



Gender Balance and Opportunity across the Detroit Arsenal compared to industry

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Abstract

The purpose of this research paper is to explore the current state of gender balance and leadership opportunities for Arsenal employees and to examine potential improvement possibilities.

The researcher employed a qualitative research approach, conducting interviews with eight senior leaders from the Detroit Arsenal, Defense and non-Defense Industry. The eight leaders were selected based on their experience and subject matter expertise. The sample of participants also provided a gender-balanced assessment. The interviews were recorded, organized, and analyzed through thematic coding to determine common threads.

The findings from the interviews provided three common themes: leadership believes that many improvements have been made, but there is much that can still be done; leaders' perception matches the reality found in the researchers' literature review highlighting the challenges with gender balance moving up the corporate chain; and "Diversity of Thought" is what is necessary throughout any organization to be innovative and forward thinking.

Data acquired through the Detroit Arsenal provides an understanding of the current state and potential areas of improvement. Gender balance across the entire Arsenal workforce scores higher than national occupational averages. However, similar to trends throughout the American workforce that show a declining gender balance as you look higher up the corporate ladder, the Detroit Arsenal data exhibited fewer female supervisors and senior leaders.

The researcher recommends a three-prong approach: (1) commit as Team Detroit Arsenal - the leadership team should understand issues at hand keeping diversity in mind; (2) acknowledge and communicate - senior leaders should understand the current state and communicate this through a campaign; (3) develop and initiate a "Diversity of Thought"

campaign – spreading the information through the workforce while focusing on means of improvement.

Chapter 1: Introduction

Introduction

The scope of this research paper is to examine gender balance and advancement opportunity across the Detroit Arsenal compared national averages and to gain better understanding of workforce diversity improvement options. In October 2019 the United States Army published The Army People Strategy in which GEN McConville (40th Chief of Staff, Army) stated:

“Winning matters, and People are my number one priority. People are our Soldiers - Regular Army, National Guard, and Reserve - their Families, Civilians, and Soldiers for Life - Retirees and Veterans. We win through our people, and people will drive success in our Readiness, Modernization and Reform priorities. We must take care of our people...” (US Army, 2019)

The Army People Strategy was closely followed by updates to Army Regulation 690-12, Equal Employment Opportunity and Diversity. This regulation highlights strategies to balance diversity, increase workforce adaptability, and foster equal opportunity among all Army civilians. (US Army, 2019)

Gender equality has been a popular hot-button issue in the media, politically, and across the national workforce. In 2019, the United States women’s soccer team won the World Cup and eventually a gender discrimination lawsuit regarding pay, locations of play, training, medical treatment, travel and more. (Das, 2019) In addition, the 2016 and 2018 United States election cycles included many races at all levels of government where the gender topic was covered in depth. In 2019, the President of the United States stated “By investing in women around the world, we’re investing in families, we’re investing in prosperity, and we’re investing in peace” (White House, 2019)

This all begs to the question of how well are we doing at the US Army Detroit Arsenal in Warren, Michigan when it comes to gender balance and advancement opportunity. This research paper will investigate the current state of the workforce, the state of industry, best practices, leadership perspective, and opportunities for improvement.

Background

In 1920, the United States ratified the 19th Amendment to the Constitution guaranteed women the right to vote. Since then our country has been slowly moving towards equality across the nation and specifically in the workplace. Studies continue to show that a diverse and balanced workforce will lead to a broader set of thinking with more perspectives influencing the direction of the organization. Over the past 100 years, gender participation and balance in the workforce has made considerable improvements, but is still not balanced and equal in applicable occupations. (Forbes, 2011)

At the US Army Detroit Arsenal, this gender challenge is no different from what our nation experiences and has been a priority for leadership in the past 5 – 10 years. The Detroit Arsenal, located in Warren MI, is the home of several US Army Organizations including the Tank Automotive Command (TACOM), Program Executive Office Combat Support and Combat Service Support (PEO CS & CSS), Program Executive Office Ground Combat Systems (PEO GCS), Ground Vehicle Systems Center (GVSC), Army Contracting Command – Warren (ACC – Warren), Integrated Logistics Services Command (ILSC), and several smaller supporting commands. With the general mission of supporting our troops via all ground equipment, the Arsenal supports more of the US Army equipment than all other locations combined. With such a broad mission set, it drives the question of whether our workforce is diverse enough with the right gender balance to bring different viewpoints for effective success.

Statement of Purpose and Research Questions

The purpose of this research paper is to explore the current state of gender balance and quality of opportunities for all Arsenal employees. For the purposes of maintaining focus on the issue at hand, the discussion of “equal pay for equal work” was not included in this research.

Key questions for this research include:

- 1) What is the current state of workforce gender balance at the Detroit Arsenal (and nationwide)?
- 2) What is the current state of leadership opportunities by gender demographics at the Detroit Arsenal (and nationwide)?
- 3) What are organizations currently doing to improve gender balance and opportunity?
- 4) What obstacles are leaders incurring and how do they feel the current gender balance is affecting their ability to perform their mission?

Objectives and Outcomes

The primary objective of this research is to provide the leadership throughout the Detroit Arsenal a better understanding of how the individual organizations throughout the Arsenal are succeeding in regards to gender balance and opportunity. It will provide each organization with an understanding of their current state compared to that of other organizations at the Arsenal, and to the U.S. as a whole. In addition, the research and qualitative analysis of other companies within industry will provide suggestions and opportunities for improvements. This research will provide awareness to those who need it for continuous improvement, and opportunities for additional research.

Limitations of Study

Gender in the workforce has been a political hot-button issue since the mid-20th century, with discussions heating up greatly through-out 2019. This research looks specifically at the Detroit Arsenal workplace employees and competencies compared to national averages. The qualitative nature of this research limits the inputs to those interviewed, and the data provided by the Equal Employment Office at the Detroit Arsenal.

The topic of gender equality in the workplace has many different aspects, all of which could not be covered in this study. The gender Balance of students coming out of the college/universities and the methods improve that balance are not included in this research. Moreover, the topic of lack of pay and benefits equality between genders, this topic was beyond the scope of this study. Finally, while this study looked at current state of gender balance and opportunity, it did not conduct analysis of predicting future trends.

Chapter 2: Literature Review

Introduction

The topic on gender equality in the workforce is something that has been discussed both look nationally and globally. (Bloomberg, 2019) Global and national reports and studies lead to a plethora of information and data from many credible sources to understand the current state of both gender balance and opportunity in the workforce. In addition we can gain insight into what industry leaders feel the value diversity brings and methods they have utilized to promote.

Per the Merriam-Webster dictionary, balance can be defined as “physical equilibrium or equipoise between contrasting, opposing, or interacting elements”. Opportunity, according to Merriam-Webster is “favorable juncture of circumstances or a good chance for advancement or progress”. Both definitions are concise and straight forward, and can be broken down more in order to be directly related to this paper.

“Balance” for the purposes of this study is whether organizations at the Detroit Arsenal have the optimum equilibrium of male/female ratio to provide diversity of thought. Given the composition of the workforce, and the competencies or occupations that dominate the organization this data then can be compared to the national averages (of male/female split) provided by the United States department of labor. For example, engineering across the United States is roughly eighty percent male coming out of college. Professional administrative assistants are over ninety percent female. To effectively understand current state balance this approach must be utilized to provide an accurate picture.

Advancement “opportunity” can typically be viewed in many different ways across a workforce. Promotions, training, awards, raises, assignments, and more can all be considered opportunity in one way or another. Equal opportunity means people of both genders have the

same circumstances and chances for advancement within the organization. For this research opportunity will be defined as the ability to move upward in the hierarchical workforce. This drives towards an understanding of how the balance increases, decreases, or remains the same as you move up the organizational chain. It is one point to have a balanced and diverse workforce, but another to have diverse middle and senior leadership across an organization.

In addition to the gender balance and opportunity investigation in the research, we must also look at what the organizations are doing to obtain a diverse workforce. The United States Army works to ensure equality in hiring and leadership selection processes, but a wide variety of companies across many different industries have taken steps which might be able to be leveraged. It is important to research the literature to understand what other tactics are being utilized. Although every industry and companies are different, many factors might be applicable and able to be leveraged and used.

Army Doctrine

When it comes to US Army policy and regulations there are three documents that address gender in the workplace. Those documents are The Army People Strategy, the Army Acquisition Human Capital Strategic Plan, and Army Regulation 690-12 (Equal Employment Opportunity and Diversity). All three of these recently published documents discuss the importance of a diverse workforce in broad and general terms. The three documents provide a varying level of important and applicable information to this research.

The Army People Strategy was published in October of 2019. The document, endorsed by the US Army Chief of Staff, the Sergeant Major of the Army, and the Secretary of the Army, focuses on the Soldiers, Army families, Army Civilians, and Soldiers. The Strategy provides a very clear mission statement, “the Total Army will acquire, develop, employ, and retain the

diversity of Soldier and Civilian talent needed to achieve Total Army readiness”. In addition, the strategy focuses on four strategic outcomes; Acquire, Develop, Employ, and Retain Talent. They are specifically looking for diversity of talent that comes from people to build cohesive teams driving better readiness, modernization, and reform. (US Army, 2019)

The second important piece of doctrine is the Army Acquisition Human Capital Strategic Plan, version 2017.1, published in 2017. This document lays out five primary goals for the US Army Acquisition workforce: Workforce Planning, Professional Development, Leadership Development, Employee Engagement, and Communications/Collaboration. The document talks of Workforce Planning specifically through the idea to “Plan, align, recruit, and hire a highly qualified, adaptable, diverse workforce to meet mission requirements”. This acquisition workforce of more than 37,000 professionals is currently at 69% male and 31% female. The strategy drives to improve on those gender balance statistics through the five goals laid out. (US Army Director, Acquisition Career Management Office, 2017)

The final, and most detailed, Army document worth noting is Army Regulation 690-12, Equal Employment Opportunity and Diversity. With more than forty pages of regulation, this document was published in December of 2019. The purpose of this document is to “establish Department of the Army (DA) policies, responsibilities, implementing guidance and procedures for administering the Army’s Equal Employment Opportunity and Diversity program....” In general, the document talks about diversity and how to ensure fairness among the entire workforce. It directs Federal Women’s special emphasis program, which when joined with other programs “affirms the value of workforce diversity and cultivates a culture of inclusion.” The importance of diversity and inclusion are carried throughout the entire document to remain steadfast in the Army values and ethics. (US Army, 2019)

These three documents come from a variety of levels across the US Army, similarly focusing on the importance of a diverse workforce. The recruitment, continuous development, retention, and employee satisfaction are critical to accomplishing the Army mission. Diverse employees of all backgrounds and experiences help to create teams that might have a broader perspective leading to better production. Although these documents do not directly provide objectives or strategies for gender balance, they relate the general goal of a diverse and fair workforce to the values rooted in the organization. The US Army values of Loyalty, Duty, Respect, Selfless Service, Honor, Integrity, and Person Courage (US Army Director, Acquisition Career Management Office, 2017) provide those roots for building an organization of diverse professionals.

United States Bureau of Labor Current State

The United States Bureau of Labor published considerable amounts of data applicable to this study between 2015 and 2017 in three primary reports; Women at Work (US Department of Labor, 2017), Women in the Labor force (US Bureau of Labor, 2018), and the Census American Community Survey (DeWolf, 2017). The first, Women at Work, looks into long term trends with women in the workforce. Women in the Labor force report focuses more on several aspects of the current state. Finally the Census American Community Survey provides insight into the gender distribution across the majority of jobs and competencies in the United States.

The Women at Work report published by the United States Bureau of Labor illustrates how males/females spend their time, pay discrepancies, and future projections. The report examines what makes men and women different from the ground up, leading to workforce differences. One of the most applicable charts in the report is the one shown in Figure 1. This chart depicts the growth of employment of women from 1964 until 2016 across the largest industries in the United

States. The data clearly illustrates the largest growth areas are education and health services, trade and transportation, and government (combined federal, state, and local).

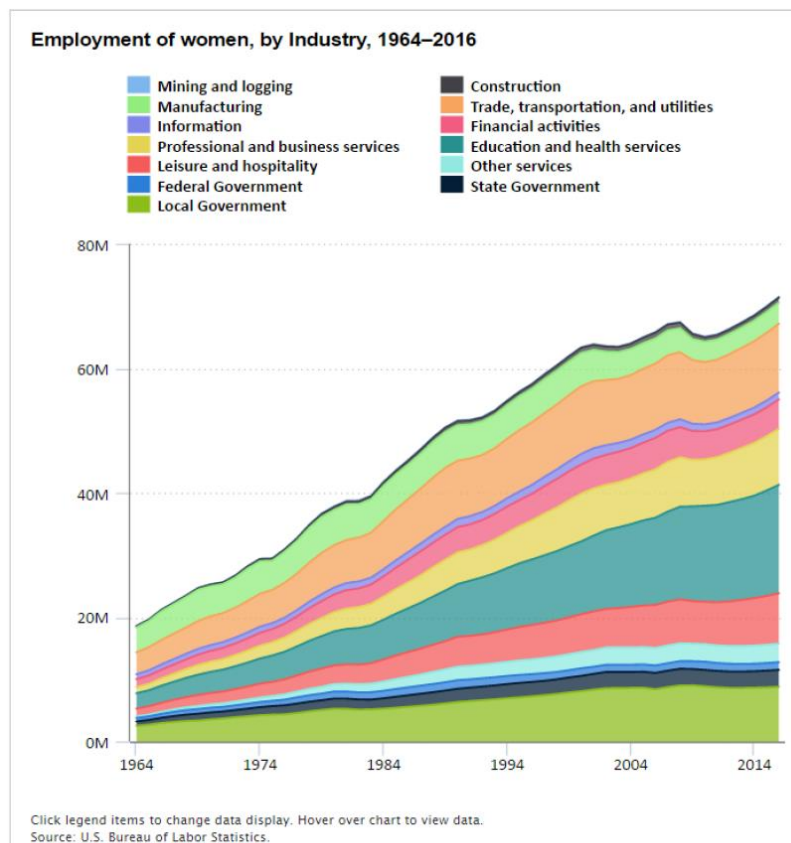


Figure 1: Employment of Women, by Industry (US Department of Labor, 2017)

Figure 2 focuses on the changes in the civilian labor force by educational attainment levels. This chart details data from the past 20 years highlighting a steady increase in education across the female workforce. While the number of women with a High School degree only has cut in half, those with Bachelor's degrees or higher has grown the most. This data alone does not show balance across the national workforce but provides insight into the gains of the female workforce. (US Department of Labor, 2017)

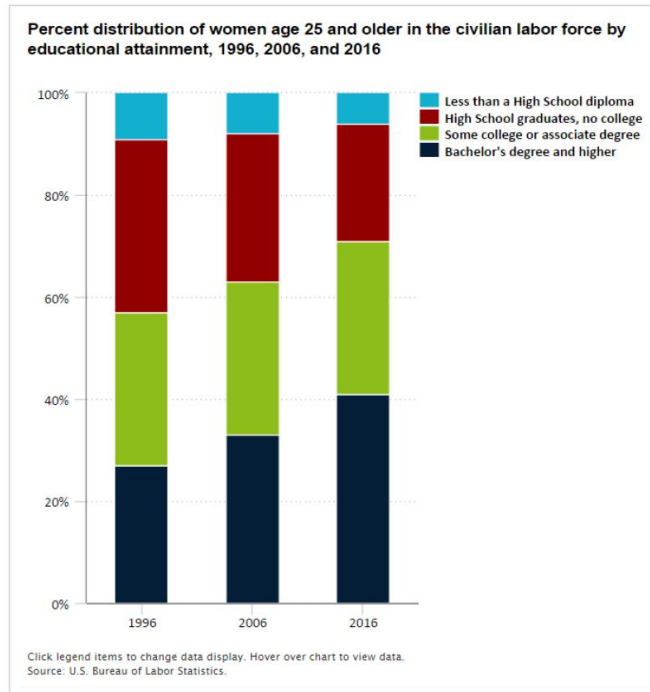


Figure 2: Distribution by education (US Department of Labor, 2017)

