of diversity and black. In the case of hispanic accessions Roanoke has the highest while Fairfax still has the highest proportion of contracts. In the case of female accessions and contracts Fairfax has the highest proportion; however, when considering contracts and accessions for other Richmond has the highest proportion in both. Of note, Cincinnati has the lowest proportion of diversity and black accessions.

Table 11. Summary Fourth District Accessions. Adapted from MCRC (2019) data.

Commissions (4th)	Total	Diversity	Black	Hispanic	Other	Female
OSS ANN ARBOR	0.073	0.060	0.076	0.103	0.030	0.097
	(0.261)	(0.238)	(0.267)	(0.306)	(0.172)	(0.297)
CINCINNATI	0.053	0.033	0.019	0.021	0.046	0.014
	(0.225)	(0.178)	(0.137)	(0.143)	(0.209)	(0.117)
COLUMBUS	0.082	0.035	0.038	0.052	0.025	0.056
	(0.274)	(0.184)	(0.192)	(0.222)	(0.158)	(0.230)
EAST LANSING	0.080	0.070	0.095	0.072	0.056	0.083
	(0.271)	(0.256)	(0.295)	(0.260)	(0.230)	(0.277)
FAIRFAX	0.128	0.128	0.143	0.113	0.127	0.188
	(0.334)	(0.334)	(0.352)	(0.319)	(0.334)	(0.392)
KENT	0.060	0.055	0.067	0.041	0.056	0.063
	(0.238)	(0.229)	(0.251)	(0.200)	(0.230)	(0.243)
LEXINGTON	0.053	0.028	0.029	0.041	0.020	0.042
	(0.223)	(0.164)	(0.167)	(0.200)	(0.141)	(0.201)
NASHVILLE	0.066	0.093	0.095	0.062	0.107	0.049
	(0.249)	(0.290)	(0.295)	(0.242)	(0.309)	(0.216)
NORFOLK	0.044	0.098	0.114	0.113	0.081	0.049
	(0.204)	(0.297)	(0.320)	(0.319)	(0.274)	(0.216)
RALEIGH EAST	0.078	0.055	0.038	0.052	0.066	0.090
	(0.268)	(0.229)	(0.192)	(0.222)	(0.249)	(0.288)
RALEIGH WEST	0.053	0.060	0.057	0.041	0.071	0.042
	(0.225)	(0.238)	(0.233)	(0.200)	(0.258)	(0.201)
RICHMOND	0.102	0.160	0.114	0.134	0.198	0.118
	(0.303)	(0.367)	(0.320)	(0.342)	(0.399)	(0.324)
ROANOKE	0.128	0.125	0.114	0.155	0.117	0.111
	(0.334)	(0.331)	(0.320)	(0.363)	(0.322)	(0.315)
Observations	1540	399	105	97	197	144

Table 12. Summary Fourth District Contracts. Adapted MCRC (2019).

Contracts (4th)	Total	Diversity	Black	Hispanic	Other	Female
ANN ARBOR	0.070	0.056	0.066	0.059	0.045	0.094
	(0.256)	(0.229)	(0.249)	(0.236)	(0.207)	(0.292)
CINCINNATI	0.058	0.039	0.039	0.021	0.049	0.040
	(0.233)	(0.194)	(0.193)	(0.142)	(0.217)	(0.195)
COLUMBUS	0.091	0.073	0.092	0.056	0.067	0.078
	(0.287)	(0.261)	(0.289)	(0.230)	(0.250)	(0.268)
EAST LANSING	0.072	0.075	0.077	0.085	0.067	0.068
	(0.259)	(0.263)	(0.267)	(0.280)	(0.250)	(0.252)
FAIRFAX	0.112	0.121	0.123	0.147	0.105	0.143
	(0.315)	(0.326)	(0.329)	(0.355)	(0.307)	(0.351)
KENT	0.074	0.061	0.057	0.053	0.068	0.076
	(0.262)	(0.239)	(0.232)	(0.224)	(0.253)	(0.266)
LEXINGTON	0.065	0.040	0.041	0.047	0.037	0.064
	(0.247)	(0.197)	(0.197)	(0.212)	(0.188)	(0.245)
NASHVILLE	0.078	0.097	0.098	0.082	0.105	0.064
	(0.268)	(0.296)	(0.297)	(0.275)	(0.307)	(0.245)
NORFOLK	0.040	0.072	0.068	0.071	0.076	0.042
	(0.197)	(0.259)	(0.252)	(0.257)	(0.266)	(0.201)
RALEIGH EAST	0.087	0.077	0.085	0.088	0.065	0.100
	(0.282)	(0.267)	(0.279)	(0.284)	(0.247)	(0.300)
RALEIGH WEST	0.064	0.067	0.081	0.038	0.070	0.060
	(0.245)	(0.250)	(0.273)	(0.192)	(0.255)	(0.238)
RICHMOND	0.080	0.116	0.099	0.132	0.123	0.082
	(0.271)	(0.321)	(0.300)	(0.339)	(0.328)	(0.274)
ROANOKE	0.109	0.105	0.074	0.121	0.123	0.089
	(0.312)	(0.306)	(0.261)	(0.326)	(0.328)	(0.284)
Observations	5090	1511	543	340	628	733

c. Sixth MCD Accessions and Contracts by OSS

Tables 13 and 14 illustrate the production of Sixth MCD from a perspective of accessions and contracts over the dataset. The Sixth MCD had 1203 accessions and 4086 contracts for this dataset; in both cases Columbia had the highest proportions (MCRC, 2019). For diversity overall accessions, Miami and Columbia have the highest proportion and Miami has the highest in contracts. In the case of black observations, Atlanta is the highest proportion for accessions and contracts. In the case of hispanic accessions and contracts, Miami has the highest proportion with 31% for both. In the case of other, there is a significant disparity between accessions and contracts, with Atlanta having the highest proportion of contracts, but they fall significantly behind Columbia and Tallahassee regarding accessions. In the area of female accessions and contracts Tallahassee has the highest proportion: 20% of the female accessions for the district.

Table 13. Summary Sixth MCD Accessions. Adapted from MCRC (2019) data.

Commission (6th)	Total	Diversity	Black	Hispanic	Other	Female
ATLANTA	0.096	0.117	0.154	0.078	0.113	0.094
	(0.295)	(0.322)	(0.363)	(0.269)	(0.318)	(0.294)
BATON ROUGE	0.086	0.056	0.074	0.060	0.028	0.057
	(0.280)	(0.230)	(0.262)	(0.239)	(0.167)	(0.232)
CHARLOTTE	0.107	0.089	0.088	0.069	0.113	0.057
	(0.310)	(0.286)	(0.285)	(0.254)	(0.318)	(0.232)
COLUMBIA	0.156	0.145	0.147	0.121	0.170	0.142
	(0.363)	(0.353)	(0.355)	(0.327)	(0.377)	(0.350)
GAINESVILLE	0.084	0.075	0.110	0.034	0.075	0.113
	(0.277)	(0.264)	(0.314)	(0.183)	(0.265)	(0.318)
KENNESAW	0.073	0.075	0.051	0.069	0.113	0.028
	(0.260)	(0.264)	(0.222)	(0.254)	(0.318)	(0.167)
MIAMI	0.077	0.145	0.081	0.310	0.047	0.047
	(0.267)	(0.353)	(0.274)	(0.465)	(0.213)	(0.213)
ORLANDO	0.116	0.128	0.118	0.138	0.132	0.160
	(0.321)	(0.335)	(0.323)	(0.346)	(0.340)	(0.369)
TALLAHASSEE	0.101	0.109	0.103	0.078	0.151	0.198
	(0.302)	(0.312)	(0.305)	(0.269)	(0.360)	(0.400)
TUSCALOOSA	0.102	0.059	0.074	0.043	0.057	0.104
	(0.303)	(0.235)	(0.262)	(0.204)	(0.232)	(0.306)
Observations	1203	358	136	116	106	106

Table 14. Summary Sixth MCD Contracts. Adapted from MCRC (2019) data.

Contracts (6th)	Total	Diversity	Black	Hispanic	Other	Female
ATLANTA	0.102	0.135	0.186	0.044	0.165	0.111
	(0.302)	(0.342)	(0.389)	(0.206)	(0.372)	(0.315)
BATON ROUGE	0.094	0.085	0.124	0.055	0.060	0.100
	(0.292)	(0.279)	(0.330)	(0.228)	(0.238)	(0.300)
CHARLOTTE	0.108	0.079	0.078	0.064	0.099	0.090
	(0.310)	(0.270)	(0.269)	(0.244)	(0.300)	(0.286)
COLUMBIA	0.131	0.099	0.117	0.078	0.094	0.127
	(0.338)	(0.299)	(0.322)	(0.269)	(0.293)	(0.333)
GAINESVILLE	0.079	0.066	0.078	0.047	0.071	0.078
	(0.270)	(0.249)	(0.269)	(0.211)	(0.257)	(0.268)
KENNESAW	0.079	0.062	0.052	0.051	0.092	0.057
	(0.269)	(0.241)	(0.223)	(0.220)	(0.289)	(0.233)
MIAMI	0.085	0.140	0.070	0.309	0.042	0.095
	(0.279)	(0.347)	(0.256)	(0.463)	(0.201)	(0.293)
ORLANDO	0.113	0.131	0.104	0.180	0.113	0.115
	(0.317)	(0.337)	(0.306)	(0.385)	(0.316)	(0.319)
TALLAHASSEE	0.112	0.123	0.098	0.117	0.173	0.140
	(0.316)	(0.329)	(0.297)	(0.321)	(0.379)	(0.347)
TUSCALOOSA	0.097	0.080	0.091	0.055	0.092	0.088
	(0.296)	(0.271)	(0.288)	(0.228)	(0.289)	(0.283)
Observations	4086	1467	613	472	382	592

d. Eighth MCD Accessions and Contracts by OSS

In Tables 15 and 16 the number of overall accessions is 1129 and contracts 3936 for Eighth MCD (MCRC, 2019). College Station has the highest number of accessions and Phoenix has the highest number of contracts. In the case of diversity, black, hispanic, and female accessions Austin has the highest proportion and in terms of contracts is close to Phoenix in many of those same categories. In the other category Fort Worth has the highest proportion of accessions and Phoenix for contracts.

Table 15. Summary Eighth MCD Accessions by OSS. Adapted from MCRC (2019) data.

Commission (8th)	Total	Diversity	Black	Hispanic	Other	Female
AUSTIN	0.115	0.146	0.191	0.168	0.102	0.160
	(0.319)	(0.353)	(0.398)	(0.374)	(0.304)	(0.368)
COLLEGE STATION	0.156	0.128	0.085	0.152	0.109	0.117
	(0.363)	(0.334)	(0.282)	(0.360)	(0.313)	(0.323)
DALLAS	0.044	0.061	0.085	0.046	0.075	0.064
	(0.206)	(0.240)	(0.282)	(0.209)	(0.264)	(0.246)
DENVER	0.105	0.082	0.043	0.061	0.122	0.138
	(0.306)	(0.274)	(0.204)	(0.240)	(0.329)	(0.347)
FORT COLLINS	0.096	0.051	0.043	0.046	0.061	0.074
	(0.294)	(0.221)	(0.204)	(0.209)	(0.241)	(0.264)
FORT WORTH	0.105	0.130	0.106	0.102	0.177	0.149
	(0.307)	(0.337)	(0.312)	(0.303)	(0.383)	(0.358)
HOUSTON	0.069	0.084	0.170	0.071	0.075	0.053
	(0.254)	(0.278)	(0.380)	(0.258)	(0.264)	(0.226)
LUBBOCK	0.084	0.120	0.085	0.152	0.088	0.053
	(0.278)	(0.326)	(0.282)	(0.360)	(0.285)	(0.226)
PHOENIX	0.137	0.118	0.106	0.152	0.075	0.138
	(0.344)	(0.323)	(0.312)	(0.360)	(0.264)	(0.347)
SALT LAKE CITY	0.089	0.079	0.085	0.051	0.116	0.053
	(0.284)	(0.271)	(0.282)	(0.220)	(0.321)	(0.226)
Observations	1129	391	47	197	147	94

Table 16. Source Eighth MCD Contracts by OSS. Adapted from MCRC (2019) data.

Contracts (8th)	Total	Diversity	Black	Hispanic	Other	Female
AUSTIN	0.109	0.152	0.142	0.186	0.111	0.134
	(0.312)	(0.359)	(0.349)	(0.389)	(0.314)	(0.341)
COLLEGE STATION	0.129	0.103	0.098	0.106	0.102	0.108
	(0.335)	(0.304)	(0.298)	(0.308)	(0.303)	(0.310)
DALLAS	0.058	0.073	0.094	0.050	0.095	0.066
	(0.235)	(0.260)	(0.293)	(0.219)	(0.293)	(0.249)
DENVER	0.084	0.059	0.055	0.050	0.073	0.091
	(0.278)	(0.236)	(0.229)	(0.219)	(0.261)	(0.288)
FORT COLLINS	0.089	0.053	0.035	0.048	0.070	0.064
	(0.285)	(0.225)	(0.185)	(0.213)	(0.255)	(0.245)
FORT WORTH	0.103	0.113	0.157	0.091	0.121	0.121
	(0.305)	(0.316)	(0.365)	(0.288)	(0.327)	(0.326)
HOUSTON	0.091	0.104	0.122	0.106	0.095	0.091
	(0.288)	(0.306)	(0.328)	(0.308)	(0.293)	(0.288)
LUBBOCK	0.086	0.120	0.094	0.152	0.087	0.104
	(0.281)	(0.325)	(0.293)	(0.359)	(0.283)	(0.306)
PHOENIX	0.148	0.148	0.150	0.144	0.154	0.132
	(0.355)	(0.356)	(0.357)	(0.352)	(0.361)	(0.339)
SALT LAKE CITY	0.101	0.074	0.051	0.067	0.093	0.089
	(0.301)	(0.261)	(0.221)	(0.250)	(0.290)	(0.285)
Observations	3936	1590	254	776	560	529

e. Ninth MCD Accessions and Contracts by OSS

In the case of Ninth MCD per Tables 17 and 18, there are 1309 accessions and 4449 contracts in the dataset (MCRC, 2019). Of those, Chicago has the highest proportion of contracts for the total, diversity, black, and hispanic and for accessions the same is true except for Kansas City has the highest number of black. Of note, OSS Lincoln has 0% of black accessions in this dataset. In the case of other OSS Norman has the highest proportion of accessions and contracts. For the female category OSS West Lafayette has the highest proportion of accessions at 15% whereas OSS Twin Cities has the highest number of contracts.

