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THE INTEGRATION OF WOMEN IN SOCOM: A PREDICTIVE MODEL FOR POLICY EVALUATION

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**THE INTEGRATION OF WOMEN IN SOCOM:
A PREDICTIVE MODEL FOR POLICY EVALUATION**

by

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December 2019

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After the repeal of the Direct Ground Combat Definition and Assignment Rule in 2016, direct combat positions in Special Operations Command (SOCOM) opened to women, along with all other positions in the U.S. military. Since then, relatively few women have attempted or completed the accession programs in SOCOM for these previously closed positions. Women can offer unique benefits to SOCOM like reduced signature management, increased access to women in conservative cultures, and the use of different risk analysis strategies. Understanding how many women have already and will be entering SOCOM has become a relevant question. This thesis attempts to predict the number of women who will enter SOCOM and evaluates different strategies to enhance this integration. I developed a model that predicts the number of women entering SOCOM in previously closed positions. Then, I altered this steady state model to predict the performance of three different strategies aimed at women's recruitment, selection, and retention in SOCOM. Performance of these strategies was evaluated using five criteria: numerical performance, costs, controllability and reactivity, tenability, and impacts to performance. Retention-based strategies predicted few additional women in SOCOM but performed the best in our meta-analysis due to their benefits in performance, cost, and tenability. Other gender-specific programs may need to be leveraged for SOCOM to reliably profit from the unique benefits women offer.

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ABSTRACT

After the repeal of the Direct Ground Combat Definition and Assignment Rule in 2016, direct combat positions in Special Operations Command (SOCOM) opened to women, along with all other positions in the U.S. military. Since then, relatively few women have attempted or completed the accession programs in SOCOM for these previously closed positions. Women can offer unique benefits to SOCOM like reduced signature management, increased access to women in conservative cultures, and the use of different risk analysis strategies. Understanding how many women have already and will be entering SOCOM has become a relevant question. This thesis attempts to predict the number of women who will enter SOCOM and evaluates different strategies to enhance this integration. I developed a model that predicts the number of women entering SOCOM in previously closed positions. Then, I altered this steady state model to predict the performance of three different strategies aimed at women's recruitment, selection, and retention in SOCOM. Performance of these strategies was evaluated using five criteria: numerical performance, costs, controllability and reactivity, tenability, and impacts to performance. Retention-based strategies predicted few additional women in SOCOM but performed the best in our meta-analysis due to their benefits in performance, cost, and tenability. Other gender-specific programs may need to be leveraged for SOCOM to reliably profit from the unique benefits women offer.

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LIST OF ACRONYMS AND ABBREVIATIONS

A&S	assessment and selection
BUD/S	Basic Underwater Demolition/ SEAL training
CAF	Canadian Armed Forces
CCT	Combat Controller
COIN	Counter Insurgency Operations
CWMD	Counter-Weapons of Mass Destruction
DA	Direct Action
DGCDAR	Direct Ground Combat Definition and Assignment Rule
DND	Department of National Defence (Canada)
DSD	differences of sexual development
EE	employment equity
FID	Foreign Internal Defense
HA	Humanitarian Assistance
HPP	Human Performance Program
IAAF	International Association of Athletics Federations
JROTC	Junior Reserve Officer Training Corps
KLE	Key Leader Engagements
MARSOC	Marine Special Operations Command
MISO	Military Information Support Operations
MLDC	Military Leadership Diversity Commission
NCO	non-commissioned officer
NDAA	National Defense Authorization Act
OS	Occupational Specialty
POTFF	Preservation of the Force and Family
Rangers	Army SOF unit
SEAL	Sea, Air, and Land (Naval Special Warfare
SF	Special Forces (Army)
SFA	Security Force Assistance

SIR model	susceptible, infected, recovered model
SOAS	Special Operations Assessment and Selection (SEAL officers specific)
SOF	Special Operations Forces
SR	Special Reconnaissance
STO	Special Tactics Officer (Air Force)
SWCC	Special Warfare Combatant Crewmen (Navy Special Warfare)
SOCOM	United States Special Operations Command
STEM	Science, Technology, Engineering, and Medicine
UN	United Nations
UW	Unconventional Warfare
WISR	Women In Service Review

EXECUTIVE SUMMARY

After the repeal of the Direct Ground Combat Definition and Assignment Rule (DGCDAR) in 2016, approximately 15,500 direct combat positions in Special Operations Command (SOCOM) became open to women, along with all other positions in the U.S. military.[1] Since then, relatively few women have attempted or completed the accession programs in SOCOM for these previously closed positions.