The final applicable data, which the report provided, is the future projections of the female workforce in 2024. The chart in Figure 3 depicts how the female workforce continues to grow at rapid rates. Although the labor department expects drops in those aged 45-54 and 16-24, every other age group exhibits increases of 10% and higher. This data supports the idea that the importance of diversity and inclusion will only become more critical into the future. (US Department of Labor, 2017)

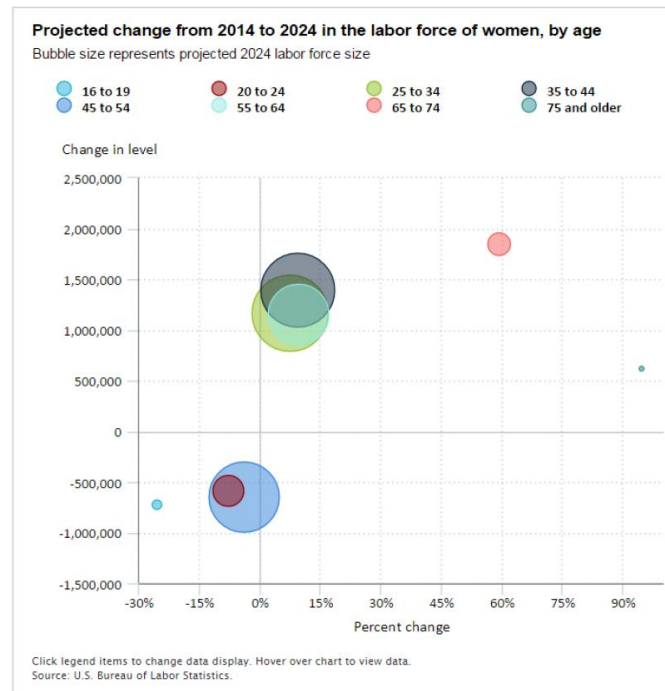


Figure 3: Women's labor force in 2024 (US Department of Labor, 2017)

The second report of interest provided by the United States Bureau of Labor is the Women in the Labor Force Report. This report investigates characteristics that may affect the female workforce, including data across the majority of industries and employment in the United States. The most basic information provided is that of workforce participation. In 2017, 57.0% of all women were participating in the workforce, a 0.2% increase from the year before. In comparison, 67.1% of males participate in the workforce, a number that has remained constant over recent years. On the other end, unemployment rates for females has come down to 4.5%, dropping 0.5% from the previous year and following recent trends. One other piece of data was the fact that marriage and children does bring down the participation rate for women. Those married and/or have children show a 5-15% drops depending on circumstances and ages of children. (US Bureau of Labor, 2018)

There were several other topic areas that provide value in the context of this research paper. Education for women has increased with college degrees moving from 11% of women to 43% of women in less than fifty years. Married couples where both spouses work has increase from 36% to 46% in the past fifty years as well. One final piece of information that stood out in the report was the status of female veterans. As the Detroit Arsenal is a military organization quite often Army veterans seek employment. Females have recently increased to 12% of the veteran workforce with unemployment numbers statistically similar. (US Bureau of Labor, 2018)

The next piece of data from the Bureau of Labor is the Census American Community Survey. This survey illustrates the gender balance across the majority of industries, jobs, and competencies across the United States. The data found in this table is critical to the analysis conducted in later chapters of this research providing the baseline for many key occupations.

Table 1 represents the national breakdown by gender across the seven primary occupations held across the Detroit Arsenal. The complete list can be seen in Appendix F.

Table 1: US Occupation by Gender (US Bureau of Labor, 2018)

	Male	Female
CONTRACTING	47.2%	52.8%
ENGINEERING	87.0%	13.0%
BUDGET	38.0%	62.0%
ADMIN/SECRETARY	5.9%	94.1%
LOGISTICS	64.6%	35.4%
IT	83.2%	16.8%
PROGRAM MANAGEMENT	65.0%	35.0%

Finally, the Bureau of labor provided several key data points in 2017 that will help to understand the current state of women representation in the workforce. This data showed that in 2017 there were 74.6 million women in the civilian labor force, which accounted for roughly 47% of all United States workers. The study also showed that women are more likely to earned a bachelor's degree by the time they turned 29 (34% female, 26% male). Figure 4 illustrates the female representation across several occupations at the high and low ends. Figure 5 focuses more on the gender opportunity factors and looks at percentages of women in different management roles. (DeWolf, 2017)

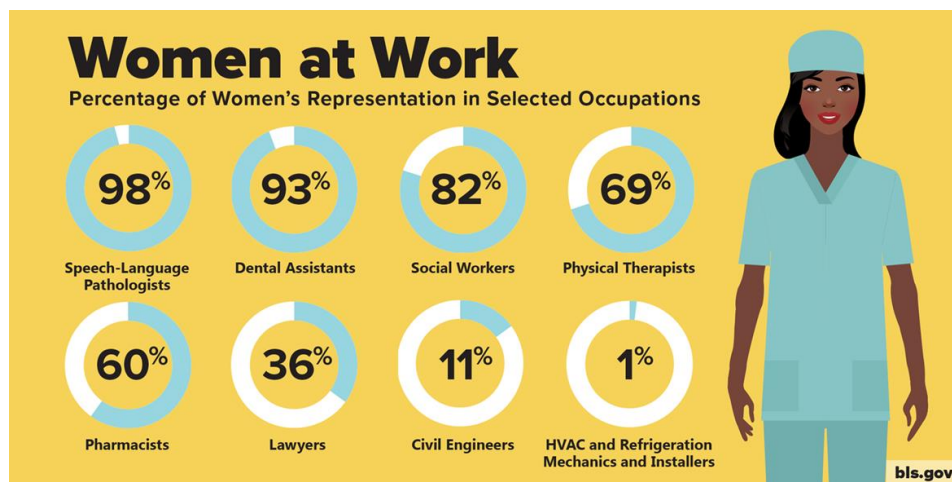


Figure 4: Women at Work Representation (DeWolf, 2017)

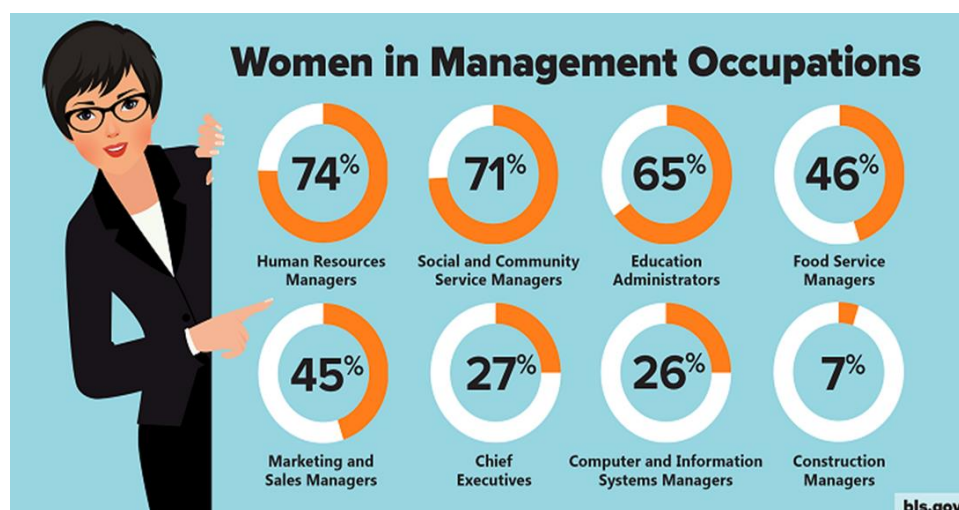


Figure 5: Women in Management Representation (DeWolf, 2017)

National Survey Data and Information

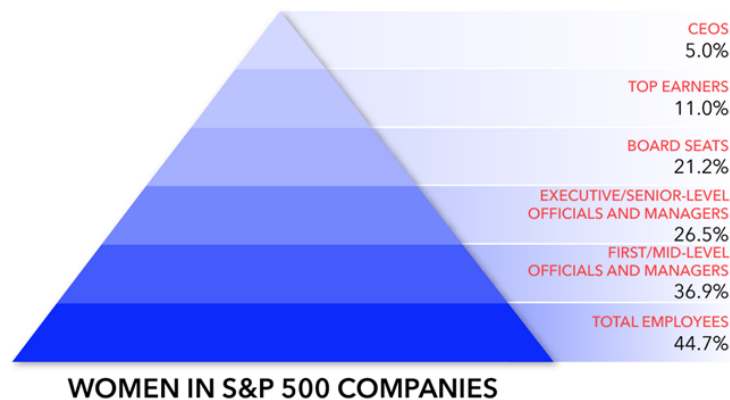
Fortunately for this research paper there has been considerable numbers of studies conducted that shine light into the current state of gender balance and opportunity across industry in general. For the purposes of this study, the methodology involves focusing on critical data and information that leads to further comparisons and analysis later in this paper. These critical data sources include Catalyst – Women in the Workforce (Catalyst, 2020), Equileap Gender Equality Global Report & Ranking (Equileap, 2018 Edition), Government Accountability Office (GAO) reports on women representation on corporate boards (Schulker & Matthews, 2018), Rand Women’s Representation in the US Department of Defense Workforce (Schulker & Matthews, 2018), and McKinsey & Company Women in the Workplace report (McKinsey & Company, 2019). These five reports all provide statistical insight into the current state of gender balance and opportunity.

Catalyst – Women in the Work Force

Catalyst is a nonprofit company that works with CEOs and workplaces across the world looking to support transformational change in regards to diversity and inclusion. (Catalyst, 2020). In June of 2019, Catalyst put out a report titled “Women in the Workforce – United States: Quick Take”. This report provided valuable information on national population, education, labor force, and leadership roles. On the people end, the report states that the overall United States population is becoming more diverse with projections of the nation becoming majority – minority by 2045 (meaning a larger percentage of the total population is from minority categories). In 2018, just under half of all Millennials and Generation Z were people of color. When it comes to education, “women earned more than half of bachelor’s degrees

(57.3%), master's degrees (59.4%), and doctorate degrees (53.5%)". The same stands in regards to technical degrees where women earned more than half of all of them. (Catalyst, 2019)

As of 2018, women represented 46.9% of the total workforce. There has been a decline however in the rates of women participation in the labor force. The women's labor force participation rate hit its highest at 60.0% in 1999 and has declined to 57.1% in 2018. This compares to the men at 69.1% in 2018, also exhibiting a steady decline since the middle of the 20th century. When it comes to leadership, Catalyst stated that in 2018 women held 5.0% of CEO positions, 26.5% of senior level positions, and 36.9% of first line managers. As shown in Figure 6, the number of females drastically drops as you move up the corporate ladder. (Catalyst, 2020)



Sources

Catalyst, *Women CEOs of the S&P 500* (2019).
EY Center for Board Matters, 2016 Top Earners in S&P 500 Companies, Unpublished data.
Catalyst, *2016 Catalyst Census: Women and Men Board Directors* (2017).
U.S. Equal Employment Opportunity Commission (EEOC), Unpublished 2015 S&P 500 EEO-1 data.

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CATALYST.ORG

Figure 6: Women in leadership roles (Catalyst, 2020)

Equileap Gender Equality Global Report & Ranking

Equileap is a company that started in 2016 with the goal of helping gender equality by laying out the data available. (Equileap, 2019) In 2018, Equileap put out a report titled “Gender Equality Global Report & Ranking”. This report provided some insight into global perspectives on gender balance, top scoring companies, and some other insights. The key points the company provided in their report were that there has been some positive change, but it seems to be in sporadic. Many of the top companies have chosen to be world leaders on the topic, but change has not fully taken root throughout the world.

Equileap uses a process of evaluating more than 3,000 companies across 23 countries on 19 separate criteria. These criteria cover gender balance, promotion opportunity, policies, pay, diversity, endorsement, and more. Once all of the data was collected, each company was scored on a scale from zero to one-hundred and provided a scholastic letter grade (A – F). Figure 7 details those high level scores of the top 200 companies they ranked. The figure highlights the number of companies that got each grade in 2018 and compares that to the 2017 numbers. As can be seen, the scores as a whole have improved but there are no scores in the “A” range. (Equileap, 2018 Edition)

COMPARISON OF TOP 200 GRADES 2017 AND 2018

Graph 1

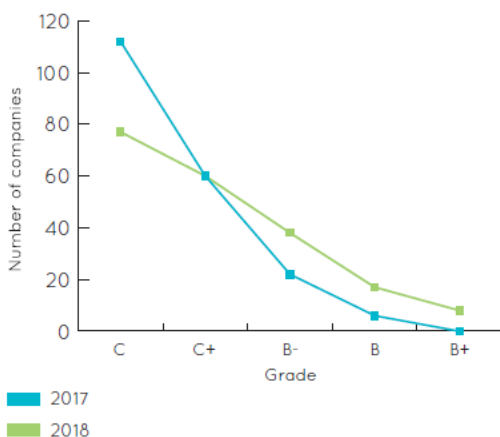


Figure 7: Equileap Grades (Equileap, 2018 Edition)

TOP 200 % COM- PARISONS	BOARD	EXECU- TIVES	SENIOR MANAGE- MENT	WORK- FORCE
Top 200	34.3	25.6	31.9	41.7
Data sample*	27.5	16.3	22.4	37.7
TOTAL SAMPLE	28.7	18.0	25.2	38.5

* Excluding Top 200

Figure 8: Equileap Gender Balance at all Levels (Equileap, 2018 Edition)

One of the areas to highlight from the Equileap report is the data in Figure 8 which highlights the gender balance of the top 200 companies as you move up the corporate chain. This data illustrates that the global workforce in 2018 was 41.7% female with the rate trending downward as you move up the chain to senior management and executive level positions. The report details that when specifically looking at Board level roles, women currently hold 34.3% of those positions improving on last year's 30%.

The report lays out the scores of the top 200 companies to provide insight as to who is excelling in gender equality. Figure 9 details the top ten scoring companies through the Equileap criteria. The data details no real geographical advantages as the top 10 includes companies from North America, Europe, Asia, and Australia.

RANK	COMPANY	COUNTRY	SECTOR	SCORE	GRADE
1	General Motors	USA	Consumer, Cyclical	71	B+
2	L'Oréal	France	Consumer, Non-cyclical	71	B+
3	Kering	France	Consumer, Cyclical	68	B+
4	Merck	USA	Consumer, Non-cyclical	67	B+
5	Starhub	Singapore	Communications	66	B+
6	Tele2	Sweden	Communications	66	B+
7	Westpac	Australia	Financial	66	B+
8	National Australia Bank	Australia	Financial	66	B+
9	Swedbank	Sweden	Financial	65	B
10	JPMorgan Chase	USA	Financial	64	B

Figure 9: Equileap Top 10 Companies (Equileap, 2018 Edition)

One final piece of information to pull from the Equileap report that provides good global perspective is Figure 10, which depicts the average scores per country. The scores are a compilation of 12 criteria publicly available and seven criteria rated through a questionnaire. This series of criteria is then factored in to determine the score on a scale from 0 – 100, and an applicable letter grade. The most interesting aspect of the figure is the considerably lower score for the North American countries of both Canada and the United States. The United States specifically scored a 36%, 18th best among the countries reviewed in this report. (Equileap, 2018 Edition)

COUNTRY AVERAGE

Graph 4: Average score per country (data sample).