Table 17. Source Ninth MCD Accessions by OSS.
Adapted from MCRC (2019) data.

Commission (9th)	Total	Diversity	Black	Hispanic	Other	Female
BLOOMINGTON	0.086	0.055	0.098	0.023	0.059	0.100
	(0.280)	(0.229)	(0.300)	(0.150)	(0.236)	(0.301)
CHAMPAIGN	0.057	0.052	0.059	0.080	0.039	0.058
	(0.231)	(0.223)	(0.238)	(0.272)	(0.195)	(0.235)
CHICAGO	0.115	0.140	0.098	0.227	0.113	0.108
	(0.319)	(0.347)	(0.300)	(0.421)	(0.317)	(0.312)
FARGO	0.035	0.026	0.020	0.057	0.015	0.017
	(0.184)	(0.160)	(0.140)	(0.233)	(0.121)	(0.129)
IOWA CITY	0.073	0.064	0.039	0.091	0.059	0.033
	(0.260)	(0.245)	(0.196)	(0.289)	(0.236)	(0.180)
KANSAS CITY	0.095	0.093	0.176	0.057	0.088	0.075
	(0.294)	(0.291)	(0.385)	(0.233)	(0.284)	(0.264)
LINCOLN	0.059	0.058	0.000	0.034	0.083	0.042
	(0.235)	(0.235)	(0.000)	(0.183)	(0.277)	(0.201)
MILWAUKEE	0.089	0.067	0.059	0.068	0.069	0.108
	(0.285)	(0.250)	(0.238)	(0.254)	(0.253)	(0.312)
NORMAN	0.070	0.146	0.098	0.114	0.172	0.025
	(0.256)	(0.353)	(0.300)	(0.319)	(0.378)	(0.157)
SPRINGFIELD	0.067	0.079	0.118	0.034	0.088	0.058
	(0.251)	(0.270)	(0.325)	(0.183)	(0.284)	(0.235)
TWIN CITIES	0.084	0.067	0.098	0.034	0.074	0.125
	(0.278)	(0.250)	(0.300)	(0.183)	(0.262)	(0.332)
ST LOUIS	0.076	0.076	0.098	0.068	0.074	0.100
	(0.265)	(0.265)	(0.300)	(0.254)	(0.262)	(0.301)
W LAFAYETTE	0.095	0.076	0.039	0.114	0.069	0.150
	(0.293)	(0.265)	(0.196)	(0.319)	(0.253)	(0.359)
Observations	1309	343	51	88	204	120

Table 18. Summary Ninth District Contracts by OSS.
Adapted from MCRC (2019) data.

Contract (9th)	Total	Diversity	Black	Hispanic	Other	Female
BLOOMINGTON	0.085	0.067	0.094	0.042	0.068	0.064
	(0.278)	(0.250)	(0.293)	(0.201)	(0.252)	(0.245)
CHAMPAIGN	0.067	0.069	0.070	0.092	0.056	0.048
	(0.250)	(0.254)	(0.255)	(0.289)	(0.231)	(0.213)
CHICAGO	0.116	0.157	0.167	0.241	0.105	0.124
	(0.320)	(0.364)	(0.374)	(0.428)	(0.307)	(0.330)
FARGO	0.032	0.030	0.036	0.026	0.030	0.030
	(0.175)	(0.171)	(0.188)	(0.160)	(0.170)	(0.170)
IOWA CITY	0.075	0.055	0.055	0.058	0.053	0.060
	(0.263)	(0.228)	(0.228)	(0.233)	(0.225)	(0.237)
KANSAS CITY	0.087	0.090	0.079	0.079	0.102	0.084
	(0.282)	(0.286)	(0.270)	(0.269)	(0.303)	(0.277)
LINCOLN	0.065	0.057	0.046	0.063	0.059	0.076
	(0.247)	(0.232)	(0.209)	(0.243)	(0.236)	(0.265)
MILWAUKEE	0.078	0.064	0.073	0.065	0.059	0.087
	(0.269)	(0.245)	(0.260)	(0.248)	(0.236)	(0.281)
NORMAN	0.076	0.127	0.079	0.099	0.166	0.061
	(0.264)	(0.333)	(0.270)	(0.300)	(0.372)	(0.240)
SPRINGFIELD	0.075	0.076	0.073	0.060	0.086	0.073
	(0.264)	(0.265)	(0.260)	(0.238)	(0.280)	(0.261)
TWIN CITIES	0.080	0.068	0.091	0.045	0.070	0.104
	(0.271)	(0.251)	(0.288)	(0.206)	(0.255)	(0.306)
ST LOUIS	0.087	0.085	0.094	0.058	0.096	0.100
	(0.283)	(0.279)	(0.293)	(0.233)	(0.295)	(0.300)
W LAFAYETTE	0.077	0.055	0.043	0.073	0.050	0.090
	(0.266)	(0.228)	(0.202)	(0.261)	(0.219)	(0.286)
Observations	4449	1387	329	382	676	670

f. Twelfth MCD Accessions and Contracts by OSS

In the Twelfth MCD there are 1245 accessions and 4324 contracts in this dataset (MCRC, 2019). OSS San Diego has the highest proportion of accessions and contracts from an overall perspective per Tables 19 and 20. In the case of accessions San Diego either has the highest or is among the highest proportion for every category (diversity, black, hispanic, other, female). OSS Berkeley has the highest for black, OSS Orange for hispanic, and OSS Seattle for other accessions. In the case of contracts displayed in Table 20, OSS Orange has the highest proportion of diversity, hispanic, and female, while OSS Los Angeles has black and OSS San Diego has other. Of note, in Table 19 OSS Spokane has 0% black accessions.

Table 19. Source Twelfth MCD Accessions by OSS.
Adapted from MCRC (2019) data.

Commission (12th)	Total	Diversity	Black	Hispanic	Other	Female
BERKELEY	0.106	0.111	0.125	0.111	0.107	0.135
	(0.308)	(0.314)	(0.333)	(0.315)	(0.310)	(0.343)
CORVALLIS	0.071	0.059	0.069	0.042	0.069	0.071
	(0.258)	(0.235)	(0.256)	(0.200)	(0.254)	(0.259)
LOS ANGELES	0.071	0.076	0.139	0.079	0.059	0.079
	(0.258)	(0.265)	(0.348)	(0.270)	(0.235)	(0.271)
ORANGE	0.113	0.126	0.069	0.153	0.121	0.167
	(0.317)	(0.332)	(0.256)	(0.361)	(0.326)	(0.374)
RIVERSIDE	0.073	0.087	0.097	0.106	0.069	0.048
	(0.260)	(0.281)	(0.298)	(0.309)	(0.254)	(0.214)
SACRAMENTO	0.115	0.121	0.139	0.130	0.110	0.119
	(0.319)	(0.327)	(0.348)	(0.337)	(0.314)	(0.325)
SAN DIEGO	0.134	0.131	0.111	0.144	0.128	0.175
	(0.341)	(0.338)	(0.316)	(0.351)	(0.334)	(0.381)
SAN JOSE	0.083	0.081	0.083	0.051	0.103	0.071
	(0.276)	(0.274)	(0.278)	(0.220)	(0.305)	(0.259)
SPOKANE	0.061	0.038	0.000	0.037	0.048	0.016
	(0.240)	(0.192)	(0.000)	(0.189)	(0.215)	(0.125)
SANTA BARBARA	0.063	0.062	0.069	0.069	0.055	0.024
	(0.244)	(0.242)	(0.256)	(0.255)	(0.229)	(0.153)
SEATTLE	0.108	0.107	0.097	0.079	0.131	0.095
	(0.311)	(0.310)	(0.298)	(0.270)	(0.338)	(0.295)
Observations	1245	578	72	216	290	126

Table 20. Summary Twelfth MCD Contracts by OSS.
Adapted from MCRC (2019) data.

Contract (12th)	Total	Diversity	Black	Hispanic	Other	Female
BERKELEY	0.091	0.087	0.102	0.085	0.085	0.105
	(0.287)	(0.282)	(0.303)	(0.278)	(0.279)	(0.307)
CORVALLIS	0.084	0.067	0.073	0.056	0.074	0.080
	(0.278)	(0.251)	(0.260)	(0.230)	(0.262)	(0.272)
LOS ANGELES	0.087	0.102	0.124	0.116	0.087	0.091
	(0.282)	(0.303)	(0.330)	(0.320)	(0.283)	(0.288)
ORANGE	0.109	0.132	0.102	0.144	0.130	0.127
	(0.312)	(0.339)	(0.303)	(0.352)	(0.337)	(0.333)
RIVERSIDE	0.086	0.095	0.091	0.117	0.080	0.068
	(0.280)	(0.293)	(0.288)	(0.321)	(0.271)	(0.251)
SACRAMENTO	0.101	0.101	0.098	0.119	0.088	0.126
	(0.301)	(0.301)	(0.298)	(0.324)	(0.284)	(0.332)
SAN DIEGO	0.114	0.114	0.080	0.116	0.122	0.121
	(0.317)	(0.318)	(0.272)	(0.320)	(0.327)	(0.326)
SAN JOSE	0.077	0.081	0.105	0.070	0.083	0.069
	(0.267)	(0.273)	(0.308)	(0.256)	(0.276)	(0.254)
SPOKANE	0.079	0.051	0.025	0.041	0.065	0.068
	(0.270)	(0.220)	(0.158)	(0.197)	(0.246)	(0.251)
SANTA BARBARA	0.077	0.073	0.091	0.070	0.070	0.055
	(0.266)	(0.260)	(0.288)	(0.256)	(0.255)	(0.228)
SEATTLE	0.095	0.097	0.109	0.067	0.115	0.091
	(0.293)	(0.295)	(0.312)	(0.250)	(0.320)	(0.288)
Observations	4324	2257	275	839	1143	637

3. District Bar Graphs—Summary Statistics via Bar Graphs

Figures 22–27 provide an overall illustration of district performance in the dataset for the categories of diversity (which means black or hispanic or other), black, hispanic, other, and female (MCRC, 2019). Figure 22 displays the total proportion of diversity or female accessions by district. This means that Twelfth MCD has the highest proportion of this metric and Sixth MCD has the least. To reiterate, this is the performance of the OSSs that are currently in that district over the entire dataset, so any movement during the time of the dataset impacts these numbers. However, this graphic shows that Twelfth MCD is producing more diversity and female accessions based on their current structure. The same holds true for Figure 23 when just considering diversity accessions, Twelfth MCD has the highest proportion. In Figure 24, when just considering female accessions First and Fourth MCD's have the highest proportions and Eighth MCD has the least. For Figure 25, when considering black accessions Sixth MCD has the highest proportion and Eighth MCD has the least. For Figure 26, hispanic accessions Twelfth and Eighth MCD's have the highest proportions with Ninth MCD having the least. For Figure 27, other accessions are the consideration with Twelfth MCD having a much larger proportion than everyone else and Sixth MCD having the least.

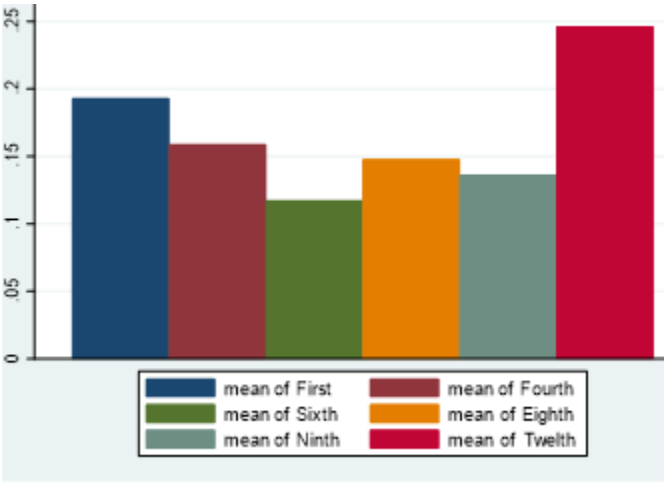

Figure 22. Total Diversity/Female Accessions by MCD. Adapted from MCRC (2019) data.

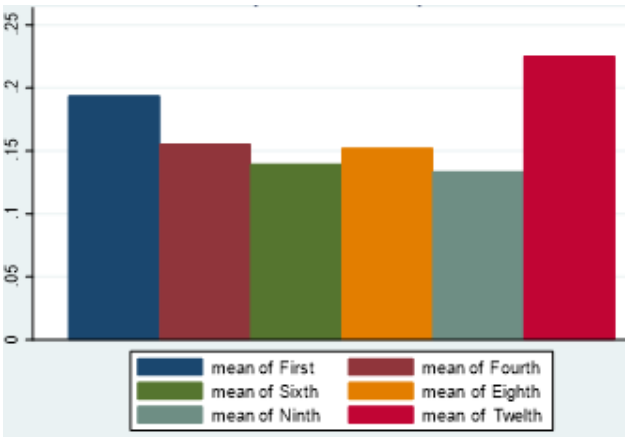

Figure 23. Diversity Accessions by MCD. Adapted from MCRC (2019) data.

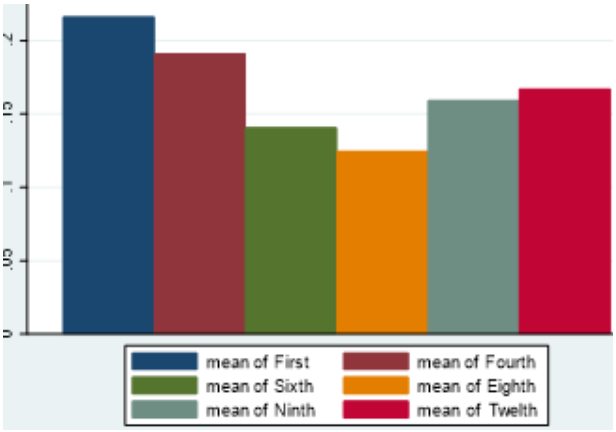

Figure 24. Female Accessions by MCD. Adapted from MCRC (2019) data.