Women offer unique benefits to SOCOM like reduced signature management, increased access to women in conservative cultures,[2] and the use of different risk analysis strategies.[3] Understanding how many women will be entering SOCOM becomes an interesting and relevant question. Early predictions from SOCOM commanders for the number of women who would qualify and graduate in these newly opened billets would be low.[4] Predicting the number of women who will enter SOCOM becomes important to inform legislation and polices that might otherwise change or amend the battle-tested assessment and selection pipelines in these communities.

To do this, I created a system dynamics model that predicts the number of women who will enter SOCOM. This steady state model predicts that few women (71.6 women) would hold these newly opened billets SOCOM 20 years later. I became interested in evaluating different strategies to enhance gender integration by altering the steady state model to reflect the changes of implementing three strategies focused on recruitment, selection, and retention. The initial analysis showed varied performance across these three

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[1] Thomas Szayna et al., Considerations for Integrating Women into Closed Occupations in the U.S. Special Operations Forces, RR1058 (Santa Monica, CA: RAND Corporation, 2015), xv. https://doi.org/10.7249/RR1058.

[2] U.S. Army War College, *Female Engagement Teams (FET) Blueprint. Carlisle, PA* U.S. Army War College, 2017.https://www.academia.edu/35312738/_U_Female_Engagement_Teams_FET_Blueprint.pdf, 2.

[3] Christine R Harris and Michael Jenkins, "Gender Differences in Risk Assessment: Why Do Women Take Fewer Risks than Men?" *Judgment and Decision Making* 1, no. 1 (2006), 61.

[4] B.L. Losey, "Female Integration Implementation Plan for Naval Special Warfare," Official memorandum. San Diego, CA: Department of the Navy Naval Special Warfare Command, 2015. https://dod.defense.gov/Portals/1/Documents/pubs/WISR_Implementation_Plan_Navy.pdf.

strategies. Both the recruitment and retention strategies did little to increase the number of women in SOCOM, predicting 94.2 women and 107.5 women, respectively, when compared to the selection strategy, which increased the representation to 1,441.2 women in 20 years and beyond tokenism closer to critical mass, where groups benefit the most from gender integration.[5] The performance of these different strategies was then evaluated using five criteria: numerical performance, costs, controllability and reactivity, tenability, and impacts to performance.

The research suggests that even over a large time horizon, the steady state processes will not result in many women entering SOCOM. The selection strategy produced impressive numerical results, but suffered when evaluating performance and tenability. Retention-based strategies predicted few additional women in SOCOM but, due to their benefits in performance, cost, and tenability, performed the best in the meta-analysis. This research concluded that a retention strategy is the best method to increase the number of women in SOCOM due to its meta-analysis net score and the fact that they are the only strategies that predicted an increase in the organizational performance in SOCOM. For further research, other programs, like the *ad hoc* Cultural Support Teams, may need to be leveraged for SOCOM to reliably benefit from the unique benefits women offer.

[5] Rosabeth Moss Kanter, *Men and Women of the Corporation* (New York: Basic Books, 1977).

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I. INTRODUCTION

We are all committed to implementing this change without compromising readiness or morale or our warfighting capabilities

Leon E. Panetta[1]

Despite all positions being open to women after the repeal of the Direct Ground Combat Definition and Assignment Rule (DGCDAR) in 2016, few women have sought accession in the newly opened Special Operations Command (SOCOM) billets.[2] From 2016 to 2018, one women entered these billets as an Army Ranger despite applicants across all the newly opened positions.[3] Different policies and strategies have been examined to increase the representation of women in these newly opened positions based on examples of foreign integrated militaries. These comparisons, however, may lead to false equivalencies that are of limited use due to a myriad of factors, including how different countries employ their militaries, their demographics (volunteer, conscription, levels of skill, and education), their size, and the capabilities of the forces.[4] Further, determining how to best support gender integration in SOCOM remains fraught with controversy, partly due to the nature of the relationship between Congress and the Department of Defense. Colton C. Campbell and David P. Aueswald examine this relationship in *Congress and Civil-Military Relationships:*

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[1] Claudette Roulo, "Defense Department Expands Women's Combat Role," *DOD News* (January 24, 2013): https://archive.defense.gov/news/newsarticle.aspx?id=119098

[2] Jessica Glicken Turnley et al., "Special Operations Forces Mixed-Gender Elite Teams" (Tampa, FL: The Joint Special Operations University's Center for Special Operations Studies and Research, 2014). https://dod.defense.gov/Portals/1/Documents/wisr-studies/SOCOM%20-%20JSOU%20Study%20on%20Special%20Operations%20Forces%20Mixed-Gender%20Elite%20Team3.pdf.