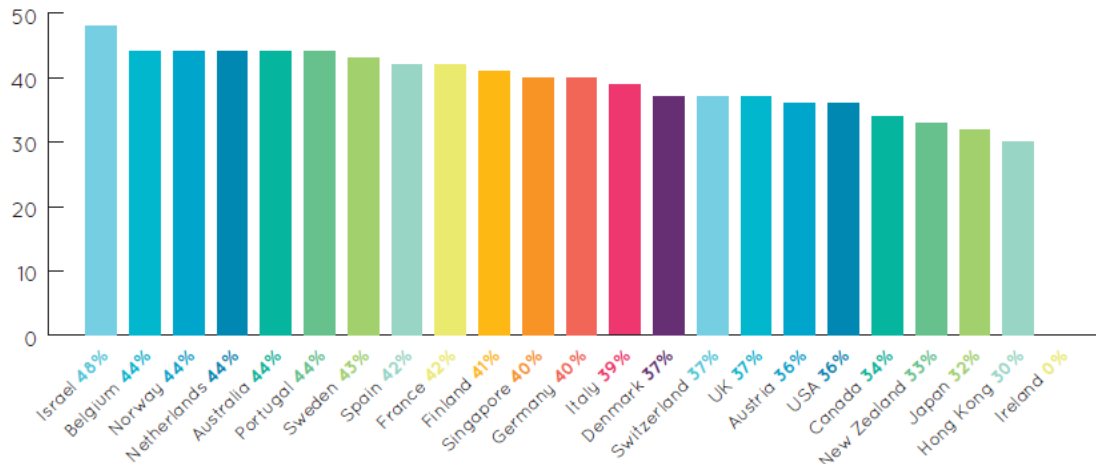
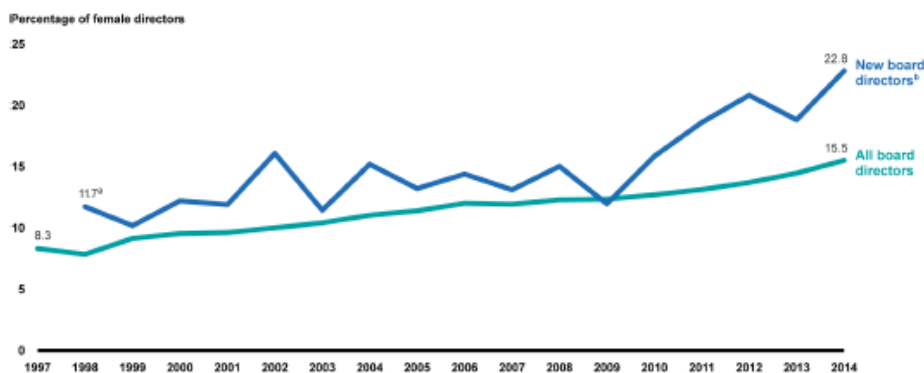


Figure 10: Equileap Country Averages (Equileap, 2018 Edition)

Government Accountability Office (GAO) reports on women representation on corporate boards

The United States GAO produced a report to the House of Representatives in December 2015 that was titled “Strategies to Address Representation of Women Include Federal Disclosure Requirements”. This 38 page report focused on the representation of women on boards of US

Figure 2: Percentage of Women on Corporate Boards and among New Board Directors in the S&P 1500, 1997-2014



Source: GAO analysis of Institutional Shareholder Services Inc. (ISS) data. | GAO-16-30

*We could not determine the number of new board directors in 1997 as we did not have data for 1996.

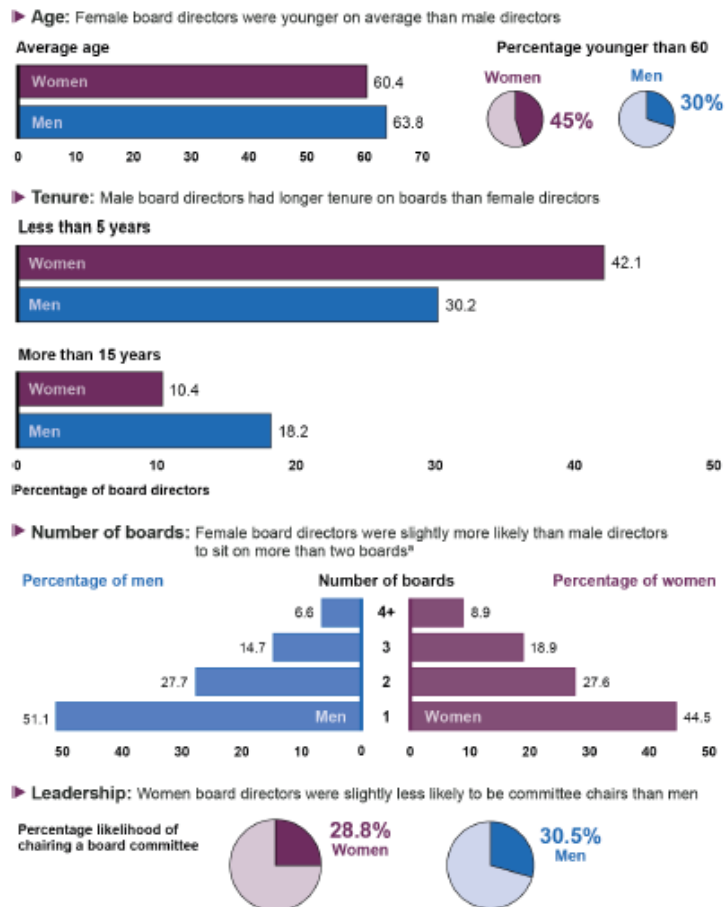
*New board directors refer to directors who joined the board each year.

Figure 11: GAO Women on corporate boards (United States Government Accountability Office (GAO), 2015)

publically traded companies. The report exhibits in Figure 11, in 2014 women comprised close to 15% of corporate board positions, a considerable improvement from roughly 8% in the late 1990s. The figure highlights how the increase has been steady, but not quick. (United States Government Accountability Office (GAO), 2015)

The report included the infographic shown in Figure 12 that provides an extensive amount of applicable information. The figure first depicts age of board members, where females are slightly younger. It then highlights the tenure of those serving on boards, depicting the female's tenure is much shorter on average. The remainder of the information provided looks at serving on multiple boards and leadership positions within those boards. Those two sections exhibit that women are slightly more likely to sit on more than one board and slightly less likely to lead a board committee. The gender split on corporate boards exhibits the difference in male/female participation and selection at the highest levels of American industry.

Figure 5: Male and Female Directors in the S&P 1500 Differ in Certain Characteristics, 2014



Source: GAO analysis of Institutional Shareholder Services Inc. (ISS) data. | GAO-16-30

*This calculation includes other public board appointments outside the S&P 1500.

Figure 12: GAO Infographic (United States Government Accountability Office (GAO), 2015)

The GAO report primarily served both as data collection and analysis of the current state in 2014. It additionally provided proposed strategies to increase the representation of females on corporate boards. Figure 13 depicts 3 separate factors affecting female representation on boards, and a couple potential strategies for each. These strategies include requirement of diversity, targets, increased board sizes, term limits, and more. (United States Government Accountability Office (GAO), 2015)

Table 1: Potential Strategies to Increase Representation of Women on Boards

Factor affecting representation of women on boards	Potential Strategies
Not prioritizing diversity in recruitment efforts	Requiring a diverse slate of candidates to include at least one woman Setting voluntary targets
Lower representation of women in the traditional pipeline for board positions	Expanding board searches
Low turnover of board seats each year	Expanding board size Adopting term limits or age limits Conducting board performance evaluations

Source: GAO analysis of factors and strategies that can affect gender diversity of boards. | GAO-16-30

Figure 13: GAO Recommendations (United States Government Accountability Office (GAO), 2015)

RAND Women’s Representation in the US Department of Defense Workforce

The RAND Corporation is a federally funded research center which provides the Department of Defense with objective fact and data based research. The corporation published a report in 2018 titled “Women’s Representation in the US Department of Defense (DoD) Workforce. Portions of the data is dated as it covers 2010 and 2011, but some trends can be leverage the same in today’s workforce. Although the primary topic around this report had to do specifically with female military veterans and their opportunity in the civilian labor force, there are some key take a ways that are applicable to this research. The report discusses the importance of the federal government leading the way when it comes to promoting workforce gender diversity, and more specifically the large Department of Defense. The report mentions substantial progress over the past two decades in overall representation of women, women representation in senior positions, and gender differences in pay. The report states that even with these gains, specifics vary across different organizations, and the DoD is typically behind other federal agencies.

**Table 2: Rand Federal Gender Breakout
(Schulker & Matthews, 2018)**

Executive Department	2010		2011	
	PW	RCLF	PW	RCLF
Transportation	26.9	46.7	26.8	47.7
Navy	29.5	43.9	28.9	44.1
Air Force	29.6	44.8	29.0	44.8
Homeland Security	32.0	46.8	31.9	46.8
Army	36.8	44.1	36.1	44.3
Energy	38.3	52.0	38.3	52.1
Justice	39.3	51.4	39.1	52.0
Interior	40.1	45.8	40.0	46.2
Agriculture	43.9	50.2	44.0	50.3
Commerce	45.6	47.6	45.4	47.9
DoD	48.8	47.9	48.9	49.1
Labor	49.4	60.9	49.4	60.2
State	57.4	61.2	56.6	61.7
Veterans Affairs	59.6	51.8	59.5	51.8
Housing and Urban Development	60.8	63.7	60.5	62.9
Treasury	62.4	51.1	62.2	49.2
Education	62.9	63.9	62.6	63.6
Health and Human Services	64.7	52.3	64.7	52.0
Government-wide	43.9	44.2	43.6	43.8

SOURCE: OPM, 2012.

NOTE: PW = permanent workforce (permanent employees). Shaded rows indicate the departments included in this analysis: DoD (by which, in this table, we mean only agencies not aligned to the military services, so the departments of the Army, Navy, and Air Force are *not* included in it here, though they are generally elsewhere in this report) and the federal government as a whole. The RCLF benchmark adjusts the CLF to match the occupational mix in each agency, and OPM derives it from decennial census data.

Table 2 highlights those differences across many of the key federal organizations and their gender splits. As previously mentioned, the data is close to 10 years old but can show some of the trends in gender balance through different DoD branches and other federal departments. In the table, “PW” stands for Public Workforce, and “RCLF” stands for Relevant Civilian Labor Force”. As can be seen from the data, the Army actually maintained the highest percentage of female workforce among the defense services. Those numbers, however, pale in comparison to some of the other non-defense federal agencies such as Education or Health and Human Services. This data aligns with some of the Department of Labor data shown that highlights competencies and

occupations and the gender split. Typically the Defense components are highly technical and employ people in those male dominated occupations.

The report summarizes the Office of Diversity Management and Equal Opportunity mission to promote diversity and inclusion across the DoD civilian workforce. The report discusses the fact that there are considerably less female veterans available to hire than male counterparts. Workforce planning, recruitment and onboarding policy changes, and retention measures can all help female representation in the workforce. Although much of the data in this report was a couple years old, the vast majority still remains accurate in today's world. (Schulker & Matthews, 2018)

McKinsey & Company Women in the Workplace

McKinsey & Company is a well-known consulting firm that provides support to private, public, and social organizations globally. In 2019, the consulting company produced the "Women in the Workplace" study which they claim is the largest study of this type in corporate America. Their data comes from more than 600 companies and over 250,000 people surveyed. The report focuses on three primary areas; the state of the pipeline, the culture of work, and the commitment to diversity. Much of their analysis and data were compared to a similar report the company ran five years prior. At the highest level the report pulled out that the country is taking an important step in the right direction with increases of females in leadership roles and increases in companies seeing the value of a diverse workforce. It also states that despite this progress, women remain significantly underrepresented. (McKinsey & Company, 2019)

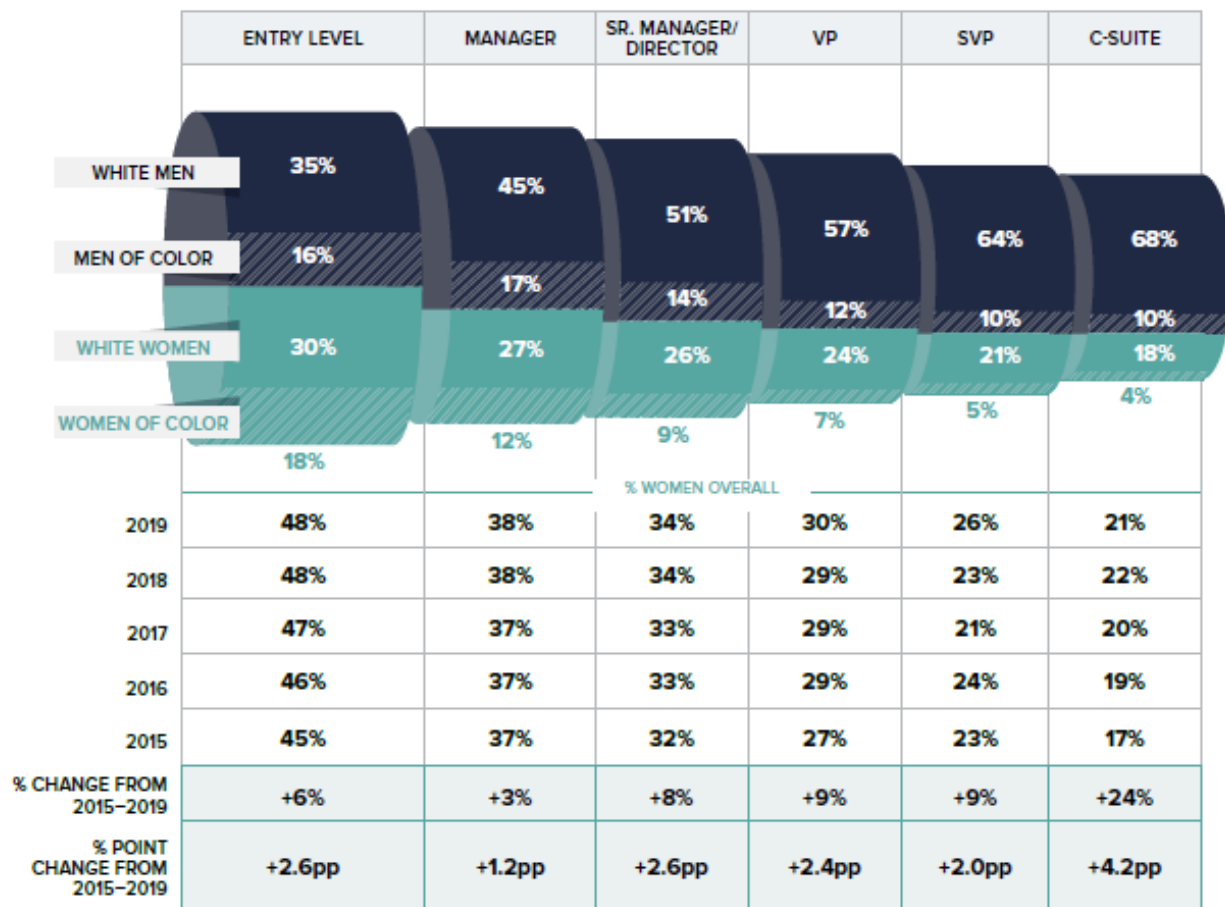
Figure 14 below depicts the pipeline (or corporate ladder) laid out in the McKinsey report. The data details improvements in gender balance at every level in the corporate chain, with the largest improvement in the C-suite at 24% over the past five years. This data also illustrates that

the percentage of females decreases each level you move up within the organization. One final critical piece to pull from Figure 14 is what the report calls the “broken rung”. Focusing in the on the % change, you can see that the lowest amount of change is the step from entry level to manager with only a 3% increase. The report states that for every 100 men promoted/selected as a manager, 72 women are promoted/selected for the same level. (McKinsey & Company, 2019)

REPRESENTATION IN THE CORPORATE PIPELINE BY GENDER AND RACE

% OF EMPLOYEES BY LEVEL IN 2019²

MEN WOMEN



² Due to rounding, represent

Figure 14: McKinsey & Company Corporate Pipeline
(McKinsey & Company, 2019)

The report goes on to discuss the concept of the broken rung in more detail. Figure 16 depicts what HR, women, and men each feel the biggest challenge is to get equal numbers of males and females in leadership roles. As the data illustrates in Figure 14 there is a clear break in the step to manager, but Figure 15 portrays that perception is that is only the 3rd or 4th biggest challenge. The report goes on to suggest five steps companies can take to fix their “broken rung”:



Figure 15: McKinsey: Broken Rung (McKinsey & Company, 2019)

1. Set a Goal for getting more women into first level management
2. Require diverse slates for hiring and promotions
3. Put evaluators through unconscious bias training
4. Establish clear evaluation criteria
5. Put more women in line for the step up to manager

The McKinsey report looks into the culture of work in depth and specifically focuses on equal opportunity and fairness, work-life flexibility, and a safe respectful workplace. The report states that women are less optimistic about their opportunity to advance. This is highlighted below in Figure 16 where several questions were asked to males and females about opportunity. This figure illustrates the disparity in perception and optimism.