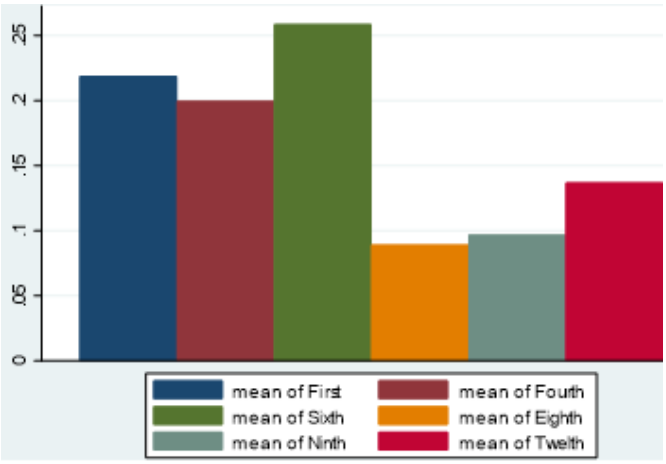

Figure 25. Black Accessions by MCD. Adapted from MCRC (2019) data.

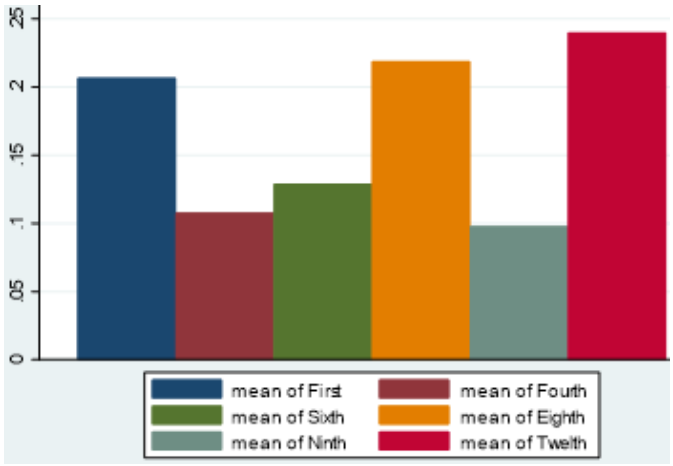

Figure 26. Hispanic Accessions by MCD. Adapted from MCRC (2019) data.

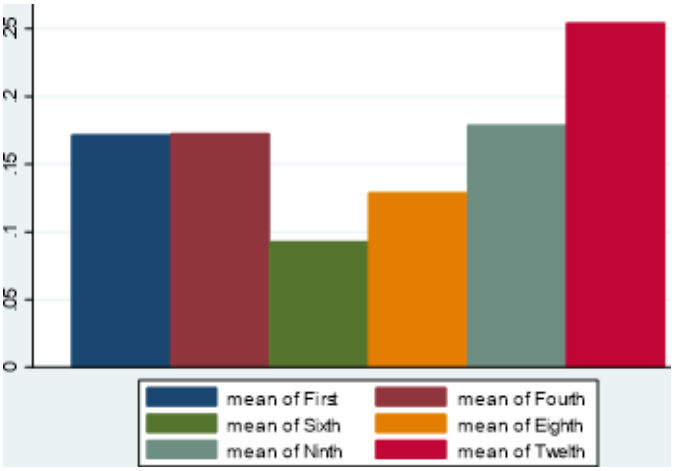

Figure 27. Other Accessions by MCD. Adapted from MCRC (2019)

4. Summary Statistics via Bar Graphs for OSSs

a. Diversity and Female Accessions for First MCD by OSS

In Figures 28 and 29, the accessions for First MCD by diversity and females are depicted. In Figure 28, OSS Manhattan, OSS College Park, OSS Boston, and OSS Amherst are the top performers for diversity accessions over the dataset, with OSS Buffalo, OSS Syracuse, and OSS State College being the lowest. In Figure 29, with female accessions OSS College Park is by far the top performer over the dataset with OSS Buffalo, OSS Reading, and OSS Pittsburgh having relatively lower numbers (MCRC, 2019).

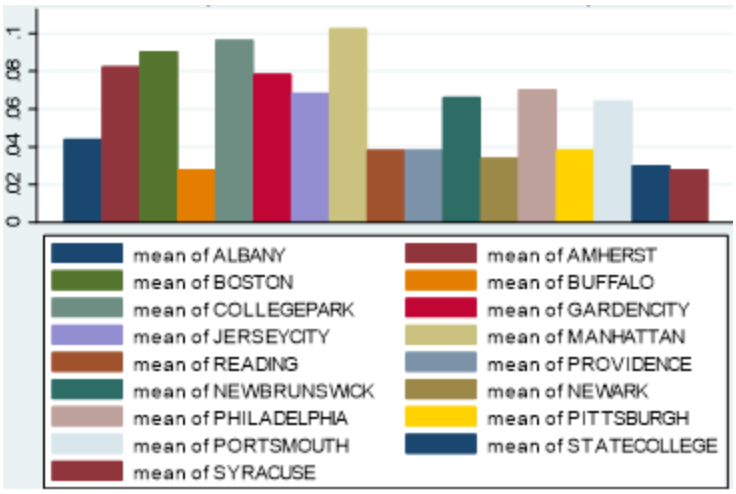

Figure 28. Diversity Accessions First MCD. Adapted from MCRC (2019)

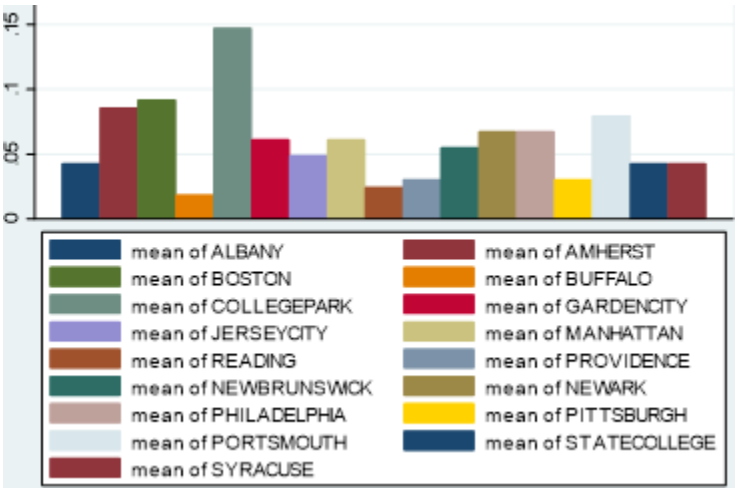

Figure 29. Female Accessions for First MCD. Adapted from MCRC (2019) data.

b. Diversity and Female Accessions for Fourth MCD by OSS

In Figures 30 and 31, the accessions for Fourth MCD by diversity and female are depicted. In Figure 30, OSS Richmond has the highest proportion of diversity accessions over the dataset while OSS Lexington has the least. In Figure 31, OSS Fairfax has a much higher proportion of females compared with the other OSSs while Cincinnati has the least (MCRC, 2019).

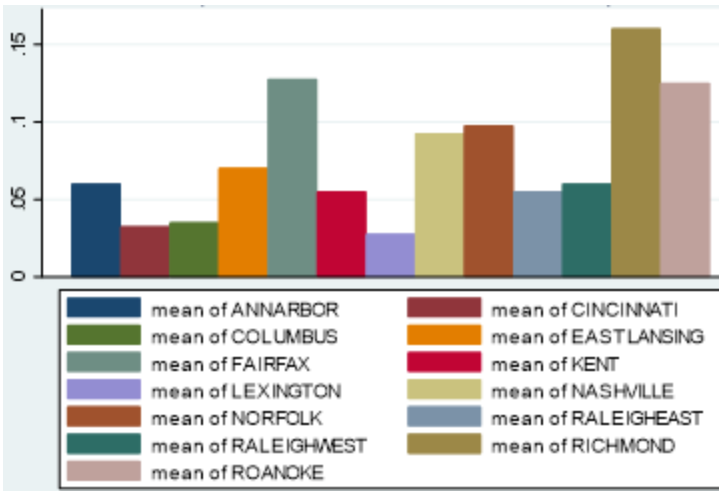

Figure 30. Diversity Accessions Fourth MCD. Adapted from MCRC (2019) data.

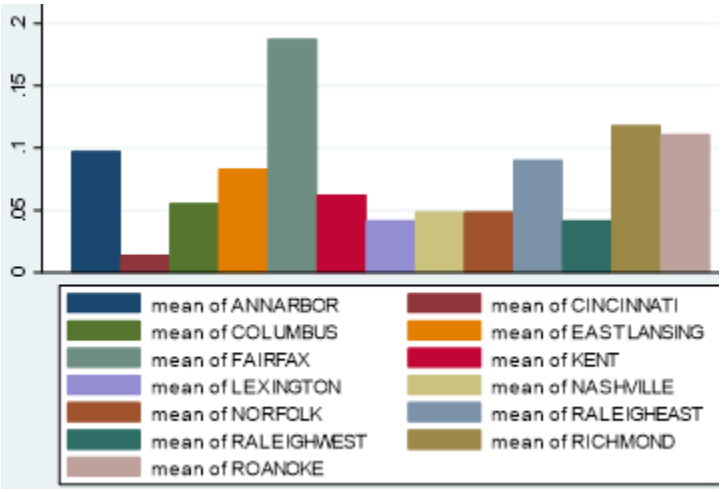

Figure 31. Female Accessions Fourth MCD. Adapted from MCRC (2019) data.

c. Diversity and Female Accessions for Sixth MCD by OSS

In Figures 32 and 33, the diversity and female accessions for Sixth MCD are depicted. In Figure 32, OSS Columbia and OSS Gainesville have the highest proportion of diversity accessions while OSS Baton Rouge and OSS Tuscaloosa have the least. In Figure 33, OSS Tallahassee has the highest proportion of female accessions, while OSS Kennesaw has the least (MCRC, 2019).

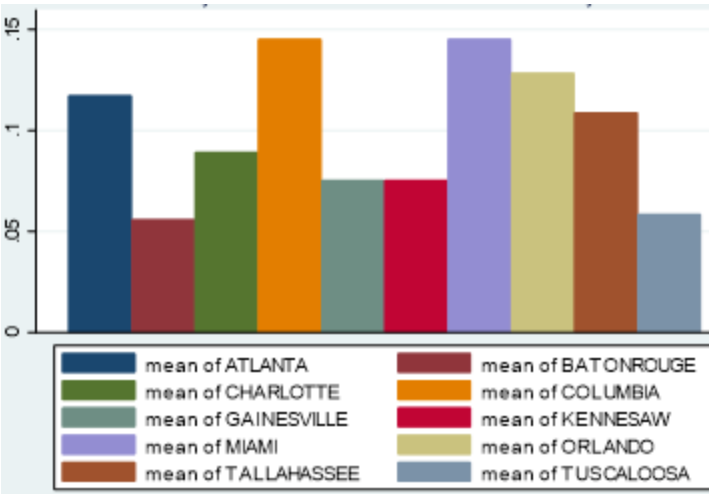

Figure 32. Diversity Accessions Sixth MCD. Adapted from MCRC (2019) data.

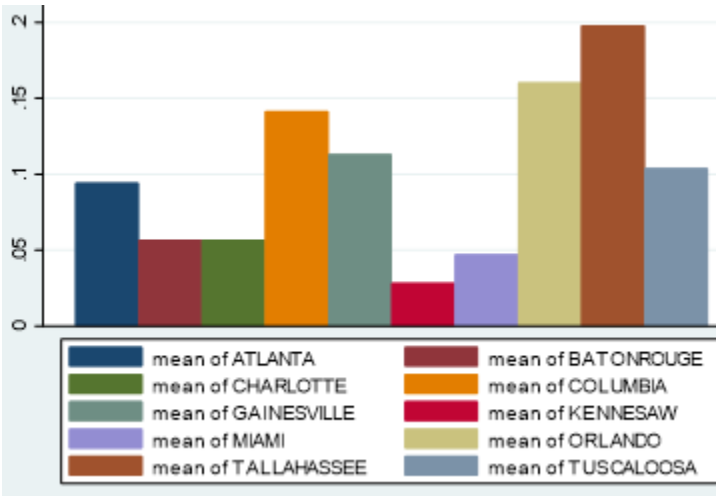

Figure 33. Female Accessions Sixth MCD. Adapted from MCRC (2019) data.

d. Diversity and Female Accessions for Eighth MCD by OSS

In Figures 34 and 35 the diversity and female Accessions for Eighth MCD are depicted. In Figure 34, OSS Austin, OSS College Station, and OSS Fort Worth are all top performers in terms of diversity accessions while OSS Fort Collins has the lowest numbers relatively speaking. In Figure 35, OSS Austin, OSS Denver, OSS Fort Worth, and OSS Phoenix are the highest performers in terms of female accessions while OSS Houston, OSS Lubbock, and OSS Salt Lake City are the lowest (MCRC, 2019).

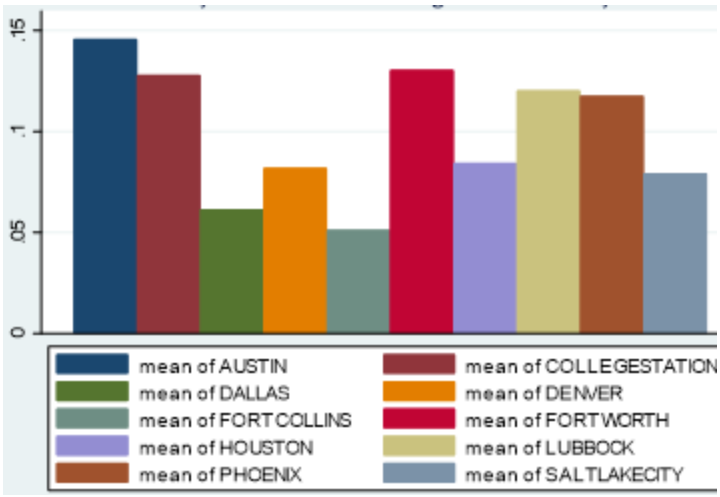

Figure 34. Diversity Accessions Eighth MCD. Adapted from MCRC (2019) data.