[3] Jeff Pavelko, "USSOCOM Implementation Plan Progress" (Women in Service Review brief to OSD 16 Jan 2018). https://dacowits.defense.gov/Portals/48/Documents/General%20Documents/RFI%20Docs/June2017/SOCOM%20RFI%202.pdf?ver=2017-06-07-221616-277.

[4] Agnes Gereben Schaefer et al., *Implications of Integrating Women into the Marine Corps Infantry, RR1103* (Santa Monica, CA: RAND Corporation, 2015). https://www.rand.org/pubs/research_reports/RR1103.html, 44.

> Congress has overturned the military ban of gays serving openly and has had a say in lifting the combat exclusion for military women. It has imposed significant budget cuts through the sequestration process, forcing the Department of Defense (DOD) to reexamine military strategy, personnel numbers, and weapon purchases. And most recently, lawmakers from both sides of the aisle have proposed legislation to take the decision for prosecuting sexual assault cases out of the hands of commanding officers—a move that military leaders say would hurt their ability to maintain order and discipline.[5]

While acknowledging the friction this relationship creates, this civil-military relationship is both good and necessary to build the trust that exists between the American people and its military. Strong motivations and biases have the potential to influence the policies and strategies implementing gender integration due in part to the high risk of special operations and the criticality of the missions they perform. The RAND corporation reported 85% of SOF members surveyed opposed letting women into their specialty, the predominate concern being the "potential impact on mission effectiveness and their continued ability to function as a highly performing team central to participants concerns."[6] Legislators, by comparison, may be motivated by interests in social progress, inclusivity, and equal opportunities for women. This thesis will attempt to objectively evaluate these policies and strategies by developing a system dynamics model that will predict the number of women who will enter SOCOM in these previously closed billets, and using those results, recommend strategies for optimized implementation and opportunities for further research. Of note, this thesis is not arguing for or against gender integration in direct combat occupational specialties; this thesis will be evaluating the performance of different strategies in support of gender integration within SOCOM.

Defining and differentiating the terms "sex" and "gender" will be helpful to ensure these terms are not conflated throughout this thesis. Sex is determined by socially agreed upon observable biological characteristics including gonadal, morphologic, chromosomal,

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[5] Colton C. Campbell and David P. Aueswald, *Congress and Civil-Military Relationships* (Washington, DC: Georgetown University Press, 2015), 1.

[6] Szayna et al., *Considerations for Integrating Women into Closed Occupations in the U.S. Special Operations Forces*, xvii.

and hormonal characteristics and are classically defined as male and female.[7] In some instances, however, such as Differences of Sexual Development (DSD), individuals might exhibit some characteristics of both sexes. Recent high-profile examples of DSD include Caster Semenya and Dutee Chand, two elite sprinters, who were disqualified by the International Association of Athletics Federations (IAAF) from competing as women due to their high levels of naturally occurring testosterone, despite possessing external female anatomy.[8] When discussing the physiological differences between sexes, this thesis will use the terms male and female. While acknowledging the non-binary aspects of sex, this study will categorically limit the use of terms to male or female.

Gender, however, is an artificial construct based on behavior often associated with a specific sex. In a study on Special Operations Forces Mixed-Gender Elite Teams, the Joint Special Operations University (JSOU) classified behaviors like "bravery, repressed emotions, strength, and assertive behavior" as traditional, Western, and masculine. By contrast, behaviors of "nurturing, compassionate, weakness, and retiring behaviors" were considered feminine.[9] Occupations can therefore become gendered when these behaviors reflect the archetype of the profession.[10] Traditionally gendered occupations may feature common usage of gendered qualifiers such as "female doctor" or "male nurse" to differentiate these exceptions from the norm. The U.S. military and SOCOM traditionally recognized and rewarded classic masculine behavior.