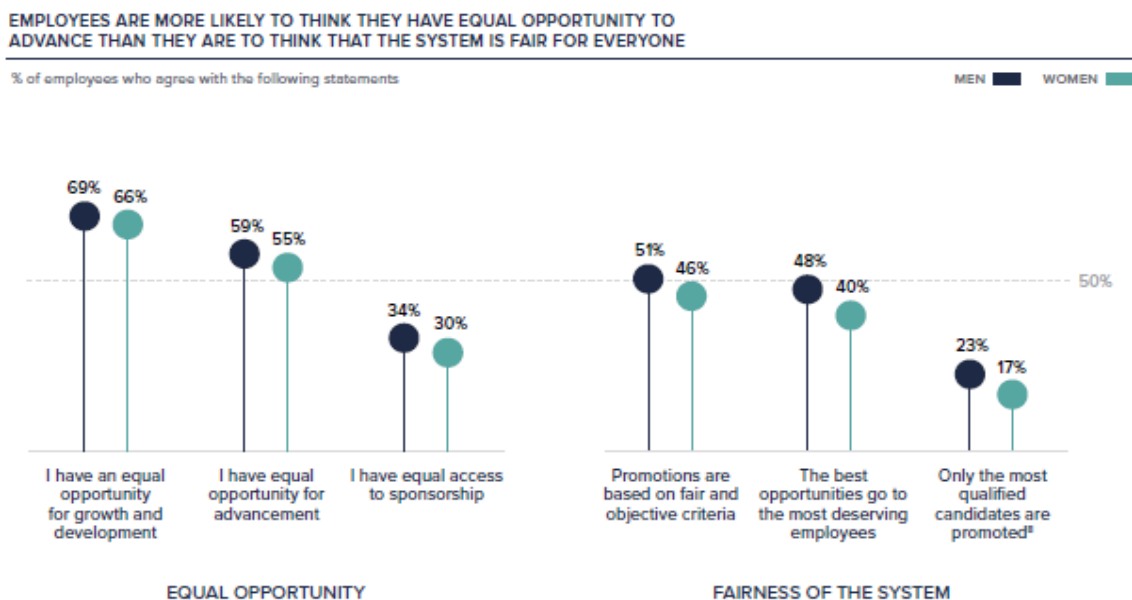


Figure 16: McKinsey Equal Opportunity (McKinsey & Company, 2019)

When looking to the work-life flexibility the clear message is that women feel more negative consequences from taking leave to deal with family related issues. The data details that 81% of women in the workforce have a partner that works full time as well. This is compared to

56% of men in the workforce that have a partner working full time. When it is turned around and viewed through the household responsibilities, 39% of working women feel they do most of the house work as well, while only 11% of men make that claim. The report does mention positive trends with a possible generational shift where the housework is more shared.

The report addresses the importance of leadership to model the right behavior when it comes to gender biased behaviors. Figure 17 depicts an interesting set of data that looks at how often different people notice gender bias, and when they act upon it. As can be seen, women are further down the x-axis, meaning they observe and see bias much more often. Along the y-axis represents the likelihood of objecting once bias is noticed, and the trends focus on the higher the leadership role, the more likely to object.

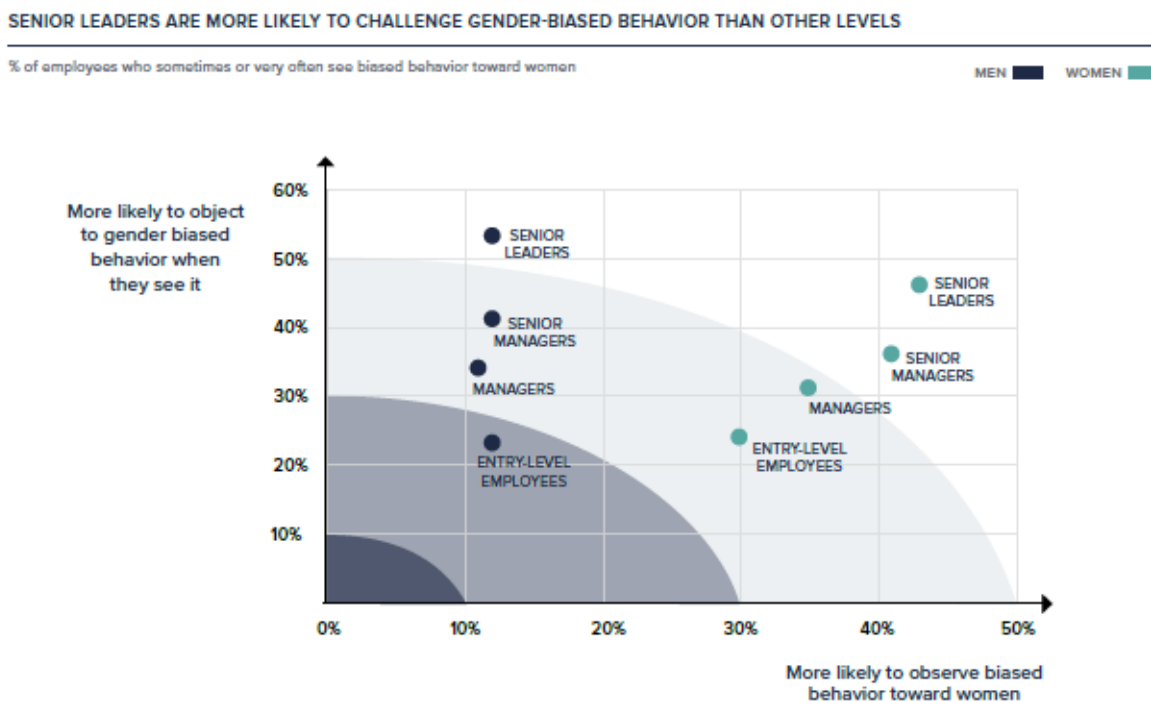


Figure 17: McKinsey Gender Bias (McKinsey & Company, 2019)

The final point to glean from the McKinsey report is that of the commitment to gender diversity. Figure 18 exhibits drastic improvement over the past seven years where companies are highly committed to gender diversity and ensuring it is a corporate priority. The interesting aspect of the chart is that companies see it this way, while employees have not noticed the same improvements. (McKinsey & Company, 2019)

COMMITMENT TO GENDER DIVERSITY HAS RISEN OVER THE LAST FIVE YEARS



Figure 18: McKinsey: Commitment to Diversity (McKinsey & Company, 2019)

The McKinsey report provides considerable in depth data and analysis on the topic of gender opportunity for advancement. The Figures depicted highlight where a problem exists, some of the reasons why it exists, and five steps to fix the issue. The report also highlights the perception gap where company leadership and the employees don't view gender diversity in the same way.

Successes/Improvements Examples

Throughout business and the federal government there have been a number of successes in regard to gender balance and opportunity. For the purpose of this research, they have been narrowed to three categories. First, the researcher investigated some of the industry leaders

citing examples of actions gone well. Second, it is important to look across the DoD organizations to understand what has gone right. Finally, research can be conducted to understand different actions or implementation plans that can be put into place to lead to future success. The components together can lead to a better understanding of concepts and best practices that could be leveraged at the Detroit Arsenal or other locations for continued improvement.

Industry Examples

When looking into industry for success, a great place to start is General Motors (GM) as the top scoring company in the Equileap report noted earlier in this research. GM starts from the top with a female CEO in Mary Barra, followed by a female CFO. GM also has an evenly split board of directors with six males and six females. (Trop, 2018) Much of the new drive with GM was rooted in their 2008 bankruptcy. GM leadership understood that in order to maintain relevancy and past successes, they must have a culture shift where employees share equal transparency and ownership. The company has taken specific looks at pay parity among gender through average salaries of comparable positions. (Taylor, 2019)

Additional high scores in North America on the Equileap report were Bank of America and Johnson & Johnson. As does GM, both of these companies have a large female presence in their C-suite (executive level managers), Bank of America with five and Johnson and Johnson with three. Both of these companies had focus on both gender pay parity and common paid parental leave with males and females. Both of these companies have focused on policies that are appealing to both genders including; flex-time, telework, healthcare options, and part time

options. The leadership of these corporations believe that these are some of the factors helping to push them towards the top. (Taylor, 2019)

Mondo is a large staffing company with offices spread throughout the United States. They recently wrote an article looking at companies in the technology competencies that are doing well with gender equality. Mondo stated that Intel is a leader in the area with their CEO pledging \$300 million in 2015 to increase workforce diversity and seek equal representation. Much of this funding has been invested into recruiting and training efforts. Over the first two and a half years the business saw a 65% improvement in gender representation. General Electric (GE) is similar in the fact they are pushing for an even 50-50 gender ratio. GE has also decided to focus on recruiting and training efforts, and has pushed awareness as well. (Vize, 2018)

In addition to specifically identifying Intel and GE, Mondo mentioned other companies such as Etsy, Facebook, and Microsoft as leaders. Etsy is a tech company with more females than males (one of the few), with 54% women. In addition, Etsy's leadership and management levels are split right down the middle. In 2015 both Facebook and Microsoft announced they had eliminated the gender pay gap. Realizing this is a first step, Mondo recognized that both firms still have much work to do. More and more companies are realizing the importance of gender equality and parity and are prioritizing efforts to gain innovation and representation. (Vize, 2018)

Department of Defense Examples

Recent articles on women in the Department of Defense highlight positive details happening. The first article looks at some occurrences where the Air Force is doing well, and how the Army and Navy can learn from those actions. The second is Army specifically and goes

into Army Acquisition leadership and the recent increase in female participation. These both serve as research based information on how change is possible and how the defense sector of the federal government is seeing some success.

Within the Air Force, gender balance and opportunity starts from the top. The military branch recently appointed their fourth female Secretary, the highest position in the Air Force. In comparison, the Army and Navy have never had a female Secretary. Although some claim the primary reason is purely timing, most experts believe it is due to the technical nature of the position and priority programs. The article discusses how the conversation needs occur regarding how women are equally as qualified for these roles as their male counterparts. Physical strength has nothing to do with the requirements of the job. Two of the women Air Force Secretary's commented that they felt greater gender related pressures as a young leader coming up and felt they faced no gender related hurdles while in that office. One major idea a former Secretary noted was that "It has started to not become a big deal—which is a big deal," in regard to more women taking on leadership roles throughout the Department of Defense. (Cohen, 2019)

Specific to US Army Acquisition leadership, a recent article on the US Army Acquisition Support website highlighted multiple women selected to run major Army programs. The selected women agreed that "A diverse background in the acquisition field is key to standing out to members of the selection board." The leaders mentioned that positive female role models and mentors were also critical in their development of their career and more strong role models are needed. One leader stated that "diversity of thought—regardless of gender—will lead to better problem solving". Since the publishing of this article in 2018, several more females have been board-selected to leadership roles throughout the Army. (Hames, 2018)

These two articles highlight that good movement in gender opportunity within leadership is occurring in the department of defense. The Air Force is leading the way with female leadership at the highest levels. By federal officials appointing a female as the top civilian for the Air Force, leadership is showing reason the advantages of diversity of thought. Within the Army civilian ranks, several women have been appointed to board-selected positions setting examples for those women to follow. By highlighting these examples in published articles, the department of defense is communicating to its workforce and other stakeholders that gender balance and opportunity is a priority.

Actions for future success

Research provides a plethora of books, websites, magazine articles, journals, and more that list suggested improvements when it comes to gender balance and opportunity. Across these studies there are themes and topics that regularly pop up showing some consistency in what experts in the field believe. For this research, these have been narrowed to two articles which provide a great summary of ideas and concepts that are regularly mentioned. The first are five actions provided by Bain & Company (Gordon & Fox, 2019) looking to improve inclusion and diversity. The second article is by Next Generations (Next Generation, 2018) exploring five actions employers can do to work on gender improvements. Each of these lists take a slightly different approach at the topic and provide a variety of possible actions.

Bain & Company is a global consulting firm base out of the United Kingdom with a goal of helping industry solve challenging issues. In 2019, the company at five corporate actions to sustain improvement in inclusion and diversity. Those five actions are:

1. Focus on Facts

2. Lead and Cascade
3. Communicate Intentionally and Inclusively
4. Prioritize Care Giver Support, Flex, and Sponsorship
5. Mitigate Bias Systematically

Each of these five actions look at a different aspect of the topic. The article states it is important to track data on recruitment, promotions, and retention while seeking to understand how the employees feel. Visible and committed leadership can lead to a 2X increase in inclusion and the sense of equal opportunity. This needs to be modeled from the top down and at all levels of the organization. Ensure the corporate mission and vision are inclusive and communicated well. Dual income households are on the rise, leadership must know what is important to its employees. The initiatives of care giver support, flexibility, and sponsorship where recognized across all demographics. Finally, unconscious bias needs to be recognized and discussions in order to mitigate its potential effects. (Gordon & Fox, 2019)

Next Generation is a recruitment services company which provided a solid list of 5 concepts employers can do to improve gender equality in the workplace. The article depicts how, despite large strides being made in the gender discussion, there are key actions that companies can take to drive improvements. This study involved more than 20,000 people across 34 countries leading them to these five concepts:

1. Re-evaluate job specifications for the senior management team;
2. Remove the gender pay gap (and be transparent about it!);
3. Make work/life balance a priority for your employees;
4. Make mentors available to everyone; and

5. Harassment needs to be identified and immediately stopped

The five suggestions to lead towards improvement are straight forward but can be difficult to implement. If a company lacks diversity at the top, they should look again at the job requirements being laid out. Considerable data exists showing that a gender pay gap remains, which must change organizationally. Work/life balance is constantly becoming a more important factor in talent recruitment and retention across all diversity classifications and should be a corporate priority. Women-women and men-men specific mentoring relationships are not critical, but positive mentoring matches regardless of gender help build future leaders. Per the report one in four women have been harassed at some point in their career, this cannot continue to be ignored. (Next Generation, 2018)

These two reports are very different from each other and lay out a wide variety of actions that can be taken by companies and their leadership. Common threads can be pulled, such as the need to recognize that although large steps have been made in the positive direction, and much more can and should be done. Top down leadership and communication is critical for success and shows the organization and its people that diversity is truly a priority. The actions that can be taken are not limited to these two studies as with a quick google search thousands of websites provide options. These websites do provide good representation of some of the common themes recognized on other websites. Prioritizing diversity/inclusion, work life balance, mentorship programs, good leadership, and open communication are the primary themes relevant to this study.

Chapter 3: Research Methodology

Purpose of Study

The primary purpose of this study is to explore the current state of gender balance, and quality of opportunity for all Arsenal employees. Second, the study looks to understand what others throughout industry are doing to improve on both balance and opportunity. In understanding both the current state and the actions taking place through-out corporate America a sense of understanding can be developed. This analysis of qualitative (interviews) and quantitative (interviews and literature/data), provides leadership with the knowledge and understanding of the current state and opportunities for improvement.

Research Questions

- 1) What is the current state of workforce gender balance at the Detroit Arsenal (and nationwide)?
- 2) What is the current state of leadership opportunities by gender demographics at the Detroit Arsenal (and nationwide)?
- 3) What are organizations currently doing to improve gender balance and opportunity?
- 4) What obstacles are leaders incurring and how do they feel the current gender balance is affecting their ability to perform their mission?