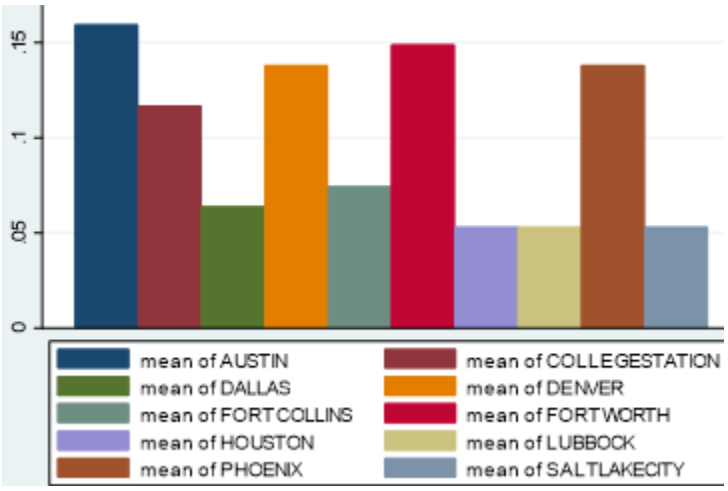

Figure 35. Female Accessions Eighth MCD. Adapted from MCRC (2019) data.

e. Diversity and Female Accessions for Ninth District by OSS

In Figures 36 and 37 the diversity and female accessions for Ninth MCD are depicted. In Figure 36, OSS Chicago and OSS Norman are the top performers in terms of diversity while OSS Fargo has the lowest number relatively speaking. In Figure 37, OSS West Lafayette has the highest numbers in terms of female accessions while OSS Fargo has the lowest (MCRC, 2019).

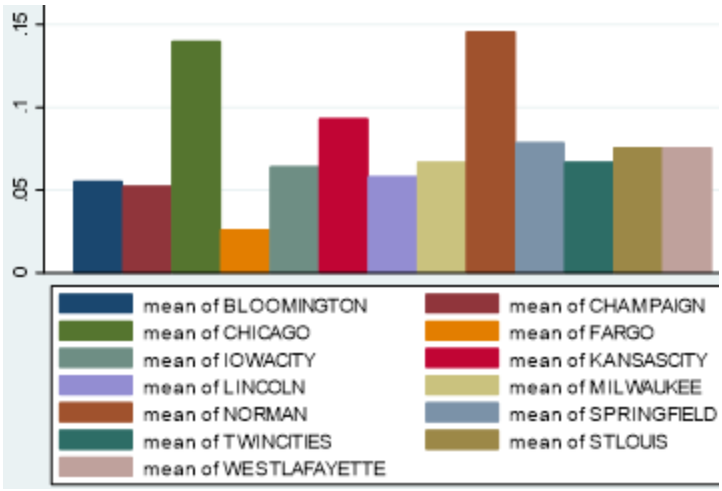

Figure 36. Diversity Accessions Ninth MCD. Adapted from MCRC (2019) data.

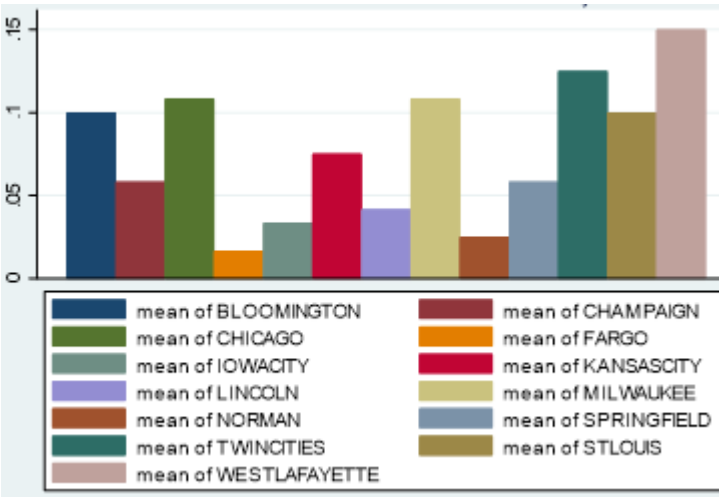

Figure 37. Female Accessions Ninth MCD. Adapted from MCRC (2019) data.

f. Diversity and Female Accessions for Twelfth MCD by OSS

In Figures 38 and 39 the diversity and female Accessions for Twelfth MCD are depicted. In Figure 38, OSS San Diego, OSS Sacramento, OSS Berkeley, and OSS Orange are all top performers in terms of diversity accessions while OSS Spokane is the lowest. In Figure 39, OSS San Diego and OSS Orange are at the top in terms of female accessions while OSS Spokane is the lowest (MCRC, 2019).

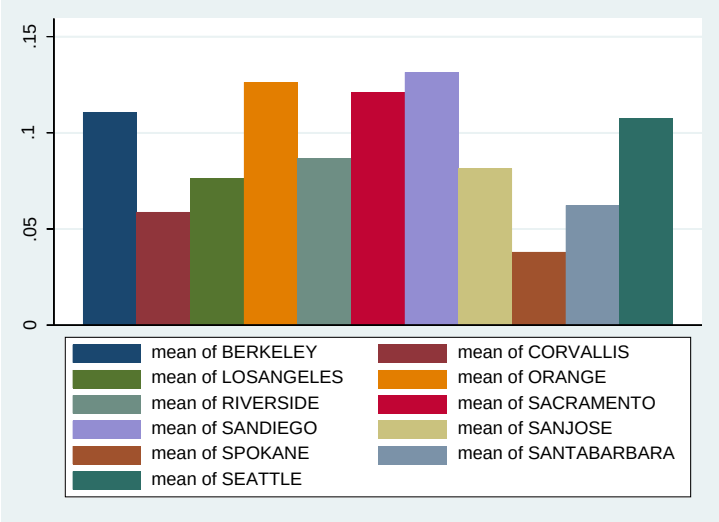

Figure 38. Diversity Accessions Twelfth MCD. Adapted from MCRC (2019) data.

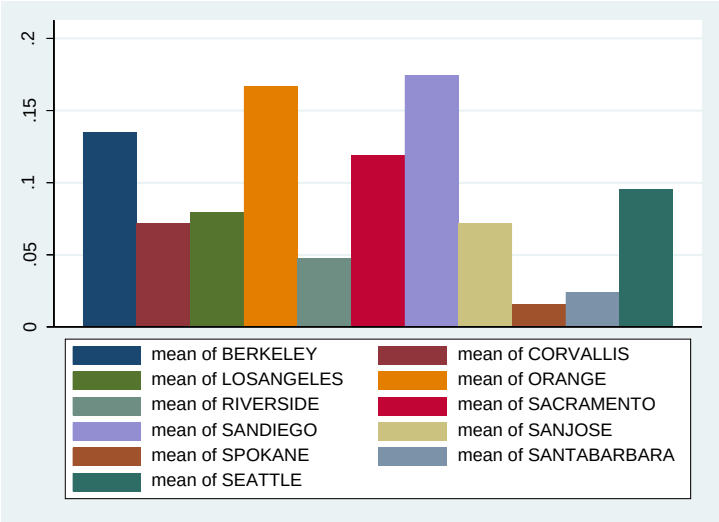

Figure 39. Female Accessions Twelfth District. Adapted from MCRC (2019) data.

5. Summary Statistics via Bar Graphs for Regions

In Figures 40 and 41, diversity accessions are separated by region. In Figure 40, ERR diversity accessions are displayed, which highlights First MCD as the primary contributor by proportion while Sixth MCD is the least. In Figure 41, WRR accessions are displayed, which highlights Twelfth MCD as the largest proportion while Ninth MCD is

the least. This is consistent with the data when all six districts were compared overall, with Twelfth MCD being the highest for WRR and First MCD for ERR (MCRC, 2019).

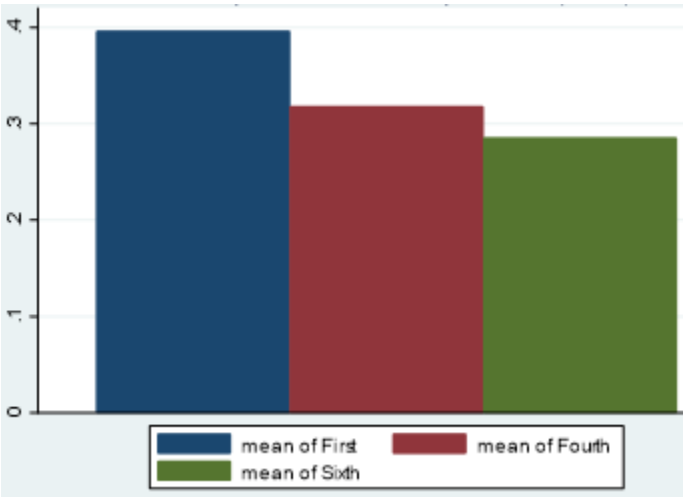

Figure 40. ERR Diversity Accessions. Adapted from MCRC (2019) data.

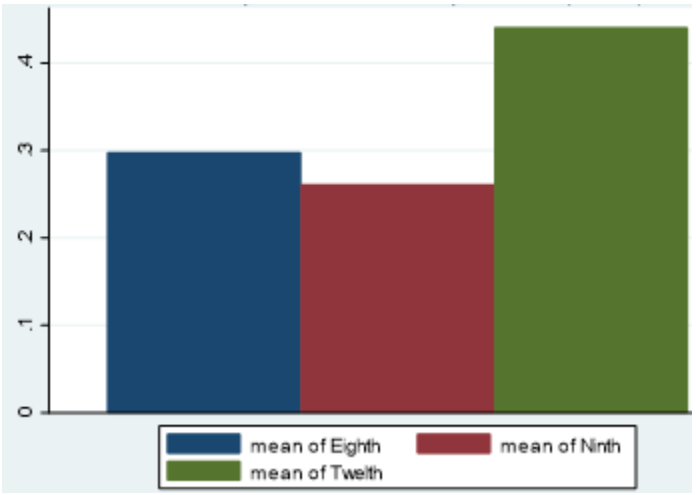

Figure 41. WRR Diversity Accessions. Adapted from MCRC (2019) data.

6. Summary Statistics Top Performing OSTs

The purpose of Figure 42 is to highlight the OSSs that performed the best over the entire dataset in the categories described (MCRC, 2019).

1. In the case of Overall female accessions, OSS College Park, OSS Fairfax, OSS Tallahassee, OSS Austin, OSS West Lafayette, and OSS San Diego are the top performing OSSs.
2. In the case of overall diversity, which includes an accession for black or hispanic or other; OSS Manhattan, OSS Richmond, OSS Columbia, OSS Miami, OSS Austin, OSS Norman, and OSS San Diego are the top performing OSSs.
3. In the case of OCC female, OSS College Park, OSS Fairfax, OSS Tallahassee, OSS Orlando, OSS Austin, OSS Denver, OSS Fort Worth, OSS Twin Cities, OSS Orange are the top performing OSSs.
4. In the case of OCC diversity, OSS Manhattan, OSS Fairfax, OSS Miami, OSS Austin, OSS Norman, OSS Chicago, and OSS Orange are the top performing OSS.
5. In the case of PLC females, OSS College Park, OSS Amherst, OSS Ann Arbor, OSS Roanoke, OSS Tallahassee, OSS College Station, OSS West Lafayette, OSS San Diego, and OSS Berkeley are the top performing OSSs.
6. In the case of PLC diversity, OSS Amherst, OSS Boston, OSS Roanoke, OSS Columbia, OSS College Station, OSS Norman, and OSS Sacramento are the top performing OSSs.

This data is over a lengthy period of time to account for the actual production of the respective OSSs, so if a station is number one, that is a good indicator that those categories of candidates are prevalent in that respective OSSs area of responsibility, independent of what QCP may tell us.

FEMALE	DIVERSITY	OCC-FEMALE	OCC-DIVERSITY	PLC-FEMALE	PLC-DIVERSITY
College Park	Manhattan	College Park	Manhattan	College Park, Amherst	Amherst, Boston
Fairfax	Richmond	Fairfax	Fairfax	Ann Arbor, Roanoke	Roanoke
Tallahassee	Columbia, Miami	Tallahassee, Orlando	Miami	Tallahassee	Columbia
San Diego	Austin	Orange	Austin	College Station	College Station
W. Lafayette	Norman	Twin Cities	Norman, Chicago	W. Lafayette	Norman
Austin	San Diego	Austin, Denver, Fort Worth	Orange	Berkeley, San Diego	Sacramento

Figure 42. Top Performing OSSs. Adapted from MCRC (2019.)

7. Likelihoods

a. Likelihood Overall

Table 21 summarizes a LOGIT regression on the entirety of the dataset (52,234 observations) in order to show the marginal effects of the categories in the left-hand column (MCRC, 2019). In each regression the districts do not change as they are compared to Twelfth MCD as the reference group. The race and gender categories do change; however, as in the first regression black, hispanic, and other to white accessions as the reference group, in regression two and three white, hispanic, and other to black Accessions. In the first two regressions the female coefficient is compared to males as the reference group. In the first regression to understand some of the marginal effects: females are 75 percentage points less likely to commission compared to males; similarly, in regression three males are 75 percentage points more likely to commission than females. In regression one, black, hispanic, and other applicants all have negative likelihoods of commissioning compared to white applicants whereas in regressions two and three, hispanic, white, and other applicants have positive likelihoods of commissioning compared to black applicants.

Table 21. Likelihood of Commissioning Whole Dataset. Adapted from MCRC (2019) data.