Issues can arise when sex and gender are conflated. For example, concluding that integrating women in a mixed gendered team will provide the team with a more compassionate perspective is inherently flawed. The possibility exists that the opposite in fact could be true; a woman could just as easily prove to be even more assertive and emotionally reserved than her male counterparts. Recognizing that the military does not

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[7] *Farlex Partner Medical Dictionary*, s.v. "sex," accessed August 6, 2018, http://medical-dictionary.thefreedictionary.com/VA.

[8] John Branch, "Dutee Chand, Female Sprinter With High Testosterone Level, Wins Right to Compete," *New York Times*, July 27, 2015. https://www.nytimes.com/2015/07/28/sports/international/dutee-chand-female-sprinter-with-high-male-hormone-level-wins-right-to-compete.html.

[9] Turnley et al., "Special Operations Forces Mixed-Gender Elite Teams," vii.

[10] Turnley et al., vii.

currently accept transgender recruits, throughout this study I will refer to an individual's sex as being male or female and gender as being either a man or woman.

Despite official exclusion from combat since the Revolutionary War, America's history is full of examples of women who have distinguished themselves in combat. During America's fight for independence, women participated in various warfighting roles, primarily working in the field hospitals and artillery units.[11] Women even participated directly in combat in some instances by disguising themselves as men. Deborah Sampson fought in the revolutionary war dressed as a man until she was injured, hospitalized, and her sex discovered. She was ultimately discharged, but still qualified to receive a governmental army pension for her service and actions.[12] Since America's fight for independence, women have continued to serve in the military, including America's most recent conflicts in Afghanistan and Iraq. As a notable example, Sergeant Leigh Ann Hester was the first woman to be awarded the Silver Star with valor[13] since WWII for her role in leading a counterattack against an insurgent ambush in Iraq in 2005.[14] Despite these examples, women were officially barred from direct ground combat until 2016.

The language for the official exclusion of women from combat has changed multiple times in the past century. In 1948, President Harry S. Truman signed Executive Order 9981 outlining the United States' military's official position of equal treatment for all servicemembers; however, this position was held alongside other policies which limited the military careers of women and other minorities.[15] Recent changes in integration policy

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[11] Linda Grant De Pauw, "Women in Combat: The Revolutionary War Experience," *Armed Forces and Society* 7, no. 2 (1981): 209–26.

[12] Alfred F. Young, *Masquerade: The Life and Times of Deborah Sampson, Continental Soldier*. (Vintage Books, New York, NY, 2005).

[13] Awards "with valor," typically denote heroic actions in combat. The Army defines the wearing of the "V," device for "participation in acts of heroism involving conflict with an armed enemy."

[14] Leigh Hester, "Recipient - Military Times Hall of Valor," accessed February 10, 2019. https://valor.militarytimes.com/hero/3885.

[15] Military Leadership Diversity Commission, *From Representation to Inclusion: Diversity Leadership for the 21st Century Military* (Arlington, VA: Military Leadership Diversity Commission, 2011). https://diversity.defense.gov/Portals/51/Documents/Special%20Feature/MLDC_Final_Report.pdf, 12.

can be framed by examining the deviation from the "Risk Rule" established in 1988.[16] In 1994, the "Risk Rule" was rescinded and replaced by the "Ground Combat Rule," formally known as the Direct Ground Combat Definition and Assignment Rule (DGCDAR).[17] The DGCDAR did two things: it formally defined direct ground combat and excluded women from participating in it.[18] Fundamentally, this legislature changed the exclusion of women from perceived risk to the avoidance of direct ground combat. The DGCDAR shaped how women were integrated into our nation's most recent conflicts in Iraq and Afghanistan. In 2009, the Military Leadership Diversity Commission (MLDC) was established to provide the president and Congress a "comprehensive evaluation and assessment of policies and practices that shape diversity among military leaders."[19] Based in part by the findings of the MLDC, in 2013, the DGCDAR was removed and each military service commander—including the Special Operations Commander (SOCOM)—was tasked to develop plans for gender integration or apply for an exemption. This period of review was officially designated Women In Service Review, or WISR.[20] After quarterly meeting with the Chairman of the Joint Chiefs of Staff and dozens of robust studies, no service chiefs applied for exemptions and all positions, including those in SOCOM, were made available to women in 2016.