Interview Questions

- 1) What is your perception of how effective your organization is with gender balance and opportunity? What barriers do you see for gender balance and opportunity?

- 2) A: Why is it important to have diversified gender parity across your leadership team? Do you have any examples why?

B: Why is it important to have diversified gender parity across your workforce? Do you have any examples why?
- 3) How do you ensure blind equality in the promotion/selection process for leaders?
- 4) Where does the Arsenal (or current place of employment) fit in comparison to other places that you have worked in regards to gender opportunity and balance?
- 5) What Organization Development tools does your team utilize for leader development? Are they available equally across gender? What feedback loops inform if they work or not?
- 6) How is your organization at talent acquisition in respect to gender balance? How could they be better?
- 7) What have you noticed or championed in your current or previous organizations to improve on balance and opportunity?

Research Design Methodology

The research methods in this study include a literature review, qualitative techniques, and data from the Detroit Arsenal. Qualitative data was primarily acquired through interviews with eight leaders with diverse backgrounds. The research process followed the standard technique of design methodology including: selecting a research topic, developing research questions, developing interview questions, conducting the literature review, gaining IRB approval (through Lawrence Technological University), identifying interview participants, obtaining informed

consent, conducting interviews, conducting thematic analysis, and documenting findings and recommendations.

The study demonstrates research conducted through the considerable amount of literature available on the topic to understand the current state of gender balance and advancement opportunity. The literature focused on national averages, studies conducted within different industries, and best practices throughout American industry. The literature provides a great cross section and view of the current state of gender balance and opportunity across the country through a variety of occupations. The literature also provided great examples for what has been working to ensure gender balance and opportunity across corporate leaders.

Data acquisition was the second focus and is included with the findings. The Detroit Arsenal Equal Employment Office provided gender data for every associate located on the Detroit Arsenal. From this data, charts were developed to exhibit the current state across competencies, organizations, and leadership levels. The addition of this data allows the study to provide input into current state compared to the national averages across all of industry.

Interviews focused on the experiences of leaders across both government and the national workforce (or referred to as Industry in this study) looking at the various elements of the study. The eight interviewees brought experience in military, government civilian, industry leaders, and non-profit organizations providing a diversity balance to provide many perspectives. The interview questions were designed to generate discussion and content driving a thematic approach at understanding the topic. These interview questions focused on their view of gender balance and opportunity, their experiences, and programs or activities in which they have led or participated resulting in success.

The perspectives of these leaders that were provided during the interviews provides a very powerful insight into these issues when corroborated with the literature available and current state data. The combination of this information leads to a better understanding of gender balance and advancement opportunities at the Detroit Arsenal, what the important factors in gender diversity are, and concepts and ideas for future improvement.

Data Collection Process

Research was conducted through a qualitative interview approach with eight interviewees from the US Army and Industry. Interview questions were provided in advance to each of the interviewees along with an “Informed Consent” form to participate in accordance with the Lawrence Technological University IRB standards. Interviewees were asked to be recorded via a cellular phone app in order to have the ability to go back to ensure data accuracy. Interviewees were told that their names, positions, or organizations would not be used within the research paper as perspective, trends, and opportunities were what was being investigated. Once the interviews were conducted and data was consolidated, a thematic analysis was conducted to find the common threads and important information from the discussions.

Chapter 4: Findings

Introduction

The purpose of this study is to explore the current state of gender balance and quality of opportunity for all Arsenal employees. This chapter includes data provided by the Equal Employment Office at the Detroit Arsenal, and thematic analyses of interviews conducted with key leaders both internal and external to the United States Government and specifically the Detroit Arsenal. The external interviewees included leaders from the defense industry and other government service providers. These findings through data consolidation and thematic interview analysis can be compared against the information found in the literature review to provide a clear picture on the current state, and possible future improvement areas.

Process for Analyzing and Interpreting Data

The Detroit Arsenal Equal Employment Office provided raw data, which included every associate located at the Detroit Arsenal. This data included pay plan, pay grade, pay plan description, occupational series, position title, gender, and Unit Code (organization). The researcher was able to apply basic pivot tables to build charts showing the current state numbers. In addition to the basic data charts and tables directly from the information provided, the researcher compared this data across organization and competency to that of the United States national gender averages to provide a direct comparison.

Gender across the Detroit Arsenal

The first piece of data to view from the Detroit Arsenal is that of gender breakdowns across the entire workforce. Looking at gender balance first lays the ground work for opportunity. Per the data provided there are currently (as of October 2019) 5,560 associates working within the Detroit Arsenal. Figure 19 depicts that of these more than five thousand employees, there is roughly a one third to two thirds split between females and males.

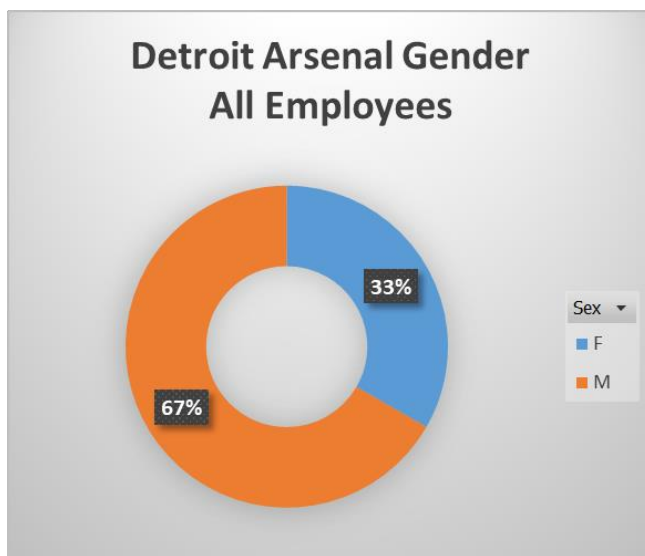


Figure 19: Detroit Arsenal Gender

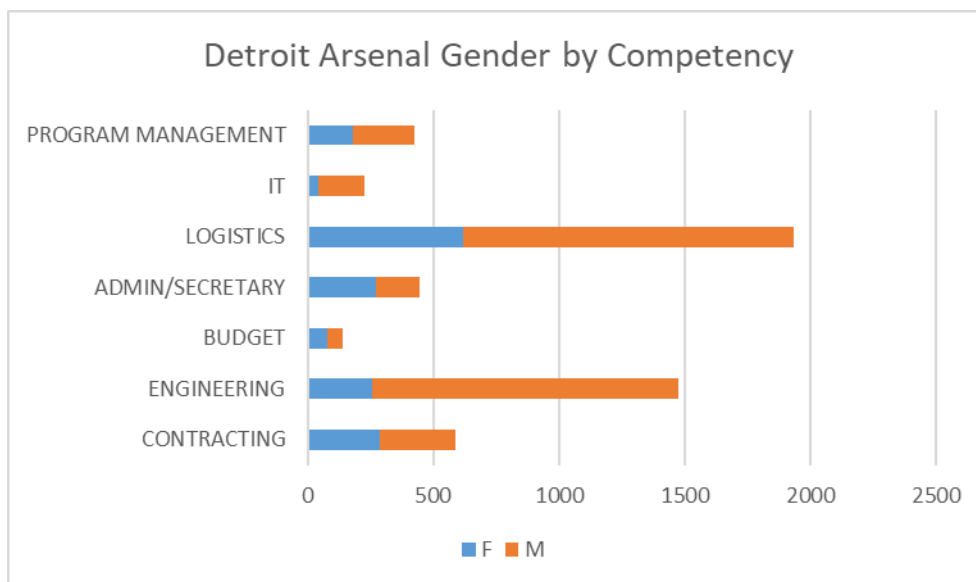


Figure 20: Competency Breakdown

The Detroit Arsenal is a US Army location that conducts operations across a wide variety of research, acquisition, sustainment, and support functions. From this wide variety of efforts there are seven primary competencies of associates that cover ninety three percent of all people working at the Detroit Arsenal. Figure 20 highlights each of those seven competencies with the gender split. As can be seen in the figure, the blue bars show the female associates and the orange bars represent males. The combination of these two stacked bars illustrates the total number of associates in that competency across the Detroit Arsenal. As the majority of the mission conducted is of a technical, programmatic, or sustainment nature, the logistics and engineering competencies account for the majority of employees.

Table 3 exhibits gender diversity at the different organizations at the Detroit Arsenal. ACC Warren is the Army Contracting Command that provides contracting expertise for many organizations across the Arsenal and other Army locations throughout the world. Ground Vehicle Systems Center is the research, development and engineering center for all efforts around ground vehicles and for the support needed. This Center is part of the larger Army Futures Command. The Tank and Automotive Command (TACOM) focuses on logistics, sustainment, the defense industrial base. PEO Combat Support and Combat Service Support (PEO CS & CSS) provides the life-cycle acquisition leadership and support for all ground aspects supporting our combat vehicles and warfighters (including tactical vehicles, bridges, robots, material handling, and much more). Finally, PEO Ground Combat Systems (PEO GCS) provides the life cycle support for all combat vehicles including the Abrams Tank, Bradley Fighting vehicle, Stryker, Self-Propelled Howitzer, Armored Multi-Purpose vehicle, and more.

The data in Table 3 depicts a male heavy workforce across the majority of the organizations. ACC Warren has the highest percentage of female workforce with 49% while GVSC maintains a 22% female workforce. The data shown in Table 3 provides an understanding of the current state, but does not account for the national averages in each occupation. For example, GVSC can expect to be male dominated as the organization primarily employs engineers, a very male dominated occupation.

Table 3: Gender by Organization

	Male		Female	
ACC Warren	288	51%	275	49%
GVSC	1361	78%	389	22%
TACOM	1603	63%	930	37%
PEO CS&CSS	247	64%	140	36%
PEO GCS	196	62%	118	38%

Gender opportunity across the workforce is difficult to assess on the Detroit Arsenal as organizations can potentially be on different pay scales and are typically structured very differently. For this study, the researcher assessed three primary organizational levels: all leadership positions, supervisory positions, and Senior Executive Service positions. Many organizations provide opportunity for advancement without progressing through the supervisory track forcing both leadership and supervision to be considered.



Figure 21: Leadership breakdown

The first piece of data to be considered is the breakdown of leadership positions across the Detroit Arsenal. As mentioned, each organization classifies leaders somewhat differently, so for this study leadership is categorized as a level 4 on the DB/NH scale or a level 14/15 on the GS scale. Some of these high level employees may not be in supervisory positions, but are commonly considered leaders. As can be seen from Figure 21, the female percentage drops from the workforce average of 33% (see figure 2) to 31.67%. These leadership positions constituted roughly ten percent of the workforce at the Detroit Arsenal.

The second aspect of this comparison is looking strictly at supervisory positions and the data from the Arsenal. This portion removes any non-supervisory level 4 on the DB/NH scale or a level 14/15 employees to provide data strictly on those in official roles leading others. As can be seen in Figure 22, the percentage again drops from the 33% female workforce. When compared to Figure 21 of all leadership positions there is a drop from 31.67% to 28.57% female supervisors.

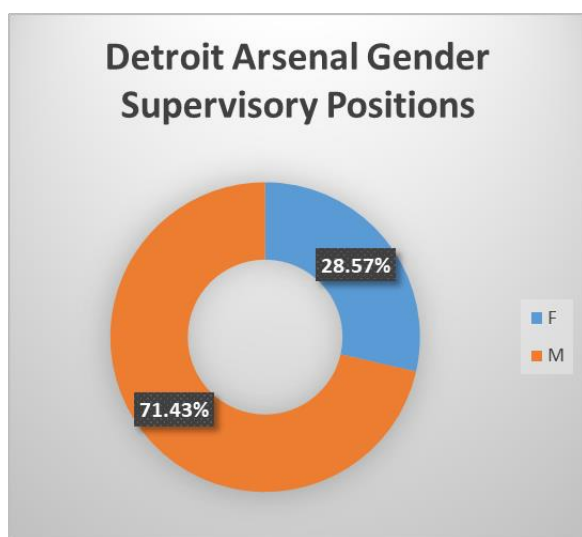


Figure 22: Supervisory Breakdown

The final piece of the leadership opportunity data is looking at the very top civilian leaders, the Senior Executive Service or SES. The Detroit Arsenal currently has 10 SES positions (in no specific order): Deputy Commanding Director, ILSC Director, PEO CS& CSS, Deputy PEO CS&CSS, Deputy PEO GCS, ACC Warren Director, TACOM Legal, GVSC Director, GVSE Systems Integration &Engineering (vacant), and GVSC Research and Development. Figure 23 depicts twenty two percent of the SESs (or two of nine currently filled positions) are females. This data is derived from a very small sample size and one additional male or female would greatly change the percentage.



Figure 23: SES Breakdown

This gender based leadership opportunity information from across the Detroit Arsenal can be summarized below in Table 4. This table depicts each of the primary seven occupation fields through-out the Arsenal and the gender breakout. The data illustrates the differences between the total percentage of females in each occupation field and the supervisory percentages at the Detroit Arsenal. All seven occupations show a slight drop off in female percentages (with

the exception of admin/secretary, there are too few supervisors in this field for any statistical significance. This table also highlights that one singular occupation does not drive the data depicted in Figures 21, 22, and 23 above.

Table 4: Female Percentage by Occupation at Detroit Arsenal

Female Percentage of Detroit Arsenal Workforce		
	All Employees	Supervisory Positions
CONTRACTING	48.4%	46.6%
ENGINEERING	17.3%	14.1%
BUDGET	56.8%	50.0%
ADMIN/SECRETARY	60.7%	N/A
LOGISTICS	32.1%	30.8%
IT	19.1%	9.1%
PROGRAM MANAGEMENT	42.3%	29.2%

With data showing both the current state of balance and opportunity across the Detroit Arsenal, one last aspect is to look at how each of these organizations (and the Arsenal as a whole) are doing compared to the national average. In order to accomplish this, the researcher leveraged data from the literature review in Chapter 2 provided by the United States Department of Labor (US Bureau of Labor, 2018). Utilizing this data, the researcher was able to break down the seven primary competency fields (see Table 4) and compare each to the national average for that specific competency. A score of 1.0 indicates the organizations average is the same as the national averages accounting for the occupations within that organization. A number greater than 1.0 means the organization has more females than the national averages. A number less than 1.0 would show the organization has more males than the national average. Scores above or below don't necessarily mean good or bad; for example ACC Warren scoring a 0.90 means they have slightly more males in a female heavy profession. As can be seen from this data analysis, the Detroit Arsenal is slightly better than the national gender balance averages at 1.04. Four of

the five organizations show tight statistical coefficients either slightly above or below 1.0. The only outlier is GVSC, which has a coefficient of 1.31 meaning they have considerably more females in their workforce than the national averages in the occupations held (mostly engineers at GVSC).

Table 5: Comparison with National Average

Location	Coefficient
ACC Warren	0.90
GVSC	1.31
TACOM	0.96
PEO CS&CSS	1.13
PEO GCS	1.06
Detroit Arsenal	1.04

This comprehensive data and information highlights the current state of gender at the Detroit Arsenal and provides a direct comparison to the national averages of the occupations that dominate the workforce in Warren, MI. Data illustrates that the Arsenal exhibits stronger balance than national averages, but experiences some of the same challenges as others see with advancement opportunity. The data in this chapter is another piece of the broader picture of gender equality which when combined with the literature review and leader interviews provides insight helpful to understand changes that could or should be conducted.

Interview Questions/Responses Using Thematic Analysis

The research into this paper in part came through eight separate interviews conducted with leaders across the Detroit Arsenal, as well as leaders from Industry. This group included four

current and former US Army SES leaders (both male and female), former female leader currently working in industry, a leader from a Fortune 500 company leading in corporate diversity, and other leaders in gender diversity. In addition the group was split how many of each between males and females in attempts to eliminate any gender bias within the thematic analysis. The group was selected to provide differing perspectives, opinions, and viewpoints across a diverse set of leaders. The seven questions selected focus on the interviewees' experiences and perspectives on the current state of their organization as well as their knowledge of the study topic. Distinct themes could be pulled from each individual question.