Commission	White	Black	Male
First	-0.114**	-0.114**	-0.114**
	(0.041)	(0.041)	(0.041)
Fourth	-0.125**	-0.125**	-0.125**
	(0.043)	(0.043)	(0.043)
Sixth	-0.018	-0.018	-0.018
	(0.045)	(0.045)	(0.045)
Eighth	-0.071	-0.071	-0.071
	(0.045)	(0.045)	(0.045)
Ninth	-0.091*	-0.091*	-0.091*
	(0.044)	(0.044)	(0.044)
Twelth	0.000	0.000	0.000
	(.)	(.)	(.)
black	-0.654***		
	(0.048)		
hispanic	-0.197***	0.458***	0.458***
	(0.039)	(0.059)	(0.059)
female	-0.745***	-0.745***	
	(0.040)	(0.040)	
other	-0.024	0.630***	0.630***
	(0.036)	(0.057)	(0.057)
white		0.654***	0.654***
		(0.048)	(0.048)
male			0.745***
			(0.040)
Constant	-1.417***	-2.071***	-2.816***
	(0.034)	(0.056)	(0.065)
Observations	52234	52234	52234

b. First MCD Likelihood by OSS

In Table 22, all the OSSs in First MCD are included to indicate an applicant's likelihood of making it to commission if they come from that OSS. In the first column the coefficient is simply all of the observations in First MCD 11815, the second column is all of the First MCD Contracts in the dataset 6371, the third column is all of First MCD female contracts 876, and the last column is all of First MCD diversity contracts (MCRC, 2019). Of note, all these regressions are done with no constants for clarity purposes. In the first column, the highest likelihoods come from OSS Boston and OSS Portsmouth while OSS Albany has the lowest. These coefficients do not mean that these OSSs have the most or least overall number of accessions, but that the likelihood of commissioning once they become an observation (declared NWA) is higher or lower. In many ways these coefficients display an OSSs ability to declare NWAs that ultimately commission, which brings in potentially some issues of over or under declaring of NWAs and efficiency ratios. In the second column, OSS Portsmouth are the highest likelihoods while Albany remains

the lowest from this selected dataset of those contracted. In Column 3 and 4 OSS Portsmouth and OSS Albany remain with the highest and lowest likelihoods, respectively.

Table 22. First District All, Contract, Female, Diversity.
Adapted from MCRC (2019) data.

Commission	First==1	Contract=1	Female/Contract	Diversity/Contract
ALBANY	0.135***	0.261***	0.127*	0.183***
	(0.013)	(0.023)	(0.052)	(0.038)
AMHERST	0.224***	0.368***	0.175***	0.240***
	(0.013)	(0.021)	(0.043)	(0.032)
BOSTON	0.234***	0.397***	0.259***	0.331***
	(0.014)	(0.023)	(0.051)	(0.036)
BUFFALO	0.162***	0.273***	0.070	0.137***
	(0.015)	(0.024)	(0.059)	(0.042)
COLLEGE PARK	0.198***	0.387***	0.286***	0.300***
	(0.013)	(0.023)	(0.042)	(0.033)
GARDEN CITY	0.185***	0.322***	0.196***	0.206***
	(0.014)	(0.024)	(0.054)	(0.031)
JERSEY CITY	0.174***	0.304***	0.160**	0.222***
	(0.016)	(0.027)	(0.055)	(0.034)
MANHATTAN	0.154***	0.296***	0.154***	0.202***
	(0.012)	(0.020)	(0.048)	(0.026)
READING	0.147***	0.258***	0.103	0.213***
	(0.014)	(0.024)	(0.062)	(0.045)
PROVIDENCE	0.171***	0.315***	0.152*	0.207***
	(0.014)	(0.024)	(0.067)	(0.044)
NEW BRUNSWICK	0.171***	0.289***	0.148**	0.195***
	(0.014)	(0.023)	(0.050)	(0.032)
NEWARK	0.172***	0.331***	0.262***	0.221***
	(0.014)	(0.026)	(0.060)	(0.048)
PHILADELPHIA	0.195***	0.367***	0.193***	0.343***
	(0.013)	(0.023)	(0.051)	(0.042)
PITTSBURGH	0.170***	0.307***	0.116*	0.241***
	(0.014)	(0.024)	(0.059)	(0.047)
PORTSMOUTH	0.233***	0.417***	0.361***	0.352***
	(0.015)	(0.025)	(0.064)	(0.044)
STATE COLLEGE	0.185***	0.316***	0.212**	0.208***
	(0.015)	(0.025)	(0.067)	(0.050)
SYRACUSE	0.159***	0.320***	0.152**	0.173***
	(0.014)	(0.026)	(0.057)	(0.047)
female	-0.075***	-0.113***		
	(0.009)	(0.016)		
black	-0.075***	-0.115***		
	(0.011)	(0.020)		
hispanic	-0.018	-0.044*		
	(0.011)	(0.018)		
other	-0.031**	-0.072***		
	(0.010)	(0.017)		
Observations	11815	6371	876	2136
R^2	0.168	0.303	0.211	0.247

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

c. Fourth MCD Likelihood by OSS

In Table 23, Fourth MCD has 10190 overall observations, 5090 contracts, 733 female observations, and 1511 diversity observations (MCRC, 2019). In column 1, OSS Fairfax and OSS East Lansing indicate the highest likelihood of commissioning while OSS Lexington has the lowest. In column 2, where the regression is now considering just those who contracted OSS Richmond has the highest likelihood while OSS Lexington has the

lowest. Again, this is an indication that each OST may be restrictive in terms of who they contract. In column 3, when considering those applicants who are female and a contract, OSS Richmond has the highest likelihood of commissioning while OSS Cincinnati is much less likely. In column 4, when considering those applicants who are diversity and a contract, OSS Richmond is again the most likely while OSS Columbus is the lowest.

Table 23. Fourth District All, Contract, Female, Diversity.
Adapted from MCRC (2019) data.

Commission	Fourth	Contract	Female	Diversity
ANN ARBOR	0.193***	0.355***	0.203***	0.286***
	(0.014)	(0.024)	(0.048)	(0.048)
CINCINNATI	0.143***	0.302***	0.069	0.220***
	(0.014)	(0.027)	(0.074)	(0.057)
COLUMBUS	0.181***	0.304***	0.140**	0.126**
	(0.013)	(0.022)	(0.053)	(0.042)
EAST LANSING	0.202***	0.369***	0.240***	0.248***
	(0.014)	(0.024)	(0.056)	(0.041)
FAIRFAX	0.207***	0.388***	0.257***	0.279***
	(0.011)	(0.020)	(0.039)	(0.032)
KENT	0.177***	0.278***	0.161**	0.239***
	(0.015)	(0.024)	(0.053)	(0.046)
LEXINGTON	0.134***	0.273***	0.128*	0.180**
	(0.014)	(0.025)	(0.058)	(0.056)
NASHVILLE	0.151***	0.294***	0.149*	0.252***
	(0.013)	(0.024)	(0.058)	(0.036)
NORFOLK	0.151***	0.374***	0.226**	0.358***
	(0.016)	(0.033)	(0.071)	(0.042)
RALEIGH EAST	0.142***	0.308***	0.178***	0.188***
	(0.011)	(0.022)	(0.046)	(0.040)
RALEIGH WEST	0.132***	0.288***	0.136*	0.238***
	(0.013)	(0.026)	(0.060)	(0.044)
RICHMOND	0.199***	0.429***	0.283***	0.364***
	(0.012)	(0.024)	(0.051)	(0.033)
ROANOKE	0.191***	0.382***	0.246***	0.316***
	(0.011)	(0.020)	(0.049)	(0.035)
female	-0.077***	-0.119***		
	(0.009)	(0.018)		
black	-0.071***	-0.123***		
	(0.011)	(0.021)		
hispanic	-0.013	-0.045		
	(0.014)	(0.026)		
other	0.031**	-0.014		
	(0.012)	(0.020)		
Observations	10190	5090	733	1511
R^2	0.168	0.321	0.213	0.281

d. Sixth MCD Likelihood by OSS

In Table 24, Sixth MCD has 7469 overall observations, 4086 contracts, 592 female contracts, and 1467 diversity contracts (MCRC, 2019). In column 1, from an overall perspective, observations from OSS Orlando have the highest likelihood of commissioning, while those from OSS Kennesaw have the least. In column 2, for those contracted in Sixth MCD those from OSS Columbia has the highest likelihood of commissioning and OSS Kennesaw has the lowest. In column 3, for female contracts those from OSS Gainesville and OSS Tallahassee have the highest likelihood of commissioning while OSS Kennesaw and OSS Miami have the least. In column 4, for diversity contracts those from OSS Columbia have the highest likelihood of commissioning while OSS Baton Rouge and OSS Tuscaloosa have the lowest.

Table 24. Sixth MCD Likelihood by OSS. Adapted from MCRC (2019) data.

Commission	Sixth	Contract	Female	Diversity
ATLANTA	0.176***	0.334***	0.152**	0.212***
	(0.014)	(0.024)	(0.047)	(0.030)
BATON ROUGE	0.177***	0.312***	0.102*	0.160***
	(0.014)	(0.024)	(0.050)	(0.038)
CHARLOTTE	0.183***	0.326***	0.113*	0.276***
	(0.013)	(0.022)	(0.052)	(0.040)
COLUMBIA	0.210***	0.388***	0.200***	0.359***
	(0.012)	(0.020)	(0.044)	(0.036)
GAINESVILLE	0.182***	0.353***	0.261***	0.278***
	(0.015)	(0.026)	(0.056)	(0.043)
KENNESAW	0.163***	0.305***	0.088	0.297***
	(0.015)	(0.026)	(0.065)	(0.045)
MIAMI	0.202***	0.332***	0.089	0.254***
	(0.017)	(0.027)	(0.051)	(0.030)
ORLANDO	0.223***	0.351***	0.250***	0.240***
	(0.014)	(0.022)	(0.046)	(0.031)
TALLAHASSEE	0.186***	0.316***	0.253***	0.215***
	(0.014)	(0.022)	(0.042)	(0.032)
TUSCALOOSA	0.191***	0.348***	0.212***	0.179***
	(0.014)	(0.023)	(0.053)	(0.040)
female	-0.087***	-0.128***		
	(0.011)	(0.020)		
black	-0.060***	-0.091***		
	(0.012)	(0.021)		
hispanic	-0.032*	-0.072**		
	(0.015)	(0.024)		
other	0.001	-0.039		
	(0.016)	(0.025)		
Observations	7469	4086	592	1467
R^2	0.174	0.309	0.203	0.256

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

e. Eighth MCD Likelihood by OSS

In Table 25, Eighth MCD overall has 7045 observations, 3936 contracts, 529 female contracts, and 1590 diversity contracts (MCRC, 2019). In column 1, OSS College Station has the highest likelihood of an observation being commissioned while OSS Houston has the least. In column 2, OSS Denver and OSS College Station have the highest likelihoods of their contracts reaching commissioning while OSS Dallas and OSS Houston have the lowest. In column 3, regarding female contracts and the likelihood of making it to commission, OSS Denver has the highest likelihood while OSS Houston, OSS Lubbock, and OSS Salt Lake City are among the lowest. In column 4, regarding diversity contracts, again OSS Denver has the highest likelihood of making it to commissioning while OSS Phoenix and OSS Houston are the lowest.

Table 25. Eighth MCD Likelihood by OSS. Adapted from MCRC (2019) data.

Commission	Eighth	Contract	Female	Diversity
AUSTIN	0.191***	0.354***	0.211***	0.236***
	(0.014)	(0.023)	(0.045)	(0.028)
COLLEGE STATION	0.246***	0.378***	0.193***	0.305***
	(0.014)	(0.021)	(0.051)	(0.034)
DALLAS	0.153***	0.265***	0.171**	0.207***
	(0.019)	(0.031)	(0.065)	(0.040)
DENVER	0.188***	0.388***	0.271***	0.340***
	(0.014)	(0.025)	(0.055)	(0.044)
FORT COLLINS	0.171***	0.331***	0.206**	0.235***
	(0.014)	(0.024)	(0.066)	(0.047)
FORT WORTH	0.192***	0.338***	0.219***	0.285***
	(0.014)	(0.023)	(0.048)	(0.032)
HOUSTON	0.132***	0.261***	0.104	0.199***
	(0.014)	(0.025)	(0.055)	(0.033)
LUBBOCK	0.177***	0.330***	0.091	0.246***
	(0.015)	(0.026)	(0.052)	(0.031)
PHOENIX	0.185***	0.303***	0.186***	0.195***
	(0.012)	(0.020)	(0.046)	(0.028)
SALT LAKE CITY	0.169***	0.282***	0.106	0.265***
	(0.015)	(0.023)	(0.056)	(0.040)
female	-0.081***	-0.118***		
	(0.012)	(0.021)		
black	-0.071***	-0.114***		
	(0.017)	(0.030)		
hispanic	-0.022	-0.051**		
	(0.012)	(0.019)		
other	-0.001	-0.042*		
	(0.014)	(0.021)		
Observations	7045	3936	529	1590
R^2	0.174	0.303	0.194	0.253

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

f. Ninth MCD Likelihood by OSS

In Table 26, Ninth MCD overall observations is 8293, 4449 contracts, 670 female contracts, and 1387 diversity contracts (MCRC, 2019). In column 1, 2, 3, and 4 observations, contracts, female contracts, and diversity contracts from OSS West Lafayette have the highest likelihood of making it to commissioning in all regressions. In the case of overall observations, contracts, and diversity contracts in columns 1, 2, and 4 OSS Champaign has the lowest likelihood of making it to commissioning while in column 3 for female contracts OSS Norman is the least likely.

Table 26. Ninth MCD Likelihood by OSS. Adapted from MCRC (2019) data.