During the WISR, the National Defense Authorization Act (NDAA) directed all service chiefs and SOCOM to evaluate their physical standards. Before accepting women, Congress charged the Department of defense to ensure standards were gender neutral and would, "(1) accurately predict performance of actual, regular, and recurring duties of a

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16 Susan Hennessey, "How the Rules Changed on Women in Combat: A Legislative and Executive History Primer," Lawfare (January 26, 2013). https://www.lawfareblog.com/how-rules-changed-women-combat-legislative-and-executive-history-primer.

17 Susan Hennessey, "How the Rules Changed on Women in Combat: A Legislative and Executive History Primer."

18 The DGCDAR also excluded women where "job related physical requirements would necessarily exclude the vast majority of women Service members."

19 Military Leadership Diversity Commission, *From Representation to Inclusion: Diversity Leadership for the 21st Century Military* (Arlington, VA: 2011). https://diversity.defense.gov/Portals/51/Documents/Special%20Feature/MLDC_Final_Report.pdf, xiii.

20 "WISRJointMemo.Pdf," accessed August 5, 2019. https://archive.defense.gov/news/WISRJointMemo.pdf.

military occupation; and (2) are applied equitably to measure individual capabilities."[21] There was a concern that the standards used were artificially high, gender discriminate, or had limited predictive value.[22] The standards were examined, and in some cases, changed to reflect occupational standards.[23] Even after being validated and reaffirmed, the standards predicted high injury rates in women and that the number of qualified candidates would be small.[24] Despite these concerns the SOCOM Commander, General Votel, reiterated, "The command will absolutely not lower, raise, or create multiple sets of standards for special operations."[25] SOCOM performs vital missions for our country's defense. Its missions include but are not limited to direct action (DA), counter-proliferation of weapons of mass destruction (CWMD), unconventional warfare (UW), counterterrorism (COIN), special reconnaissance (SR), military information support operations (MSIO), foreign internal defense (FID), counterinsurgency (COIN), hostage rescue and recovery, foreign humanitarian assistance (HA), and security force assistance (SFA).[26] SOCOM must balance the requirements of the force while integrating a uniquely different asset, women, into combat billets. Therefore, it is necessary to understand both the quantitative and qualitative aspects of gender integration for SOCOM.

Women have played an integral role in SOCOM's missions in Iraq and Afghanistan. *Ad hoc* units like the Female Engagement Teams (FETs), Cultural Support Teams (CSTs), and the "Lioness" program were created "due to the gender-restrictive environment in which it was not culturally acceptable for male Soldiers to interact with

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21 Kristy N Kamarck, "Women in Combat: Issues for Congress," n.d., 40.

22 Chaitra Hardison, Susan Hosek, and Anna Saavedra, *Establishing Gender-Neutral Physical Standards for Ground Combat Occupations: Volume 2. A Review of the Military Services' Methods* (RAND Corporation, 2018). https://doi.org/10.7249/RR1340.2.

23 Hardison, Hosek, and Saavedra.

24 "Marine Corps Gender Integration Research Executive Summary, United States Marine Corps, Military," Scribd, accessed February 7, 2019. https://www.scribd.com/doc/280017557/Marine-Corps-gender-integration-research-executive-summary.

25 "Statement from USSOCOM on SECDEF's Women in Service Review Decision," accessed August 31, 2019. https://www.socom.mil/Pages/womeninservicereview.aspx.

26 "SOF Core Activities," accessed November 17, 2019. https://www.socom.mil/about/core-activities.

Host Nation females" in Afghanistan and Iraq.[27] These teams proved immensely useful in instances of tactical questioning, negotiations, signature management, and Key Leader engagements (KLE), producing tangible effects;[28] however, the *ad hoc* nature of these units contributed to some of the issues with these programs. Most U.S. servicewomen were selected or "voluntold" to participate in these programs, often as a collateral duty, limiting both their availability and expertise in performing these duties.[29] As a result, lack of relevant training, tactical competency, and physical fitness were reported across both the FET and CST.[30] Finally, commanders reported issues with the women of these units, citing a lack of maturity and fraternization[31] which detracted from their missions.[32]

Integration of women in SOCOM has even more potential benefits than those historically provided through these *ad hoc* units. Integrating women in SOCOM can help with signature management of SR missions in urban areas, where observation is inevitable.[33] Unlike rural or austere environments, SR missions in urban areas require operators to blend into the local populations to avoid detection. By incorporating women into these teams, SOF teams can better mimic the gender compositions and habits of the local population. Additionally, research in risk tolerance suggests a difference between men and women in their assessment of the probability and severity of negative outcomes[34]

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[27] U.S. Army War College, *Female Engagement Teams (FET) Blueprint. Carlisle, PA* U.S. Army War College, 2017.https://www.academia.edu/35312738/_U_Female_Engagement_Teams_FET_Blueprint.pdf, 2.