Interview Question #1:

What is your perception of how your organization is doing with gender balance and opportunity? What barriers do you see?

There was a basic agreement in the responses from all interviewees stating that their organization is much better than in the past, yet could use improvements going into the future. The leadership across the Detroit Arsenal believes that leadership does care and wants to build on continuous improvement. Multiple interviewees recognized that their industries are typically heavily dominated by males, and they believe their organizations are taking actions to move towards improvement. Industry partners had very similar responses but also focused on drastic improvements to their organization over the past couple years.

The majority of interviewees followed up the positive comments regarding the current state of workforce balance by noting that balance drops off quickly as you move up the corporate chain with leadership roles being more male dominated. The leaders across every organization at the Detroit Arsenal mentioned a little disparity at the first line supervisor level, but large differences once you move beyond that to Division Chief or Product Director levels which is

consistent with the Detroit Arsenal data provided earlier in this study. Examples were provided by many leaders discussing those challenges and the improvements continuing to be made around diversity in general.

Several barriers to gender balance and opportunity were mentioned that highlighted some general themes. First and foremost was the societal challenge of advancing one's career while taking care of family. Mother roles in the family were mentioned on multiple occasions both around child birth and traditional roles in the home. In the career competencies across the Detroit Arsenal (and Industry interviews), travel was a major part of many leadership roles and often that can be more difficult for a family woman. One final barrier that was mentioned for lack of female leaders was the idea that fewer women were applying, this was attributed both to the mother roles mentioned above and the fear of rejection again (and the existing culture of males being selected).

Interview Question #2:

A: Why is it important to have diversified gender parity across your leadership team?

Do you have any examples why?

B: Why is it important to have diversified gender parity across your workforce? Do you have any examples why?

This question was asked to the interviewees in two parts, looking at the importance of diversity both across leadership and the general workforce. The intent of providing a part A and B to the question was to understand if leaders saw this any differently. Thematically, this separate line of questioning can be dismissed as the interviewees unanimously stated that the

reasons of importance were generally the same when looking at either leadership or the entire workforce.

This question brought one statement that was brought up by more than half of the interviewees, but insinuated by all. That is that every organization doesn't necessarily need a complete balance in gender, but actually needs "Diversity of Thought." This idea was explained as needing different types of people with different experience and backgrounds that bring a different way of thinking to the organization. There is no arguing that men and women think differently, but this can also be said for race, religion, age, and more. "Diversity of Thought" brings in different perspective and paradigms that might be missed or ignored if you have a team of similar people.

It was brought up that when you lack that diversity of thought and different types of people, others across the organization might feel less comfortable coming forward with their ideas and opinions. Silencing those diverse voices can spread throughout an organization and can cost the team many great ideas that may have been developed. A couple of the interviewees mentioned that women are traditionally more soft-skill oriented, and may view a personnel situation very differently.

Interview Question #3:

How do you ensure blind equality in the promotion/selection process for leaders?

The majority of those interviewed expressed the current usage at the Detroit Arsenal of interview panels for the selection of leaders. Most of leaders at the Detroit Arsenal felt the process is as blind as possible most of the time. For those in industry there was a variety of

responses from interview panels to grooming future leaders at all levels of the organization. All interviewees focused on the current state first, and a few added discussion around differing approaches.

At the Detroit Arsenal the majority of commands use multiple layer process in selecting leaders. The first step is typically a resume review, focusing on certain criteria. One leader mentioned the concept of blacking out names on the resume to remove any unconscious bias, but also admitted this was most likely not possible. This is then followed by an interview panel of typically three people. Each organization has slightly different rules around the make-up of that panel, but some require females, others require racial diversity, and others require organizational diversity (i.e. including leaders from outside organizations). At times a third step of a senior leader interview might be added to ensure any bias can be removed and selection with high level strategic priorities are taken into account. The belief by most was that favoritism, pre-selection, and pet peeves were all still considered in the process, but this continues to get better all of the time. Blind equality is not perfect in the processes held at the Detroit Arsenal, but are a good process is in place with continued improvement ongoing.

Across corporate industry, leader selection can be very different. Companies all approach this differently and subsequently have different strengths and weaknesses in the process. One company focused on grooming leaders for future roles on a daily basis. They stated how this was built into their daily approach. Another mentioned using interview panels very similar to those used across the Detroit Arsenal. All agreed that diversity must be a consideration and action must be taken to eliminate unconscious bias.

Interview Question #4:

Where does the Arsenal (or current place of employment) fit in comparison to other places that you have worked in regards to gender opportunity and balance?

Thematically this was the most difficult question to summarize due to the wide variety of experience the interviewees brought to the table. Several of those interviewed were US Army veterans and came up in a very male-dominated workforce. Others interviewed developed their early career in completely different fields, some dominated by females. One constant among those interviewed at the Detroit Arsenal was that all felt we were doing very well compared to other similar organizations across the Army when it comes to balance. Opportunity in advancement could use ongoing improvement as leaders mentioned that gender balance quickly falls off when you look up the leadership chain. It was mentioned that different fields and competencies were more balanced than others as you look across the organization. The interviewee mentioned examples of this were more male engineers or more female administrative executives. This topic was mentioned in this studies literature review since the numbers need to be viewed relative to the national averages (i.e. large majority of engineers coming out of college are male).

Interview Question #5:

What Organization Development tools does your team utilize for leader development? Are they available equally across gender? What feedback loops inform if they work or not?

This question drew a very common theme that almost all organizations are putting greater effort into leadership development at all levels of the organization. Where leadership courses were in the past only offered to senior leaders (and subsequently mostly males), now they are

being offered across the entire workforce in some cases. Although some of the government leaders mentioned a lack of Army Civilian leadership program (although Military as consistently taught that), they mentioned the Detroit Arsenal as a location offers courses better than most. Industry also mentioned a wide variety of tools including leadership courses, mentoring, and leadership grooming. Every single leader interviewed stated that these opportunities were provided equally independent of gender as selection criteria was either open to all or based on performance.

At the Detroit Arsenal, GVSC and PEO GCS were brought up as organizations that have brought in leadership courses of all types. TACOM and ILSC have a formalized leadership development session, lunch n learns, leadership all-calls, and future mentoring opportunities. These leadership and organization development courses are finally more known throughout the workforce and have been regularly implemented at all levels. Shadow and mentorship programs were often mentioned with differing results and expectations. All of these work towards improvement regardless of gender.

Industry, again, has many different approaches to leadership development. One interviewee mentioned they contract in courses regularly and the audience for the course is very dependent on need and goals. Another interviewee mentioned a very specific leadership framework across multiple levels that drives leadership learning through every aspect of the company, improving behaviors and fundamentals. This leadership framework put specific focus on diversity. Others mentioned different approaches across several companies they have worked at, all of which drive towards improved leadership regardless of gender, race, religion, age, etc.

Interview Question #6:

Is your organization doing well at talent acquisition in respect to gender balance? How could we do better?

This question brought a wide variety of responses with the general theme that the interviewees felt their organization was strong in diverse talent acquisition. Several mentioned that we recruit associates based on merit and do not / should not focus on their personal attributes. Others mentioned specific focus on hiring from diverse colleges or looking for talent across non-standard methods such as targeted recruiting. The general consensus was that it is important to be cognizant of who we are hiring with diversity of thought, but ultimately they want the most qualified person for the job to be selected and brought on board.

Interview Question #7:

What have you have noticed or championed in your current or previous organizations to improve gender balance and opportunity?

Leaders noted that mentoring, training opportunities, interest groups, diversity organizations, and caring about people were all that would help improve gender balance and opportunity. Mentoring came up within every interview conducted in the context that often there are not enough senior female leaders to mentor the up-and-comers (and often females feel more comfortable with female mentors). Several leaders from the Detroit area mentioned the Women in Defense group as a great organization focused on bringing the community together and providing opportunity for some of those mentor relationships. A consistent thread was found around simply inviting future leaders of all genders to the table. The diversity of thought that

can be brought will help to develop the workforce and help to let people grow providing the different perspective that can help.

Chapter 5: Conclusions and Recommendations

Introduction

This research drawn from the literature review, available data, and leadership interviews has depicted the current state and suggested possible actions to improve gender balance and opportunity. The literature review focused on current Army doctrine and policy, industry successes, and expert suggested improvements. The data analysis analyzed at the current state of the Detroit Arsenal and compared that to the national averages provided through the Department of Labor. Finally the leadership interviews studied the perspectives and opinions of senior leaders both at the Detroit Arsenal and industry leaders. This research provides the baseline for this study's findings, conclusions, and recommendations.

Summary of Findings

This literature review provided great insight into the world today through the gender discussion. The general consensus is that the world (and more specifically the United States), has come tremendously far in terms of gender balance and opportunity in the workforce, but still has a long ways to go. Army policy and regulation talk to the need for diversity and inclusion throughout the workforce. These documents focus on talent acquisition, continuous development, and retention and providing the workforce environment to be attractive to all diverse qualified people. All of this is rooted in the Army Values.

The Department of Labor surveys and assessments lead to a great understanding of the current state across the country. Data provided by the Department of Labor details male/female splits across all of the largest occupations in the United States. In regard to the Detroit Arsenal, the data highlights that most career fields are typically male-dominated. Additionally it discusses the education levels throughout our country, stating that females have the higher

percentage of degrees coming out of college. One final piece from the Department of Labor was researching where women held the leadership roles... showing that Human Resources and Social roles had the highest percentage of female leadership.

Over recent years, several third party companies and consultants have conducted studies on the state of gender balance and opportunity. The most common theme among all of these studies is that as you move up the corporate ladder, then balance drastically drops off quickly. Several surveys point to the “broken rung” or the step from employee to first level manager as the largest issue. The McKinsey study goes even further in recognizing that when interviewing both males and females, the step to first line manager is not one of their top perceived issues. Finally, these surveys pulled out some aspects of unconscious bias, and the need for people to recognize there is an issue and continued focus is necessary. All of these show how vast improvements have been made in gender balance and opportunity, but much remains to be done.

Research details that companies like General Motors, Intel, the US Air Force and others are leading the way in terms of gender advancement. General Motors has a strong female CEO in Marry Barra who promotes female leadership through the company. The United States Air Force has now had four female Secretaries (compared to zero for the Army and Navy). Intel has invested more than \$300M into diversity and inclusion efforts. Again, common threads can be pulled from these successful organizations. First, identifying that the issue exists while addressing it head on is the first critical step in the path. Second, availability of female leaders as mentors drives improvement throughout the organization. Finally, investments in the employees (of all diversities) and their careers is important for both recruitment and retention. Several companies mentioned the need for Diversity of Thought in order to be a leader in their industry.

Finally, the research assessed the recommended actions a company can take to improve gender balance and opportunity (or diversity improvement as a whole). Two specific studies were noted that each provided five actions from a different perspective. These actions all focus on openness, inclusion, and open communication through the entire workforce. Work/life balance and creating an environment or culture where people want to work goes a long way in bringing and keeping a diverse workforce. Companies need to be aware of the issues at hand and focus on continuous improvement. Organizations on the Detroit Arsenal excel at some of the 10 actions mentioned but need improvement on others. Finally mentorship is a tool that is extremely important in today's workforce. Providing mentor options to all members of the workforce leads to diverse leadership down the road.

Following the literature review, thorough analysis was conducted into the current state of the Detroit Arsenal in terms of gender balance and opportunity. This data was then compared to the national gender averages of applicable competencies and occupations across the United States. The data portrays that the Detroit Arsenal as a whole is higher than average for both gender balance and opportunity. It also confirms through literature review that during movement up the corporate ladder the gender balance continues to drop. At the senior executive service level (or C-suite equivalent in industry), the Arsenal has recently added two females (while losing one). Although the numbers still remain lower than at the working level, it is a step in the right direction. The Detroit Arsenal remains a very technology based entity with higher male percentages, but in most organizations these higher male percentages are in line with the national averages.

Finally, the research involved talking to leaders both at the Detroit Arsenal and industry to gain perspective on their thoughts of gender balance and opportunity. Several themes quickly

came out of the interview. First, leadership all believes many improvements have been made and there remains much that can still be done. There is acknowledgment that there remains challenges with gender balance as you navigate the corporate management chain. One concept that was mentioned by multiple leaders was the need for diversity of thought. Having a room of leaders with similar backgrounds, experiences, and thought patterns does not help any organization to be innovative or forward thinking. The leader's opinions and statements were in line with the literature review conducted in this study. Every one of the leaders interviewed agreed past advancements are important, and future recognition and focus on the problem is important to create and maintain diversity of thought.

Conclusions

The Detroit Arsenal recognizes the concept of diversity of thought, not only across gender but across all characteristics. Leadership understands and acknowledges the current state, and wants to move forward in a positive light. Gender equality is a topic across not only our nation, but across the entire world as more companies and organization realizes the value of diversity of thought in the new global world. There are many actions that can be taken at all levels of an organization to make it the best possible place to work for all. In general people want to do well and want the opportunity to be successful and to advance their career. It is the job of the organizations leadership to acknowledge the problem, embrace and lead change, and create a positive environment of diversity and inclusion.

Recommendations

This research leads to recommendations for continued improvements at the Detroit Arsenal. These are not the only options available, but ideas and concepts this research provides as positive factors for the Detroit Arsenal.

1. Commit as Team Detroit Arsenal – The entire Detroit Arsenal leadership team should understand the issues at hand and keep diversity in mind when focusing on recruitment, continued improvement, and retention.
2. Acknowledge and communicate – Senior leaders should understand and acknowledge the current state of the Detroit Arsenal. The data and path forward should be communicated to the workforce through a campaign.
3. Develop and Initiate a Diversity of Thought Campaign – A formal Diversity of Thought campaign across the Detroit Arsenal would help to spread the word that the organizations are doing well, but much can still be improved. Focused mentorship opportunities occur in pockets, and should be readily advertised and created across organizations. Training for unconscious bias and diversity should be made available to all and encouraged by all levels of leadership. Focus on work/life balance and creating a workplace culture of diversity, inclusion, and success.

Areas for Future Research

This research was focused specifically on gender balance and opportunity at the Detroit Arsenal compared to industry. With this focused approach, there are a plethora of opportunities for future research that can be conducted on this topic.

1. Gender balance and opportunity comparison across US Army organizations
2. Gender pay study comparing the Detroit Arsenal to Industry
3. Study of diversity characteristics at the Detroit Arsenal compared to Industry
4. Recruitment and Retention comparison between the Detroit Arsenal and Detroit Automotive Industry

5. National gender rates across competencies and occupations and options for improvement
6. Analysis of resources needed for women with families

Summary

The Detroit Arsenal has improved in terms of gender balance and opportunity when comparing to years past. Current state is equal to or slightly better than national averages across most organizations at the Detroit Arsenal. The Arsenal's senior leaders have a solid understanding of the current state and a desire to make continued improvement a priority. This research paper reviewed current data and pathways to future improvement to provide awareness and recommendations moving forward. The gender equality issue has been a discussion at national levels since the 19th amendment of the US Constitution was ratified nearly 100 years ago. Today's political climate has again brought the discussion to the forefront with today's younger generations demanding a balanced diverse workforce with equal opportunity for career advancement. Diversity of Thought should be a term the entire workforce should know, embraced, and promote. Our current and future leaders of the Detroit Arsenal must continue to build on the progress in order to be a true workplace of choice, innovation, and success in order to best support our warfighters.