Commission	Ninth	Contract	Female	Diversity
BLOOMINGTON	0.188***	0.329***	0.279***	0.204***
	(0.014)	(0.024)	(0.058)	(0.045)
CHAMPAIGN	0.151***	0.283***	0.219***	0.188***
	(0.015)	(0.027)	(0.067)	(0.044)
CHICAGO	0.169***	0.341***	0.157***	0.220***
	(0.012)	(0.021)	(0.042)	(0.029)
FARGO	0.200***	0.363***	0.100	0.214***
	(0.023)	(0.038)	(0.085)	(0.067)
IOWA CITY	0.184***	0.314***	0.100	0.289***
	(0.015)	(0.025)	(0.060)	(0.050)
KANSAS CITY	0.196***	0.358***	0.161***	0.256***
	(0.014)	(0.024)	(0.051)	(0.039)
LINCOLN	0.195***	0.302***	0.098	0.253***
	(0.017)	(0.027)	(0.053)	(0.049)
MILWAUKEE	0.193***	0.373***	0.224***	0.258***
	(0.014)	(0.025)	(0.050)	(0.046)
NORMAN	0.160***	0.311***	0.073	0.284***
	(0.015)	(0.026)	(0.060)	(0.033)
SPRINGFIELD	0.164***	0.298***	0.143**	0.257***
	(0.015)	(0.025)	(0.055)	(0.042)
TWIN CITIES	0.192***	0.351***	0.214***	0.245***
	(0.015)	(0.024)	(0.046)	(0.045)
ST LOUIS	0.173***	0.294***	0.179***	0.220***
	(0.014)	(0.023)	(0.047)	(0.040)
W LAFAYETTE	0.205***	0.398***	0.300***	0.342***
	(0.014)	(0.025)	(0.049)	(0.050)
female	-0.080***	-0.130***		
	(0.011)	(0.019)		
black	-0.090***	-0.149***		
	(0.014)	(0.026)		
hispanic	-0.042**	-0.073**		
	(0.014)	(0.025)		
other	0.019	-0.005		
	(0.012)	(0.019)		
Observations	8293	4449	670	1387
R^2	0.172	0.312	0.203	0.253

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

g. Twelfth MCD Likelihood by OSS

In Table 27, the Twelfth MCD has 7422 total observations, 4324 contracts, 637 females, and 2257 diversity (MCRC, 2019). In column 1, OSS Berkeley has the highest likelihood of making it to commissioning for overall observations while OSS Riverside and OSS Spokane are the lowest. In column 2, OSS Berkeley and OSS San Diego have the highest likelihood of making it to commissioning for those contracted while OSS Spokane is the least likely. In column 3, OSS San Diego has the highest likelihood of making it to commissioning for female contracts and OSS Spokane has a resoundingly low likelihood. In column 4, OSS Berkeley has the highest likelihood for diversity contracts making it to commissioning while OSS Spokane is least likely.

Table 27. Twelfth MCD Likelihood by OSS. Adapted from MCRC (2019) data.

Commission	Twelth	Contract	Female	Diversity
BERKELEY	0.244***	0.388***	0.254***	0.327***
	(0.016)	(0.024)	(0.048)	(0.031)
CORVALLIS	0.152***	0.287***	0.176**	0.224***
	(0.015)	(0.024)	(0.055)	(0.035)
LOS ANGELES	0.172***	0.293***	0.172***	0.190***
	(0.016)	(0.025)	(0.052)	(0.029)
ORANGE	0.203***	0.359***	0.259***	0.245***
	(0.014)	(0.023)	(0.044)	(0.025)
RIVERSIDE	0.158***	0.295***	0.140*	0.234***
	(0.015)	(0.025)	(0.060)	(0.030)
SACRAMENTO	0.226***	0.382***	0.188***	0.307***
	(0.014)	(0.023)	(0.044)	(0.029)
SAN DIEGO	0.230***	0.392***	0.286***	0.295***
	(0.014)	(0.022)	(0.045)	(0.027)
SAN JOSE	0.213***	0.359***	0.205***	0.257***
	(0.016)	(0.026)	(0.060)	(0.032)
SPOKANE	0.142***	0.259***	0.047	0.191***
	(0.015)	(0.025)	(0.060)	(0.041)
SANTA BARBARA	0.180***	0.282***	0.086	0.220***
	(0.017)	(0.026)	(0.067)	(0.034)
SEATTLE	0.242***	0.381***	0.207***	0.284***
	(0.015)	(0.023)	(0.052)	(0.029)
female	-0.086***	-0.106***		
	(0.011)	(0.019)		
black	-0.039*	-0.057		
	(0.018)	(0.029)		
hispanic	-0.032**	-0.062***		
	(0.012)	(0.019)		
other	-0.022*	-0.074***		
	(0.011)	(0.017)		
Observations	7422	4324	637	2257
R^2	0.183	0.304	0.220	0.263

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

h. ERR/WRR Likelihood by District for Females and Diversity

In Table 28, the likelihood of female and diversity contracts making it to commissioning is displayed for ERR and WRR by district. In ERR there are 2201 female contracts, 5114 diversity contracts: for WRR 1836 female contracts and 5234 diversity contracts (MCRC, 2019). In column 1, Fourth MCD has the highest likelihood of one of their female contracts making it to commissioning while Sixth MCD has the lowest. Again, for all the coefficients in this table it is more of an indication of efficiency it is making it to commissioning once contracted; not a direct relationship with that district producing most or least number of accessions. In column 2, Fourth MCD has the highest likelihood of a diversity contract making it to commissioning while First MCD is the least likely. In columns 3 and 4, Twelfth MCD has the highest likelihood of both female and diversity contracts making it to commissioning while Eighth MCD has the least.

Table 28. ERR & WRR Likelihood Female/Diversity.
Adapted from MCRC (2019) data.

Commission	ERR-F	ERR-D	WRR-F	WRR-D
First	0.186***	0.233***		
	(0.013)	(0.009)		
Fourth	0.196***	0.264***		
	(0.014)	(0.011)		
Sixth	0.179***	0.244***		
	(0.016)	(0.011)		
Eighth			0.178***	0.246***
			(0.017)	(0.011)
Ninth			0.179***	0.247***
			(0.015)	(0.012)
Twelth			0.198***	0.256***
			(0.015)	(0.009)
Observations	2201	5114	1836	5234
R^2	0.188	0.246	0.186	0.251

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

i. ERR likelihood of Commissioning for Females/Diversity by OSS

In tables 29 and 30, all the OSSs in ERR are listed. This is effectively the same table; however, for purposes of clarity and viewing it is broken down into two separate tables. The totals hold true with Table 28 as the overall female contracts are 2201 and

diversity contracts 5114 for ERR (MCRC, 2019). In column 1, OSS Portsmouth has the highest likelihood of making it to commissioning for all the OSSs in ERR for female contracts while OSS Buffalo and OSS Cincinnati are the lowest. In column 2, OSS Norfolk, OSS Richmond, OSS Roanoke, OSS Columbia, OSS Portsmouth, and OSS Philadelphia are the most likely to have a diversity contract make it to commissioning while OSS Buffalo has the lowest chances.

Table 29. ERR Likelihood by OSS—part 1.
Adapted from MCRC (2019) data.

Commission-ERR	ERR-Female	ERR-Diversity
ALBANY	0.127*	0.183***
AMHERST	0.175***	0.240***
BOSTON	0.259***	0.331***
BUFFALO	0.070	0.137**
COLLEGE PARK	0.286***	0.300***
GARDEN CITY	0.196***	0.206***
JERSEY CITY	0.160**	0.222***
MANHATTAN	0.154**	0.202***
READING	0.103	0.213***
PROVIDENCE	0.152*	0.207***
NEW BRUNSWICK	0.148**	0.195***
NEWARK	0.262***	0.221***
PHILADELPHIA	0.193***	0.343***
PITTSBURGH	0.116*	0.241***
PORTSMOUTH	0.361***	0.352***
STATE COLLEGE	0.212**	0.208***
SYRACUSE	0.152**	0.173***
ANN ARBOR	0.203***	0.286***
CINCINNATI	0.069	0.220***
COLUMBUS	0.140**	0.126**
EAST LANSING	0.240***	0.248***
FAIRFAX	0.257***	0.279***
KENT	0.161**	0.239***
LEXINGTON	0.128*	0.180***

Table 30. ERR Likelihood by OSS. Adapted from MCRC (2019) data.

NASHVILLE	0.149**	0.252***
NORFOLK	0.226**	0.358***
RALEIGH EAST	0.178***	0.188***
RALEIGH WEST	0.136*	0.238***
RICHMOND	0.283***	0.364***
ROANOKE	0.246***	0.316***
ATLANTA	0.152**	0.212***
BATON ROUGE	0.102*	0.160***
CHARLOTTE	0.113*	0.276***
COLUMBIA	0.200***	0.359***
GAINESVILLE	0.261***	0.278***
KENNESAW	0.088	0.297***
MIAMI	0.089	0.254***
ORLANDO	0.250***	0.240***
TALLAHASSEE	0.253***	0.215***
Observations	2201	5114

8. WRR Likelihood of Commissioning for Females/Diversity by OSS

In Tables 31 and 32, all the OSSs in WRR are listed. For ease of viewing and clarity I used two tables, which includes the totals of 1836 female contracts and 5234 diversity contracts for WRR (MCRC, 2019). In column 1, for female contracts OSS West Lafayette has the highest likelihood of making it to commissioning while OSS Spokane has the lowest. In column 2, for diversity contracts OSS West Lafayette has the highest likelihood of making it to commissioning while OSS Champaign has the least.

Table 31. WRR Likelihood by OSS—part 1. Adapted from MCRC (2019) data.

Commissions-WRR	Female	Diversity
AUSTIN	0.211***	0.236***
COLLEGE STATION	0.193***	0.305***
DALLAS	0.171**	0.207***
DENVER	0.271***	0.340***
FORT COLLINS	0.206**	0.235***
FORT WORTH	0.219***	0.285***
HOUSTON	0.104	0.199***
LUBBOCK	0.091	0.246***
PHOENIX	0.186***	0.195***
SALT LAKE CITY	0.106	0.265***
BLOOMINGTON	0.279***	0.204***
CHAMPAIGN	0.219**	0.188***
CHICAGO	0.157***	0.220***
FARGO	0.100	0.214**
IOWA CITY	0.100	0.289***
KANSAS CITY	0.161**	0.256***
LINCOLN	0.098	0.253***

Table 32. WRR Likelihood by OSS. Adapted from MCRC (2019) data.

Commissions-WRR	Female	Diversity
MILWAUKEE	0.224***	0.258***
NORMAN	0.073	0.284***
SPRINGFIELD	0.143**	0.257***
TWIN CITIES	0.214***	0.245***
ST LOUIS	0.179***	0.220***
W LAFAYETTE	0.300***	0.342***
BERKELEY	0.254***	0.327*** (0.031)
CORVALLIS	0.176**	0.224***
LOS ANGELES	0.172***	0.190***
ORANGE	0.259***	0.245***
RIVERSIDE	0.140*	0.234***
SACRAMENTO	0.188***	0.307***
SAN DIEGO	0.286***	0.295***
SAN JOSE	0.205***	0.257***
SPOKANE	0.047	0.191***
SANTA BARBARA	0.086	0.220***
SEATTLE	0.207***	0.284***
Observations	1836	5234
R^2	0.207	0.258

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

9. Predicted Probabilities by MCD

In Figures 43–46, the predicted probabilities of making it to commissioning are listed. In Figure 43, the way to read this is if you are female observation in Fourth MCD your likelihood of commissioning is .092 (the lowest) for this dataset and for Twelfth MCD is .103, which is the highest. In Figure 44, for black observations Fourth MCD has the lowest predicted probability while Sixth and Twelfth MCDs having the highest. In Figure 45, for hispanic observations Fourth MCD has the lowest predicted probability while

Twelfth MCD has the highest. In Figure 46, for other observations First MCD has the lowest predicted probability while Twelfth MCD has the highest (MCRC, 2019).

First	0.093
Fourth	0.092
Sixth	0.101
Eighth	0.096
Ninth	0.096
Twelth	0.103

Figure 43. Female Predicted Probabilities. Adapted from MCRC (2019) data.

First	0.101
Fourth	0.1
Sixth	0.11
Eighth	0.105
Ninth	0.103
Twelth	0.111

Figure 44. Black Predicted Probabilities. Adapted from MCRC (2019) data.

First	0.15
Fourth	0.149
Sixth	0.163
Eighth	0.156
Ninth	0.153
Twelth	0.166

Figure 45. Hispanic Predicted Probabilities. Adapted from MCRC (2019) data.

First	0.098
Fourth	0.172
Sixth	0.188
Eighth	0.18
Ninth	0.177
Twelth	0.191

Figure 46. Other Predicted Probabilities. Adapted MCRC (2019).

B. FINDING#2: CURRENT DISTRICT/OSS OUTPUTS ARE NOT ALIGNED TO PROPER SCALE WITH QCP

1. OCC Females

Figure 47 is a visual depiction of the difference between what the QCP says should be each district's share by percentage, and what that district contributed to overall accessions. The map is not a perfect depiction of district breakdown, because the program used to create it goes by state and in some cases the districts share states. For the purposes of understanding the map, that First MCD is the northeast corner, Fourth MCD is to the south and west, Sixth MCD is the southeast, Eighth MCD is the southwest, Ninth MCD is the midwest, and Twelfth MCD is the west. The darker the map, the better performance against QCP:

1. For white females all ERR Districts performed above QCP and WRR Districts performed below with nothing extraordinarily revealing.
2. In the case of black females Sixth MCD performed well below QCP at -13% and Twelfth MCD performed well above at 14%.
3. In the case of hispanic females First MCD, Sixth MCD, and Eighth MCD performed below and Fourth MCD, Ninth MCD, and Twelfth MCD performed above, not really a Regional pattern.
4. In the case of other Females Twelfth MCD performed well below QCP at -16% and First MCD and Fourth MCD performed significantly above.

The reality is the areas that are sometimes performing below QCP are still producing the highest number of accessions; however, if the QCP is correct, there are many more prospects that are potentially being missed out on.