[28] Heather Gregg, "Women in Special Operations: From Cultural Support Teams to an Enduring Capability," May 2013, 9.

[29] Gregg, 14.

[30] Gregg, 33.

[31] Fraternization is a military crime punishable under article 134 of the UCMJ.

[32] Gregg, "Women in Special Operations: From Cultural Support Teams to an Enduring Capability," 32.

[33] Frederik Sunde and Marius Kristiansen, "Defying Stereotypes: The Untapped Potential of Integrating Female Reconnaissance Operators Into Small State NATO SOF," *Small Wars Journal*, October 2018. https://smallwarsjournal.com/jrnl/art/defying-stereotypes-untapped-potential-integrating-female-reconnaissance-operators-small.

[34] Christine R Harris and Michael Jenkins, "Gender Differences in Risk Assessment: Why Do Women Take Fewer Risks than Men?" *Judgment and Decision Making* 1, no. 1 (2006), 61.

and use different strategies in decision making environments.[35] Gender integrated teams can provide more robust, diverse, and risk aware decisions when compared to all-male teams.

Using the same physical test as Navy SEALs and SWCC, women have entered Navy Diver and Navy EOD billets in significantly lower rates and represent a very small portion of the community. Navy Divers first graduated women in 1975 and both Navy EOD and Navy Divers accepted women before the repeal of the DGCDAR. These units, therefore, can provide useful data for the integration of women into the SEALs and SWCC, the last remaining Navy Occupational Specialties (OS) closed to women. In a 2015 memo, the Naval Special Warfare commander expressed some concerns regarding women completing SEAL training citing Navy Diver and EOD statistics for comparison. Women account for only 0.6% of Navy Divers, 0.9% of Navy enlisted EOD, and 2.5% of Navy EOD officers. Graduation rates were also disparate between men and women candidates.[36] In EOD, enlisted women graduate at a rate of 13% compared to the 31% for men.[37] For Navy Divers, 18% of women graduate compared to 47% for men.[38] Similarly, attrition is also high in the SEAL community; however, competition for a training billet is greater. For men, graduation rates are 28% for enlisted and 65% for officers. As of this writing, no women have been selected to begin Basic Underwater Demolition/SEAL Training (BUD/S) as an officer or enlisted.

These factors suggest that comparatively few women would enter SOCOM. Motivated by concerns that disparity in graduation rates between sexes could result in additional pressure to reevaluate the battle-tested Assessment and Selection (A&S) methods, this research seeks to predict how many women should one should expect to enter

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[35] Phyllis Schiller Myers, "Gender Differences in Risk Behavior in Financial Decision-Making: An Experimental Analysis," *Journal of Risk and Insurance; Malvern* 65, no. 1 (March 1998): 152.

[36] B.L. Losey, "Female Integration Implementation Plan for Naval Special Warfare" (official memorandum, San Diego, CA: Department of the Navy Naval Special Warfare Command, 2015). https://dod.defense.gov/Portals/1/Documents/pubs/WISR_Implementation_Plan_Navy.pdf.

[37] B.L. Losey, "Female Integration Implementation Plan for Naval Special Warfare,"

[38] B.L. Losey, "Female Integration Implementation Plan for Naval Special Warfare."

SOCOM and analyze the best ways to address this potential gender representation discrepancy.

All service branches have begun accepting women applicants into their respective A&S pipelines. The Navy admitted the first female midshipmen to SEAL Officer Assessment and Selection (SAOS) in 2017 with no subsequent candidates passing this initial selection.[39] One women has completed RASP II for Army Ranger training,[40] one woman completed the MARSOC Q-course but was not selected to continue training,[41] and one woman has completed Army SF SFAS but has yet to attempt the Q-course at the writing of this thesis.[42] The Air Force has reported nine women have attempted the Airforce Special Warfare Preparation Course, with one woman passing the eight-week pre-selection preparations to begin A&S.[43]

This thesis seeks to create a model that can be used to predict the number of women entering SOCOM in its previously closed billets. By accounting for the most influential variables and relationships, I created a base-line model that predicts the number of women who will enter SOCOM without any policy or administrative changes across variable time horizons. With a working steady state model, I adjusted, added, removed, and combined different variables to reflect different policies and strategies and measure performance. By evaluating both a strategy's performance across five criteria: numerical performance, cost of implementation, reactivity and controllability, tenability, and perceived impacts to

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39 Jeanette Steele, "1st Woman Drops out of Navy SEAL Training Pipeline," *San Diego Union Tribune*, accessed February 6, 2019. https://www.sandiegouniontribune.com/military/the-intel/sd-me-seal-women-20170811-story.html.