Appendix A - References

- Bloomberg. (2019, September 27). *Global leaders from public and private sectors convene to discuss gender equality*. Retrieved from Bloomberg:
<https://www.bloomberg.com/company/stories/global-leaders-from-public-and-private-sectors-convene-to-discuss-gender-equality/>
- Catalyst. (2019, June 5). *Women in the Workforce - United States: Quick Take*. Retrieved from Catalyst: www.catalyst.org
- Catalyst. (2020). *What We Do*. Retrieved from Catalyst: <https://www.catalyst.org/what-we-do/>
- Cohen, R. S. (2019, September 11). What the Army and Navy Can Learn From the Air Force's Female Secretaries. *Air Force Magazine*.
- Das, A. (2019, March 9). U.S. Women's Soccer Team Sues U.S. Soccer for Gender Discrimination. *The New York Times*, pp. Section A, Page 1.
- DeWolf, M. (2017, March 1). *US Department of Labor*. Retrieved from 12 Stats About Women Working (US Department of Labor Blog: blog.dol.gov)
- Equileap. (2018 Edition). *Gender Equality Global Report & Ranking*. Equileap.
- Equileap. (2019). *Equileap - About Us*. Retrieved from Equileap: <https://equileap.org/about/>
- Forbes. (2011). *Global Diversity and inclusion - Fostering Innovation Through a Diverse Workforce*. New York: Forbes Insights.
- Gordon, C., & Fox, S. (2019). *Take Action, Gain Traction: Inclusion and Diversity in the UK Workplace*. Bain & Company.
- Hames, J. M. (2018, July 17). *Civilian women making waves in acquisition leadership positions*. Retrieved from US Army Acquisition Support Center: <https://asc.army.mil/web/news-civilian-women-making-waves-in-acquisition/>

McKinsey & Company. (2019). *Women in the Workplace - 2019*. McKinsey & Company.

Next Generation. (2018). *5 Things Employers Can Do To Improve Gender Equality In The Workplace*. Retrieved from Next Generation:

<https://www.nextgeneration.ie/blog/2018/04/workplace-gender-equality>

Schulker, D., & Matthews, M. (2018). *Women's Representation in the U.S. Department of Defense Workforce*. Santa Monica: RAND Corporation.

Taylor, H. (2019, February 19). *GM, Bank of America and Johnson & Johnson earn top scores in new study of corporate gender equality*. Retrieved from CNBC:

<https://www.cnbc.com/2019/02/19/gm-tops-new-gender-equality-ranking-at-americas-largest-companies.html>

Trop, J. (2018, October 19). General Motors Is Leading the Charge Toward Gender Equality in the Automotive Industry. *Fortune*.

United States Government Accountability Office (GAO). (2015). *Strategies to Address Representation of Women Include Federal Disclosure Requirements*. Washington DC: United States Government Accountability Office (GAO).

US Army. (2019). *Equal Employment Opportunity and Diversity (Army Regulation 690-12)*. Washington DC: Department of Army.

US Army. (2019). *The Army People Strategy*. US Army.

US Army Director, Acquisition Career Management Office. (2017). *Army Acquisition Workforce Human Capital Strategic Plan 2017-2021*. US AARMY DACM.

US Bureau of Labor. (2018). *Women in the Labor Force (Report 1077)*. US Bureau of Labor.

US Department of Labor. (2017). *Women at Work*. Washington DC: US Department of Labor.

Vize, S. (2018). *Companies Working Toward Gender Parity in Tech*. Retrieved from Mondo:

<https://www.mondo.com/blog-gender-parity-in-tech-2018/>

Warner, J., & Corley, D. (2017). *The Women's Leadership Gap*. Washington DC: Center for American Progress.

White House. (2019, February 7). *White House - Fact Sheet*. Retrieved from

[www.whitehouse.gov: https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-committed-womens-economic-empowerment-around-world/](https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-committed-womens-economic-empowerment-around-world/)

Appendix B – Institutional Review Board Approval



Institutional Review Board
Office of the Provost
research.ltu.edu irb@ltu.edu

November 18, 2019

Jason Middleton, Master of Global Leadership and Management Candidate, DAU SSCF
Lawrence Technological University
College of Business and Information Technology
jason.middleton@dau.edu

Dear Jason,

I am pleased to report that the IRB application to conduct research with human participants for your MBA thesis “Gender Balance and Opportunity across the Detroit Arsenal Workplace Compared to Industry” has been approved under the Expedited review path for a period of one year, November 18, 2019 – November 18, 2020.

The IRB is satisfied that the following ethical concerns regarding the treatment of your human participants have been addressed in your research protocol: (1) The research involves interviewing participants who will voluntarily consent to participate in the study; (2) Participants who will voluntarily consent to be interviewed are free to withdraw from the study at any time; (3) You do not have any copyrighted devices in your interview guide and/or you are using original devices and/or devices in the public domain and/or devices you are permitted to use via fair use for educators; (4) You have identified potential risks to you and the participants; and (5) You have assured that a balance exists between potential benefits of the research to the participants and/or society and the risk assumed by the participants.

Please contact the IRB if you require an extension to your project after one year. Please note you must contact the IRB if you make any changes to your research protocol. Please do not hesitate to contact the IRB if you have any questions whatsoever.

Sincerely,

Matthew Cole, Ph.D.
Chair, Institutional Review Board (IRB)
Lawrence Technological University
irb@ltu.edu o: 248.204.3096 f: 248.204.3099

The Lawrence Tech IRB is organized and operated according to guidelines of the United States Office for Human Research Protections and the United States Code of Federal Regulations and operates under Federal Wide Assurance No. FWA00010997 that expires 02/23/2021.

Lawrence Technological University

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Appendix C – OPSEC Review and Public Affairs Certification

This will be done at some point

Appendix D – Informed Consent Form

Informed Consent to Participate in *Gender Balance and Opportunity across the Detroit Arsenal Workplace Compared to Industry*

Mr. Jason R Middleton of the Lawrence Technological University and the DAU Senior Service College Fellowship invites you to be a part of the *Gender Balance and Opportunity across the Detroit Arsenal Workplace Compared to Industry* research study. This research is being conducted in fulfillment of the Senior Service College Fellowship requirements.

This research study looks at the current state of gender balance and opportunity across the Detroit Arsenal compared to industry and the US working population. The purpose of this study is to explore and gain better insights into the current state and what other organizations are doing to improve. We are asking you to participate because you have a unique perspective that can bring value to the study and general conversation.

If you agree to be part of the research study, you will be interviewed via a set of survey questions that ask you to discuss or respond to various aspects of the competency management program. I expect this interview to take approximately forty five minutes to complete.

While you may not receive any direct benefit for participating, I hope that this study will contribute to the awareness across the Detroit Arsenal into the current state of gender balance and opportunity as well as some shared means of improvement.

Researchers will not be able to link your survey responses to you, but they will know that you participated in the research if you decide to consent to participate. I plan to publish the results of this study, but will not include any information that would identify you.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose to not answer an individual question or you may skip any section of the survey/interview.

Regarding compensation, please note that you will not be provided with any monetary compensation for participating in this study.

If you have questions about this research study, you can contact Mr. Jason Middleton, at jmiddleto@ltu.edu.

If you have questions about your rights as a research participant, please contact the Lawrence Technological University Institutional Review Board, 21000 West Ten Mile Road, Southfield, MI 48075, (248) 204-3541, irb@ltu.edu.

If you have read this informed consent form, understand the information contained in this informed consent form, and agree to participate in this study, please print and sign your name below, and enter today's date. You will be offered a copy of this form to keep.

Participant (please print your name)

Participant (please sign your name)

Date

Investigator's signature

Date

Appendix E – Interview Questionnaire

Interview Questions for Gender Balance and Opportunity Across the Detroit Arsenal Workplace Compared to Industry:

Definitions for clarity on this topic...

Balance: Does the gender ratio match the national averages for the competencies we employ.

Opportunity: As you move up the leadership chain, what happens to the gender balance.

- 1) What is your perception of how your organization is doing with gender balance and opportunity? What barriers do you see?
- 2) A: Why is it important to have diversified gender parity across your leadership team? Do you have any examples why?
B: Why is it important to have diversified gender parity across your workforce? Do you have any examples why?
- 3) How do you ensure blind equality in the promotion/selection process for leaders?
- 4) Where does the Arsenal (or current place of employment) fit in comparison to other places that you have worked in regards to gender opportunity and balance?
- 5) What Organization Development tools does your team utilize for leader development? Are they available equally across gender? What feedback loops inform if they work or not?
- 6) Is your organization doing well at talent acquisition in respect to gender balance? How could we they better?
- 7) What are some actions you have noticed or championed in your current or previous organizations to improve on balance and opportunity?

Appendix F – Occupational Gender Breakdown

(US Department of Labor, 2017)

Occupation	Number of full-time workers	Number of men	Number of women	Percentage of women in occupational group
Accountants and auditors	1,692,991	678,164	1,014,827	59.9
Actuaries	26,642	18,601	8,041	30.2
Administrative services managers	133,284	86,878	46,406	34.8
Advertising and promotions managers	41,608	19,269	22,339	53.7
Advertising sales agents	131,371	67,443	63,928	48.7
Aerospace engineers	123,484	108,681	14,803	12
Agents and business managers of artists, performers, and athletes	33,035	18,092	14,943	45.2
Agricultural and food science technicians	32,481	21,424	11,057	34
Agricultural and food scientists	22,484	13,914	8,570	38.1
Animal trainers	31,498	15,169	16,329	51.8
Appraisers and assessors of real estate	72,566	48,063	24,503	33.8
Architects, except naval	169,366	128,183	41,183	24.3
Architectural and engineering managers	159,701	143,563	16,138	10.1
Archivists, curators, and museum technicians	35,788	16,185	19,603	54.8
Artists and related workers	125,078	78,367	46,711	37.3
Athletes, coaches, umpires, and related workers	121,696	88,277	33,419	27.5
Automotive service technicians and mechanics	729,510	715,176	14,334	2
Baggage porters, bellhops, and concierges	69,575	54,415	15,160	21.8
Bailiffs, correctional officers, and jailers	358,707	259,256	99,451	27.7
Bakers	148,290	67,152	81,138	54.7
Barbers	74,451	63,708	10,743	14.4
Bartenders	219,856	101,394	118,462	53.9

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Bill and account collectors	122,378	36,978	85,400	69.8
Billing and posting clerks	407,686	47,376	360,310	88.4
Biological scientists	73,165	40,197	32,968	45.1
Biological technicians	16,847	8,050	8,797	52.2
Bookkeeping, accounting, and auditing clerks	842,584	119,242	723,342	85.8
Budget analysts	41,211	15,651	25,560	62
Bus drivers	279,333	162,288	117,045	41.9
Business operations specialists, all other	264,025	123,232	140,793	53.3
Butchers and other meat, poultry, and fish processing workers	208,070	161,922	46,148	22.2
Carpenters	915,998	898,938	17,060	1.9
Cashiers	1,017,176	294,567	722,609	71
Chefs and head cooks	354,511	286,759	67,752	19.1
Chemical engineers	53,133	43,850	9,283	17.5
Chemical technicians	56,912	38,289	18,623	32.7
Chemists and materials scientists	76,920	46,650	30,270	39.4
Chief executives	1,098,048	831,158	266,890	24.3
Childcare workers	537,110	32,541	504,569	93.9
Chiropractors	39,928	29,103	10,825	27.1
Civil engineers	317,670	273,266	44,404	14
Claims adjusters, appraisers, examiners, and investigators	296,535	121,095	175,440	59.2
Cleaners of vehicles and equipment	224,432	192,341	32,091	14.3
Clergy	345,976	289,289	56,687	16.4
Clinical laboratory technologists and technicians	248,936	69,924	179,012	71.9
Combined food preparation and serving workers, including fast food	142,501	54,861	87,640	61.5

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Compensation, benefits, and job analysis specialists	51,568	13,370	38,198	74.1
Compliance officers	248,780	117,695	131,085	52.7
Computer and information systems managers	561,466	401,470	159,996	28.5
Computer control programmers and operators	82,878	76,011	6,867	8.3
Computer network architects	92,409	85,518	6,891	7.5
Computer occupations, all other	613,463	476,122	137,341	22.4
Computer operators	69,888	40,056	29,832	42.7
Computer programmers	371,952	294,706	77,246	20.8
Computer support specialists	562,145	427,841	134,304	23.9
Computer systems analysts	478,879	297,409	181,470	37.9
Computer, automated teller, and office machine repairers	134,991	120,161	14,830	11
Construction and building inspectors	78,867	67,676	11,191	14.2
Construction laborers	1,279,421	1,242,848	36,573	2.9
Construction managers	709,029	652,746	56,283	7.9
Cooks	1,213,155	766,711	446,444	36.8
Cost estimators	119,438	103,589	15,849	13.3
Counselors	572,271	155,941	416,330	72.8
Counter and rental clerks	44,808	25,846	18,962	42.3
Counter attendants, cafeteria, food concession, and coffee shop	35,749	15,851	19,898	55.7
Couriers and messengers	153,472	131,027	22,445	14.6
Court, municipal, and license clerks	61,922	14,945	46,977	75.9
Credit analysts	25,288	12,300	12,988	51.4
Credit authorizers, checkers, and clerks	38,525	9,286	29,239	75.9

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Crushing, grinding, polishing, mixing, and blending workers	72,186	63,196	8,990	12.5
Customer service representatives	1,836,583	640,070	1,196,513	65.1
Cutting workers	48,139	37,439	10,700	22.2
Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	68,488	56,773	11,715	17.1
Data entry keyers	223,130	51,605	171,525	76.9
Database administrators	100,437	65,509	34,928	34.8
Dental assistants	176,166	13,392	162,774	92.4
Dentists	94,693	66,304	28,389	30
Designers	653,906	336,687	317,219	48.5
Detectives and criminal investigators	114,691	82,948	31,743	27.7
Diagnostic related technologists and technicians	284,210	95,371	188,839	66.4
Dietitians and nutritionists	71,289	8,548	62,741	88
Dining room and cafeteria attendants and bartender helpers	86,467	52,818	33,649	38.9
Directors, religious activities and education	49,074	23,286	25,788	52.5
Dishwashers	110,647	90,347	20,300	18.3
Dispatchers	249,122	111,248	137,874	55.3
Door-to-door sales workers, news and street vendors, and related workers	46,425	23,880	22,545	48.6
Drafters	136,643	110,692	25,951	19
Driver/sales workers and truck drivers	2,728,976	2,585,286	143,690	5.3
Economists	24,282	17,250	7,032	29
Editors	121,098	60,224	60,874	50.3

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Education administrators	781,769	281,444	500,325	64
Electrical and electronics engineers	196,331	178,387	17,944	9.1
Electrical, electronics, and electromechanical assemblers	99,081	51,135	47,946	48.4
Electricians	708,412	694,430	13,982	2
Elementary and middle school teachers	2,480,384	547,310	1,933,074	77.9
Eligibility interviewers, government programs	64,653	14,401	50,252	77.7
Emergency medical technicians and paramedics	159,387	110,048	49,339	31
Engineering technicians, except drafters	330,076	277,195	52,881	16
Engineers, all other	483,758	421,002	62,756	13
Environmental engineers	24,102	17,803	6,299	26.1
Environmental scientists and geoscientists	60,714	41,589	19,125	31.5
Farmers, ranchers, and other agricultural managers	438,396	386,531	51,865	11.8
File clerks	124,102	29,885	94,217	75.9
Financial analysts	202,163	123,379	78,784	39
Financial clerks, all other	115,603	49,999	65,604	56.7
Financial managers	1,066,848	512,744	554,104	51.9
Financial specialists, all other	39,668	18,553	21,115	53.2
Firefighters	264,896	254,482	10,414	3.9
First-line supervisors of construction trades and extraction workers	730,631	709,246	21,385	2.9
First-line supervisors of correctional officers	50,463	36,631	13,832	27.4