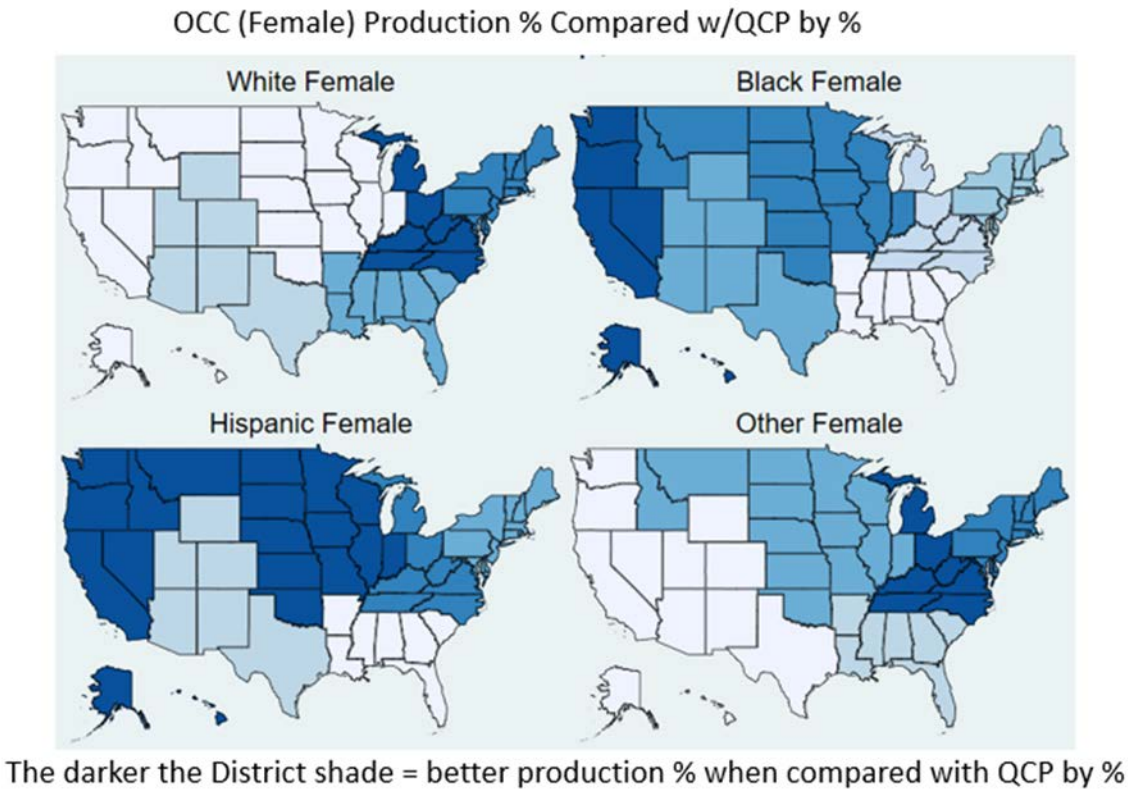

Figure 47. OCC Females Production Compared to QCP by %.
Adapted from MCRC (2019) data.

2. PLC Females

Figure 48 (configured like figure 47):

1. In the case of white females, there are no striking disparities, but First MCD does perform the best compared with QCP while Twelfth MCD has the lowest performance while the other four districts are very close to their QCP. The same cannot be said for black females as Sixth MCD accessions are 26% below what is expected based on QCP apportionment. This is the case given the reality that Sixth MCD still has the most black female accessions, but when compared to QCP there is a significant deficit.
2. In the case of above QCP performance Eight MCD, Twelfth MCD, and First MCD all are doing well, which is depicted by the colors on the map.
3. In the case of hispanic females Sixth and Twelfth MCDs are performing considerably below QCP while First and Fourth MCDs are well above.

4. In the case of the other female category, Ninth MCD is performing well above QCP while Twelfth MCD is performing well below. Again, this is interesting, because Twelfth MCD has the most accessions in the other category, but according to QCP there should be even more.

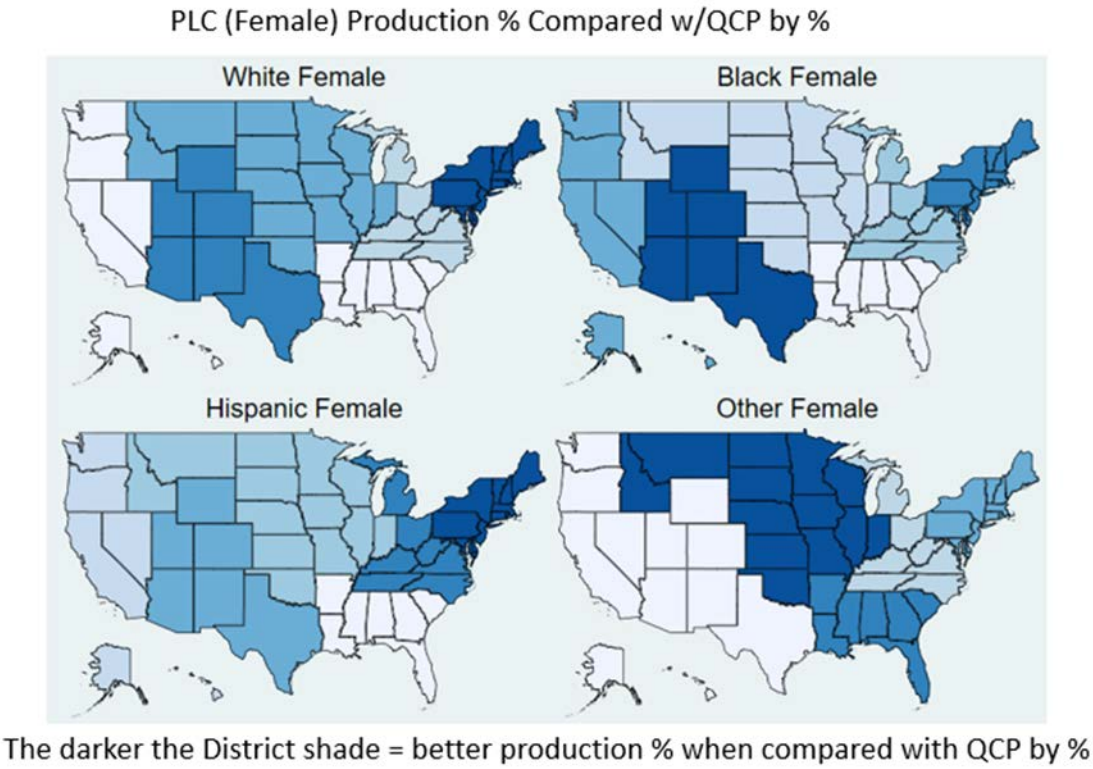

Figure 48. PLC Females Production Compared with QCP by %. Adapted from MCRC (2019) data.

3. OCC Male

Figure 49 (configured like 47, 48)

1. The white male category holds relatively true to QCP as the highest difference either way is 4%.
2. In the black male category, again there are not huge negatives as the highest is -5% for Sixth MCD while the biggest positive is 8% for First MCD.
3. In the hispanic male category, Twelfth MCD has the biggest deficit at -10% while Eighth MCD is the most positive at 8%. Again, this is curious since

Twelfth MCD is a large producer of hispanic accessions, but this data indicates there is still a large proportion of QCP not being accounted for.

4. In the case of other accessions, the largest positive when compared to QCP is Ninth MCD while Twelfth MCD again has the largest negative at -13%. However, the same holds true as with hispanic males, Twelfth MCD is the biggest producer of other accessions, but there is a distinct separation between the reality of the dataset and QCP.

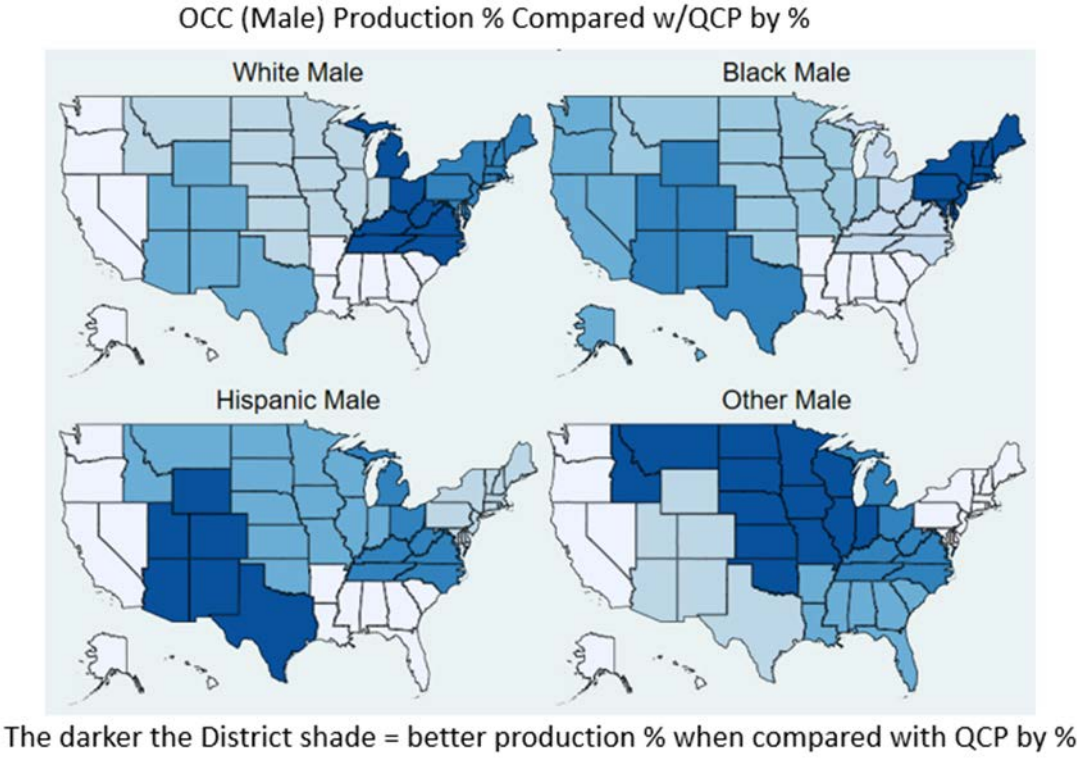

Figure 49. OCC Males Production Compared with QCP by %. Adapted from MCRC (2019) data.

4. PLC Males

Figure 50 (configured like 47, 48, 49)

1. The white male category is very close between accessions and QCP by percentage with the highest being -3% for Ninth MCD.

2. The same can be said for the black male category as the 5% above QCP for Twelfth MCD is the highest either way.

3. In the case of hispanic males -6% for Sixth MCD is the largest gap with all others 4% or less.

4. In the case of other males, First MCD with -9% and Ninth MCD with 10% are cause for concern as they are relatively large gaps between accessions and QCP.

5. Overall, PLC males are probably the closest category in terms of production compared to QCP with the biggest exception in the other category.

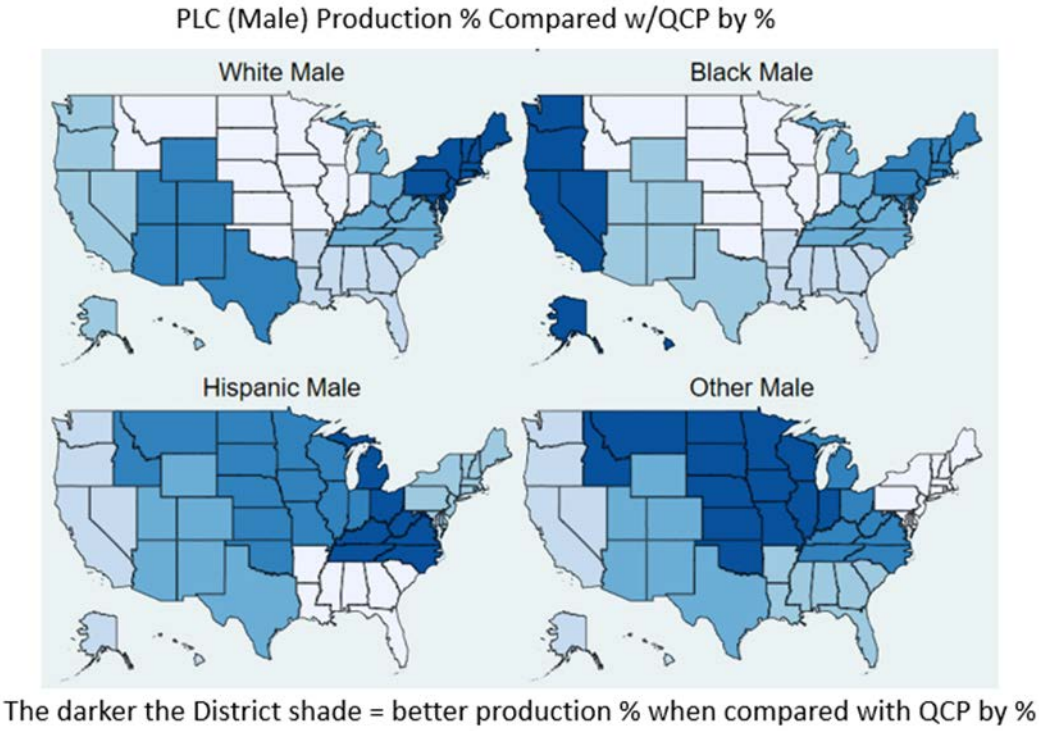

Figure 50. PLC Males Production Compared with QCP by %. Adapted from MCRC (2019) data.

C. FINDING#3: CURRENT DISTRICT /OSS QUALITY ACCESSIONS ARE SPATIALLY VARIED

1. District Accessions by High Test Score and PFT

Figure 51 depicts the proportion of accessions if the applicant is considered a quality accession by the definition of either a 1200 SAT or 28 ACT or 90 AFQT and a 280

or better on the PFT. Twelfth MCD still has the highest amount of diversity accessions with these new criteria; however, the separation is greater (MCRC, 2019).

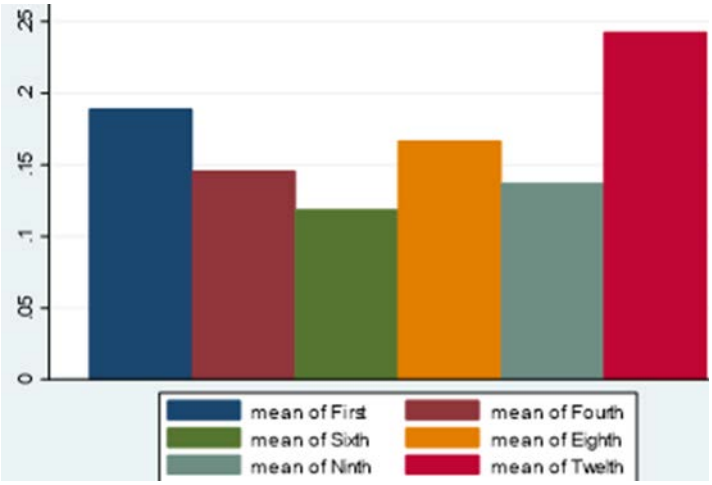

Figure 51. Quality Accessions by District. Adapted from MCRC (2019) data.

2. Likelihood of Accession for Quality versus Regular

Table 33 depicts the marginal effects for the likelihood of accession for all 52,234 observations (MCRC, 2019), displayed by district and female compared to males and diversity compared to no diversity. Again, for clarification, diversity means the applicant is either black or hispanic or other. This is a table of standard regressions with no constant included. The first regression includes all 52,234 observations with Twelfth MCD having the highest coefficient and diversity and females both being negative compared to no diversity and males. In regression two, the sample only includes 29,188 as only quality applicants are included. As a reminder quality applicant are those with a 280 PFT or better and either a greater than 90 AFQT or greater than 28 ACT or greater than 1200 SAT. In this case district coefficients are all higher with Twelfth MCD having the highest and diversity is improved with female remaining the same. In the last two regressions the sample is restricted to those who have an RS waiver for number three and an MCRC waiver for number four. In this study the only thing analyzed as far as waivers is binary; meaning did the applicant have an RS waiver, MCD waiver, region waiver, or MCRC Waiver. The

analysis did not involve the types of waivers at each level as they change over the dataset, so this was not a primary part of the study, but the data is available for potential future studies.

Table 33. Likelihood of Accessions with Quality.
Adapted from MCRC (2019) data.

Commission	All	Quality	RS waiver	MCRC waiver
First	0.178***	0.211***	0.106***	0.073***
	(0.004)	(0.005)	(0.015)	(0.015)
Fourth	0.175***	0.213***	0.117***	0.093***
	(0.004)	(0.006)	(0.015)	(0.016)
Sixth	0.187***	0.214***	0.147***	0.099***
	(0.004)	(0.007)	(0.018)	(0.019)
Eighth	0.185***	0.233***	0.118***	0.098***
	(0.005)	(0.007)	(0.019)	(0.021)
Ninth	0.182***	0.228***	0.121***	0.076***
	(0.004)	(0.006)	(0.016)	(0.017)
Twelth	0.198***	0.237***	0.115***	0.111***
	(0.005)	(0.006)	(0.017)	(0.018)
Diversity	-0.032***	-0.024***	-0.004	-0.003
	(0.003)	(0.005)	(0.013)	(0.014)
female	-0.082***	-0.082***	-0.067**	-0.049**
	(0.004)	(0.007)	(0.021)	(0.017)
Observations	52234	29188	2477	1698
R^2	0.166	0.207	0.116	0.087

Standard errors in parentheses
$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

3. Odds Ratios (Districts)

In Figures 52–56, the odds ratios for female, black, hispanic, white, and other are displayed by district. In the first column of each figure, the odds ratio for the likelihood of commissioning for each category is displayed from an overall perspective (MCRC, 2019). In the second column is the odds ratio for likelihood of commissioning for quality applicants; those with 280 PFT and either a greater than 1200 SAT or greater than 28 ACT or greater than 90 ASVAB. In Figure 52, is the comparison of the likelihood of females commissioning with the reference groups (males by district). In all cases females are less likely to commission than males, but this graphic shows that the quality factor increases the chances. Figure 53 is the comparison of black observations and their likelihood of commissioning compared to rest of the race categories (hispanic, other, white). In each case black observations are less likely to commission; however, when adding the quality

factor in two of the districts the likelihood decreased. In Figure 54, in the comparison of hispanic observations and their likelihood of commissioning comparing to the rest of the race categories (black, other, white). In all but one instance adding the quality factor increased the likelihood of making to commissioning.

In Figure 55, the comparison of other observations and their likelihood of making it to commissioning is compared to the reference group (black, hispanic, white). Notably, in Figure 55 this is the first case where you see mostly positive odds ratios (5 out of 6 districts). Additionally, in all but the sixth district, the quality factor increases the odds. In Figure 56, the comparison of white observations and their likelihood of making it to commissioning is compared to reference group (black, hispanic, other). In this case all odds ratios are positive with Twelfth MCD being the highest with white observations 43% more likely to make it to commission compared to (black, hispanic, and other) (MCRC, 2019). Interestingly, the issue of quality is dramatically different for the white odds ratios as for every district adding the quality factor reduces the likelihood of commissioning.

FirstFemale	0.456	0.503
FourthFemale	0.43	0.498
SixthFemale	0.433	0.476
EighthFemale	0.464	0.645
NinthFemale	0.452	0.573
TwelthFemale	0.515	0.621

Figure 52. Female Odds Ratios with Quality. Adapted from MCRC (2019) data.

FirstBlack	0.475	0.485
FourthBlack	0.434	0.412
SixthBlack	0.588	0.545
EighthBlack	0.498	0.579
NinthBlack	0.365	0.396
TwelthBlack	0.816	0.889

Figure 53. Black Odds Ratios with Quality. Adapted from MCRC (2019) data.

FirstHispanic	0.89	0.911
FourthHispanic	0.893	0.922
SixthHispanic	0.904	0.903
EighthHispanic	0.875	0.94
NinthHispanic	0.698	0.779
TwelthHispanic	0.891	0.914

Figure 54. Hispanic Odds Ratios with Quality. Adapted from MCRC (2019) data.

FirstOther	0.854	0.95
FourthOther	1.28	1.47
SixthOther	1.13	1.07
EighthOther	1.08	1.27
NinthOther	1.2	1.27
TwelthOther	1.05	1.17

Figure 55. Other Odds Ratios with Quality. Adapted from MCRC (2019) data.

FirstWhite	1.3	1.13
FourthWhite	1.2	1.1
SixthWhite	1.37	1.16
EighthWhite	1.33	1.267
NinthWhite	1.31	1.25
TwelthWhite	1.43	1.24

Figure 56. White Odds Ratios with Quality. Adapted MCRC (2019).

D. POTENTIAL BIASES

It is important to discuss the potential biases that may exist in this dataset or regression models specifically.

1. Reverse Causality

In many recruiting models where this a mission and ultimate outcome variable (accessions/contracts) there is likely some type of reverse causality. When there is increased need for more of the outcome and depending on the personalities involved, these factors will have a positive bias on the station/district/region variable. Conversely, in cases where less of that outcome is needed, there will likely be a negative bias on that same variable. This is also true for stations who perform well year by year (independent of QCP) where there will likely be reverse causality with a positive bias. Although these biases likely exist, this study uses models to best estimate the true effect of the overall OSS/district/region performance on diversity and female accessions, by setting them up in the most effective way possible while acknowledging limitations. Some may argue that apportioning the data out by fiscal year would help explain the data, but this was not the method used in this study, as it would go against its main purpose. This study was designed to measure the overall OSSs and district performance, not to single out individual variance based on mission or OSO performance, which could skew the outputs. The study also aims to show OSS production over a large span of data for accessions, for which OSSs are not missioned directly for, so the goal is to avoid focusing on specific years as that can be influenced by better performing OSOs in some cases. The study likely includes some reverse causality, but the hope is over this large span of data it does not dramatically impact the measurement of the true effect of the analysis.

2. Measurement Error

Measurement error surely exists in some aspects of this study. The districts are in fact performing better or worse in certain areas, but one must acknowledge that the district variables are a compilation of the current structure and individual OSS performance. So, for example if an OSS was in Fourth MCD in 2011, but now in First MCD their contributions for the whole dataset are shown as First MCD. This is the only way to have

a clean baseline for data production and to compare to the QCP data that was used. Future work could possibly focus on a deeper analysis, conducted year by year, but that would require a tremendous amount of reconciliation.

The issue of when NWAs are declared is another reason for potential measurement error. This impacts the number of observations and contracts, which results in errors in the variables. Furthermore, if some stations or districts contract applicants in a more scrutinizing way that will also result in error on that variable. In the case of individual observations each one is a declared NWA; however, in some cases the same person can be an NWA twice or contract twice or more, which leaves potential for some error on that variable. Lastly, there is inherent room for error simply due to the MCRISS data: for example, if someone was an NWA and not input, other information in the record excluded, or if the query used to pull this data from MCRISS somehow missed certain records all of these would create errors. The fact that there are some measurement errors in the data is not in question; however, on average it is likely that each OSS and district has something potentially impacting observations those resulting in an evening of things in the long term.

3. Omitted Variable Bias

Omitted variable bias, likely exists in most studies, and this study is no exception. For example, in instances where an OSS had three straights above average performing OSOs that accounts for increases in the accessions and OSS/MCD variables. The OSO themselves relatively their gender/race was not included, because that information was not part of the data and it would be very difficult to codify across the board. The mission itself is not included in the models, because the data did not include it for all the years; moreover, it is based on QCP at least in part, so it is covered in some manner. As mentioned previously it will be a part of reverse causality potentially, but there is no accession mission (just submission, induction). Lastly, the years were not included individually, and they would impact the OSS submissions as when there is a higher MCRC mission that trickles down accordingly. This trickling down should be across the board, so all OSSs should be impacted the same based on years and QCP, so it is not included. Moreover, it takes away from the ability to baseline the Districts over the entire span of data.

VI. CONCLUSION/RECOMMENDATIONS

A. STATUS QUO

Based on the literature review and background, the Marine Corps has been attempting to address the problem of diversity relative to officer composition for several decades. The current belief is that the best way to influence the population to join is by having individual OSOs or recruiters in key locations to represent the Marine Corps. Furthermore, the way to change the longstanding low numbers relative to diversity in the Marine Corps is to increase the number of accessions. Despite these beliefs, from 2006–2016 the numbers did not change significantly, especially in terms of accessions of black officers. This is likely at least in part due to a lack of significant enough changes to the officer recruiting structure perspective. If the belief that having OSOs enhances the ability to attract, recruit, and access quality diverse applicants is valid, then why has the number of OSOs remained basically constant over the decade studied?

B. DISTRIBUTION OF ACCESSIONS ACROSS MCD

First MCD produces the most overall accessions as OSS makeup stands currently. However, the purpose of this study is not simply raw overall accessions, but to determine if the composition and structure of the MCDs and OSSs are setup to maximize diversity and female accessions. For example, First MCD has the most overall OSSs, so evaluating them based on overall number without consideration to the diversity and female impacts of those accessions, comparison against what is expected based on QCP, and metrics of quality would be an incomplete assessment. The other major themes that Sixth MCD is the top area for black accessions, Eighth and Twelfth MCDs for hispanic accessions, and Twelfth MCD for other accessions and overall diversity for that matter are important to note as well as how they compare against expectations of QCP (MCRC, 2019). In each district the proportions for diversity, black, hispanic, other, and female are outlined accordingly.

C. RECOMMENDATIONS

If diversity and female accessions is the goal, this research indicates that combining some of the OSSs and in some cases adding an OSO would increase the span of coverage. In reviewing 10 years of data (MCRC, 2019), we can see that in First MCD for example, OSS Buffalo and OSS Syracuse both produce low proportions in diversity. Therefore, potentially combining them in some manner or adding another may be an option. It is understood that QCP plays a role and this is likely not the fault of any individual OSO. For Fourth MCD, OSS Lexington and OSS Cincinnati could be combined or supplemented in some manner to free up another OSO to move in proximity to OSS Fairfax or OSS Richmond for diversity reasons. In Sixth MCD, a consideration should be given to adding one more OSO to further maximize the black QCP in those areas as there is some gap between production and QCP even though it is top performing district. For Ninth MCD, OSS Lincoln and Twelfth MCD, OSS Spokane both have very low numbers on black accessions. Additionally, in Ninth MCD, OSS Fargo seems to have consistent struggles from a diversity perspective as well. Overall, from a perspective of Twelfth MCD they are huge contributor from a diversity accession perspective and specifically the other category, with still a gap in QCP, so there are more quality and qualified personnel likely being missed in that area.

This study illustrates that there are indeed gaps regarding accessions when compared to the expectations of QCP; specifically, in terms of female minority applicants. Furthermore, more assets must be added in the areas where OSSs are producing the most diversity and female accessions, not simply locating OSOs heavily based on RS geographical alignment. If diversity and female end strength starts with a high quantity and quality accessions, the status quo could be adjusted in some ways to optimize opportunities to achieve the desired results.

LIST OF REFERENCES

Asch, B. J., Buck, C., Klerman, J. A., Kleykamp, M., & Loughran, D. S. (2009). *Military enlistment of Hispanic youth.* RAND. Retrieved May 23, 2019, from https://www.rand.org/pubs/monographs/MG773.html

Choike, D., & Zeliff, M. (2010). *Marine Corps Recruiting Command* [Powerpoint Presentation]. Retrieved from U. S. Department of Justice Community Oriented Policing Services website: http://cops.usdoj.gov.pdf.conference/rand/choikeZeliffPresentation.pdf

Cohn, D., & Caumont, A. (2016). 10 demographic trends that are shaping the U.S. and the world. Retrieved November 11, 2019, from Pew Research Center website: https://www.pewresearch.org/fact-tank/2016/03/31/10-demographic-trends-that-are-shaping-the-u-s-and-the-world/

Dao, J. (2012, November 7). Marine Corps seeks minority and female officers. *The New York Times*. Retrieved from https://www.nytimes.com/2012/11/08/us/marine-corps-seeks-minority-and-female-officers.html

Diversity Portal. (2016, October). *USMC by gender, race, ethnicity*. Retrieved from https://diversity.defense.gov/Portals/51/Documents/Presidential%20Memorandum/20161018%20Abbreviated%20US%20Marine%20Corps%20by%20Gender,%20Race,%20and%20Ethnicity%20v1.0.pdf?ver=2017-01-04-135057-373

Fergerson, J. R. (2016). *The effect of active duty presence on high quality enlisted accessions in the Marine Corps* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/51692

Garza, R. P. (2014). *United States Marine Corps career designation board: Significant factors in predicting selection* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/41381

Habel, G. T. (1997). *Diversity training in the United States Marine Corps*. [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/8274

Johnson, J. A. (2015). *Significant pre-accession factors predicting success or failure during a Marine Corps officer's initial service obligation* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/47970

Malone, L., & Kelley, L. (2015). *The qualified candidate population: Estimating the nation's eligible population for Marine Corps Officer service*. Center for Naval Analyses. Retrieved from www.cna.org/CNA_files/PDF/DRM-2015-U-010289-1Rev.pdf

Sandberg, E. A. (2018). *An analysis of the Marine Corps selection process: Does increased competition lead to increased quality?* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/58360

Sandstrom, M. R. (2011). *Analysis of minority officer recruiting in the U.S. Marine Corps* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/5748

Wade, J. F. (1995). *Survey of Black officers in the Marine Corps: Attitudes and opinions on recruiting, retention, and diversity* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/31394

Walker, M. (2011, August 6). MILITARY: Increasing number of black officers in Marine Corps called overdue. *San Diego Union-Tribune.* .https://www.sandiegouniontribune.com/sdut-military-increasing-number-of-black-officers-in-2011aug06-story.html

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