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

First-line supervisors of food preparation and serving workers	428,906	197,016	231,890	54.1
First-line supervisors of gaming workers	20,535	11,089	9,446	46
First-line supervisors of housekeeping and janitorial workers	197,925	126,189	71,736	36.2
First-line supervisors of mechanics, installers, and repairers	239,714	222,381	17,333	7.2
First-line supervisors of non-retail sales workers	1,119,323	775,982	343,341	30.7
First-line supervisors of office and administrative support workers	1,203,016	473,031	729,985	60.7
First-line supervisors of personal service workers	71,661	28,432	43,229	60.3
First-line supervisors of police and detectives	105,612	90,266	15,346	14.5
First-line supervisors of production and operating workers	852,644	688,229	164,415	19.3
First-line supervisors of protective service workers, all other	70,453	52,487	17,966	25.5
First-line supervisors of retail sales workers	2,693,008	1,515,173	1,177,835	43.7
Flight attendants	57,865	16,901	40,964	70.8
Food batchmakers	54,457	22,052	32,405	59.5
Food preparation workers	361,738	162,401	199,337	55.1
Food processing workers, all other	112,774	75,374	37,400	33.2
Food servers, nonrestaurant	75,048	29,547	45,501	60.6
Food service managers	817,831	447,481	370,350	45.3

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Fundraisers	80,259	23,676	56,583	70.5
Gaming managers	15,840	8,730	7,110	44.9
Gaming services workers	66,544	34,568	31,976	48.1
General and operations managers	885,352	620,422	264,930	29.9
Graders and sorters, agricultural products	37,019	15,649	21,370	57.7
Grounds maintenance workers	799,280	762,103	37,177	4.7
Hairdressers, hairstylists, and cosmetologists	437,356	45,081	392,275	89.7
Health practitioner support technologists and technicians	455,672	105,447	350,225	76.9
Healthcare support workers, all other, including medical equipment preparers	99,752	34,378	65,374	65.5
Hotel, motel, and resort desk clerks	86,663	32,760	53,903	62.2
Human resources assistants, except payroll and timekeeping	41,006	7,217	33,789	82.4
Human resources managers	377,342	148,568	228,774	60.6
Human resources workers	711,018	199,412	511,606	72
Industrial and refractory machinery mechanics	337,283	327,038	10,245	3
Industrial engineers, including health and safety	197,550	155,735	41,815	21.2
Industrial production managers	233,451	185,795	47,656	20.4
Industrial truck and tractor operators	516,774	478,039	38,735	7.5

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Information and record clerks, all other	78,742	19,741	59,001	74.9
Information security analysts	87,834	73,109	14,725	16.8
Inspectors, testers, sorters, samplers, and weighers	668,310	425,400	242,910	36.3
Insurance claims and policy processing clerks	321,692	65,610	256,082	79.6
Insurance sales agents	453,892	241,796	212,096	46.7
Insurance underwriters	95,107	33,301	61,806	65
Interviewers, except eligibility and loan	85,368	15,814	69,554	81.5
Janitors and building cleaners	1,602,334	1,188,748	413,586	25.8
Judges, magistrates, and other judicial workers	60,833	31,989	28,844	47.4
Laborers and freight, stock, and material movers, hand	1,439,725	1,182,110	257,615	17.9
Laundry and dry-cleaning workers	107,437	38,432	69,005	64.2
Lawyers	888,694	568,535	320,159	36
Librarians	110,001	22,528	87,473	79.5
Licensed practical and licensed vocational nurses	610,860	81,120	529,740	86.7
Lifeguards and other recreational, and all other protective service workers	23,928	15,585	8,343	34.9
Loan interviewers and clerks	111,534	26,458	85,076	76.3
Lodging managers	112,715	53,267	59,448	52.7
Logisticians	127,430	82,301	45,129	35.4
Machine feeders and offbearers	20,661	12,299	8,362	40.5
Machinists	309,105	297,587	11,518	3.7
Maids and housekeeping cleaners	786,916	127,984	658,932	83.7

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Mail clerks and mail machine operators, except postal service	49,359	27,621	21,738	44
Maintenance and repair workers, general	449,315	434,104	15,211	3.4
Management analysts	665,500	384,117	281,383	42.3
Managers, all other	3,899,979	2,536,832	1,363,147	35
Market research analysts and marketing specialists	255,502	112,345	143,157	56
Marketing and sales managers	863,652	479,654	383,998	44.5
Massage therapists	65,506	14,724	50,782	77.5
Mechanical engineers	237,908	217,432	20,476	8.6
Medical and health services managers	637,605	180,621	456,984	71.7
Medical assistants	393,011	34,038	358,973	91.3
Medical records and health information technicians	153,611	13,685	139,926	91.1
Medical scientists	117,204	56,415	60,789	51.9
Medical, dental, and ophthalmic laboratory technicians	60,812	31,313	29,499	48.5
Meeting, convention, and event planners	91,655	17,142	74,513	81.3
Metal workers and plastic workers, all other	333,686	260,574	73,112	21.9
Miscellaneous agricultural workers	493,053	403,204	89,849	18.2
Miscellaneous assemblers and fabricators	812,138	513,667	298,471	36.8

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Miscellaneous community and social service specialists, including health educators and community health workers	64,940	23,262	41,678	64.2
Miscellaneous entertainment attendants and related workers	53,918	29,319	24,599	45.6
Miscellaneous health technologists and technicians	114,823	42,062	72,761	63.4
Miscellaneous legal support workers	125,899	35,113	90,786	72.1
Miscellaneous life, physical, and social science technicians	132,788	71,471	61,317	46.2
Miscellaneous media and communication workers	68,461	25,492	42,969	62.8
Miscellaneous personal appearance workers	191,738	32,838	158,900	82.9
Miscellaneous social scientists and related workers, including sociologists	22,975	10,327	12,648	55.1
Miscellaneous therapists, including exercise physiologists	123,114	28,257	94,857	77
Molders and molding machine setters, operators, and tenders, metal and plastic	34,703	29,246	5,457	15.7
Morticians, undertakers, and funeral directors	31,465	23,634	7,831	24.9
Musicians, singers, and related workers	64,811	50,687	14,124	21.8
Natural sciences managers	20,107	9,524	10,583	52.6

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Network and computer systems administrators	195,283	159,778	35,505	18.2
News analysts, reporters and correspondents	54,388	30,330	24,058	44.2
Nonfarm animal caretakers	124,837	34,640	90,197	72.3
Nurse anesthetists	24,079	9,717	14,362	59.6
Nurse practitioners	139,295	16,625	122,670	88.1
Nursing, psychiatric, and home health aides	1,244,681	172,892	1,071,789	86.1
Occupational therapists	68,794	8,263	60,531	88
Office and administrative support workers, all other	439,950	110,470	329,480	74.9
Office clerks, general	901,683	167,061	734,622	81.5
Office machine operators, except computer	24,718	9,732	14,986	60.6
Operations research analysts	131,050	67,041	64,009	48.8
Opticians, dispensing	44,245	11,976	32,269	72.9
Optometrists	26,632	15,769	10,863	40.8
Order clerks	91,990	44,011	47,979	52.2
Other education, training, and library workers	82,502	22,679	59,823	72.5
Other healthcare practitioners and technical occupations	110,487	52,884	57,603	52.1
Other installation, maintenance, and repair workers, including wind turbine service technicians	199,121	189,946	9,175	4.6
Other teachers and instructors	387,246	178,787	208,459	53.8
Packaging and filling machine operators and tenders	213,335	103,479	109,856	51.5

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Packers and packagers, hand	323,542	143,980	179,562	55.5
Painters, construction and maintenance	399,807	379,105	20,702	5.2
Painting workers	126,613	114,241	12,372	9.8
Paralegals and legal assistants	317,045	48,354	268,691	84.7
Parts salespersons	87,054	76,519	10,535	12.1
Payroll and timekeeping clerks	132,538	15,765	116,773	88.1
Personal care aides	716,208	140,442	575,766	80.4
Personal care and service workers, all other	82,253	39,119	43,134	52.4
Personal financial advisors	338,453	229,348	109,105	32.2
Pharmacists	210,886	99,370	111,516	52.9
Phlebotomists	82,191	12,443	69,748	84.9
Photographers	87,173	53,785	33,388	38.3
Physical scientists, all other	201,464	118,841	82,623	41
Physical therapist assistants and aides	56,275	18,124	38,151	67.8
Physical therapists	169,495	69,499	99,996	59
Physician assistants	80,941	27,754	53,187	65.7
Physicians and surgeons	762,927	488,416	274,511	36
Police and sheriff's patrol officers	707,360	611,254	96,106	13.6
Postal service clerks	92,916	44,245	48,671	52.4
Postal service mail carriers	276,073	173,792	102,281	37
Postal service mail sorters, processors, and processing machine operators	58,192	29,659	28,533	49
Postmasters and mail superintendents	22,837	11,818	11,019	48.3
Postsecondary teachers	909,260	479,360	429,900	47.3
Prepress technicians and workers	19,996	12,964	7,032	35.2
Preschool and kindergarten teachers	356,867	9,873	346,994	97.2

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Pressers, textile, garment, and related materials	23,521	9,797	13,724	58.3
Printing workers, except prepress technicians and workers	157,101	123,439	33,662	21.4
Private detectives and investigators	80,139	43,298	36,841	46
Probation officers and correctional treatment specialists	80,114	36,232	43,882	54.8
Procurement clerks	33,963	16,039	17,924	52.8
Producers and directors	131,754	82,584	49,170	37.3
Production workers, all other	1,012,889	745,978	266,911	26.4
Production, planning, and expediting clerks	282,146	119,402	162,744	57.7
Property, real estate, and community association managers	480,187	242,923	237,264	49.4
Psychologists	128,867	38,639	90,228	70
Public relations and fundraising managers	53,176	19,181	33,995	63.9
Public relations specialists	107,893	39,861	68,032	63.1
Purchasing agents, except wholesale, retail, and farm products	237,095	113,159	123,936	52.3
Purchasing managers	185,381	96,847	88,534	47.8
Radio and telecommunications equipment installers and repairers	120,104	107,256	12,848	10.7
Real estate brokers and sales agents	593,173	289,734	303,439	51.2
Receptionists and information clerks	691,046	73,841	617,205	89.3
Recreation and fitness workers	186,243	83,528	102,715	55.2
Registered nurses	2,396,467	303,978	2,092,489	87.3

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Religious workers, all other	41,676	20,520	21,156	50.8
Reservation and transportation ticket agents and travel clerks	97,194	45,511	51,683	53.2
Residential advisors	26,883	10,999	15,884	59.1
Respiratory therapists	88,350	34,327	54,023	61.1
Retail salespersons	1,684,365	1,039,912	644,453	38.3
Sales and related workers, all other	195,122	112,016	83,106	42.6
Sales representatives, services, all other	552,560	387,383	165,177	29.9
Sales representatives, wholesale and manufacturing	1,183,813	872,177	311,636	26.3
Secondary school teachers	511,675	219,493	292,182	57.1
Secretaries and administrative assistants	2,189,662	129,373	2,060,289	94.1
Securities, commodities, and financial services sales agents	204,326	143,754	60,572	29.6
Security guards and gaming surveillance officers	668,744	512,464	156,280	23.4
Sewing machine operators	127,056	36,567	90,489	71.2
Shipping, receiving, and traffic clerks	458,469	324,665	133,804	29.2
Social and community service managers	328,654	103,827	224,827	68.4
Social and human service assistants	153,684	35,178	118,506	77.1
Social workers	722,010	135,139	586,871	81.3
Software developers, applications and systems software	1,211,419	984,505	226,914	18.7
Special education teachers	178,048	25,624	152,424	85.6

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Statistical assistants	22,427	10,721	11,706	52.2
Statisticians	47,971	24,946	23,025	48
Stock clerks and order fillers	913,043	595,016	318,027	34.8
Supervisors of transportation and material moving workers	200,528	153,843	46,685	23.3
Tailors, dressmakers, and sewers	44,236	12,873	31,363	70.9
Tax examiners and collectors, and revenue agents	44,684	16,612	28,072	62.8
Tax preparers	51,718	21,021	30,697	59.4
Taxi drivers and chauffeurs	348,385	303,426	44,959	12.9
Teacher assistants	460,672	59,475	401,197	87.1
Technical writers	45,442	20,945	24,497	53.9
Telemarketers	30,173	12,789	17,384	57.6
Telephone operators	31,805	10,549	21,256	66.8
Tellers	203,015	28,741	174,274	85.8
Training and development managers	53,382	24,837	28,545	53.5
Training and development specialists	103,451	44,813	58,638	56.7
Transportation security screeners	34,738	24,827	9,911	28.5
Transportation, storage, and distribution managers	221,952	182,380	39,572	17.8
Travel agents	47,354	9,755	37,599	79.4
Urban and regional planners	19,850	11,026	8,824	44.5
Veterinarians	62,715	25,164	37,551	59.9
Veterinary assistants and laboratory animal caretakers	33,490	6,691	26,799	80
Waiters and waitresses	752,543	273,280	479,263	63.7
Web developers	143,349	95,527	47,822	33.4
Weighers, measurers, checkers, and samplers, recordkeeping	66,649	35,112	31,537	47.3
Welding, soldering, and brazing workers	505,665	479,158	26,507	5.2

Gender Balance and Opportunity across the Detroit Arsenal compared to industry

Wholesale and retail buyers, except farm products	134,634	69,239	65,395	48.6
Word processors and typists	186,327	28,511	157,816	84.7
Writers and authors	143,705	65,137	78,568	54.7

Appendix G – Glossary of Acronyms

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Appendix H – Author Biography



SENIOR SERVICE COLLEGE FELLOWSHIP DEFENSE ACQUISITION UNIVERSITY - DETROIT ARSENAL SEMINAR

BIOGRAPHY

Jason Middleton

Jason Middleton previously served as Associate Director for Ground Systems Engineering Support, Materials Engineering, U.S. Army, CCDC Ground Vehicle Systems Center, with responsibilities in leadership, managerial and administrative functions. Specifically, Mr. Middleton was responsible for planning, directing, reviewing and coordinating efforts of personnel engaged in research, development and engineering in the fields of Materials Engineering and Advanced Manufacturing. His staff comprised subject matter experts in the following functional disciplines: Additive Manufacturing, Coatings/Corrosion, Composites, Environmental, Elastomers, Joining/Welding, Light-Weighting, Material Maturation, and Metallurgy. Having worked in JPO MRAP during his time with



the U.S. Army, he initiated and led several efforts to focus on transitioning and supporting the PEO and PM customers across the Detroit Arsenal. Prior to joining U.S. Army, CCDC Ground Vehicle Systems, Jason worked in the private sector at Roush Industries. Given the extensive automotive industry experience, Jason worked to apply industry best practices to military ground systems.

CAREER CHRONOLGY:

- 2019-Present: Defense Acquisition University Senior Service College Fellowship, Warren, MI
- 2016-2019: Associate Director, U.S. Army, CCDC Ground Vehicle Systems Center – Materials Engineering (and Product Lifecycle Engineering)
- 2014-2016: Deputy Associate Director, U.S. Army, CCDC Ground Vehicle Systems Center – Tactical Vehicle Engineering
- 2013: Acting Project Manager, U.S. Army, APO MRAP, Caiman
- 2012-2014: Lead Systems Engineer, U.S. Army, APO MRAP, Caiman/M-ATV/RG-33
- 2011-2012: Systems Engineer, U.S. Army, APO MRAP, Caiman
- 2007-2011: Program Manager, Roush Industries
- 2005-2007: Program Supervisor, Roush Industries
- 2003-2005: Vehicle Test Engineer, Roush Industries
- 2002-2003: Product Design Engineer, Martinrea
- 1997-2002: Engineering Co-op, GKN Sinter Metals

EDUCATION:

- Bachelors in Engineering, Mechanical Engineering, Kettering University, 2002

CERTIFICATIONS:

- Defense Acquisition Certifications
 - Level III Engineering
 - Level II Program Management
 - Level I Test & Evaluation
 - Level I Production, Quality, & Manufacturing
- Army Acquisition Corps Members - 2013

AWARDS AND HONORS:

- Achievement Medal for Civilian Service - 2013