40 Meghann Myers, "This Woman Will Be the First to Join the Army's Elite 75th Ranger Regiment," *Army Times*, August 7, 2017. https://www.armytimes.com/news/your-army/2017/01/18/this-woman-will-be-the-first-to-join-the-army-s-elite-75th-ranger-regiment/.

41 Gina Harkins, "1st Female Marine to Complete MARSOC's 2nd Phase Is Leaving the Corps," Military.com, October 21, 2018. https://www.military.com/daily-news/2018/10/21/1st-female-marine-complete-marsocs-2nd-phase-leaving-corps.html.

42 Meghann Myers, "A Female Soldier Has Made It through the Army's Special Forces Selection," *Army Times*, November 16, 2018. https://www.armytimes.com/news/your-army/2018/11/14/a-female-soldier-has-made-it-through-the-armys-special-forces-selection/.

43 Stephen Losey, "In a First, Enlisted Woman Aims to Become Special Operations Weather Airman," *Air Force Times*, March 29, 2019. https://www.airforcetimes.com/news/your-air-force/2019/03/26/in-a-first-enlisted-woman-aims-to-become-special-operations-weather-airman/.

performance, combined with a qualitative analysis one can conclude the best strategy and provide recommendations for implementation.

As a field, system dynamics use both quantitative and qualitative analyses to understand endogenous systems and how they behave. Endogenous systems are often identified by their feedback mechanisms, non-linear relationships, unpredictable behavior (especially over long periods of time). Developed by Jay Forrester at MIT in the 1950s, system dynamics is used in a variety of disciplines including engineering, manufacturing, anthropology, economics, social sciences, and physics.[44] Forrester understood the potential of capturing dynamic relationships and calculating accumulations in an endogenous system, developing a calculus-based methodology for modeling referred to as a stock and flow model.[45] Stocks represent the accumulations, or integrals, of the instantaneous changes system.[46] The instantaneous changes, or flow rates, mathematically represent differentials in the system or the rate of change of the stocks over time.[47] Additionally, variables are used to capture the magnitude and relationships that exist between stocks and flows. The model will evaluate a total of three stocks: women eligible for military service, women in the military, and women in SOCOM.

Without the aid of this model, it was difficult to determine what affect and magnitude one or multiple strategies would have on the number of females entering SOCOM because the dynamic and complex relationships that exist in the system. Without a model, strategies would have to be implemented and then evaluated to accurately determine performance. This process is both costly and has the potential to produce undesirable consequences that could affect mission readiness.

In this thesis, I will examine three aspects to the integration of women into SOCOM. Chapter II will introduce the base-line model and how it predicts women entering

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[44] John Sterman, *Business Dynamics: Systems Thinking and Modeling for a Complex World* (Boston: Irwin/McGraw-Hill, 2000), 5.

[45] Sterman, 192.

[46] Sterman, 192.

[47] Sterman, 194.

SOCOM over time. In Chapter III, I evaluated the numerical performance of different strategies and evaluate them independently. In Chapters IV and V, I will compare proposed strategies with a metanalysis and provide my conclusion, recommendations for implementation, and opportunities for further research.

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II. STEADY STATE MODEL

All models are wrong, but some are useful

George E.P. Box[48]

A. STEADY STATE MODEL OVERVIEW

The model consists of three stocks: women qualified for military service (F^1), women in the military (F^2), and women in SOCOM (F^3), where the value of each stock is captured for all women until they are no longer eligible for military service. Women exit the system and return to the general population when they become unfit for military service. Each stock is calculated at every time interval, measured in years. The numerical values and variable relationships were made on based on available open sources. Rationales are provided where key assumptions are made.

Figure 1 shows the steady state stock and flow model, demonstrating how the stocks move from right to left through the system. By design, the model does not calculate the stocks before they enter or after they leave the system designated with the cloud symbol(s). The model does not account for any limitations that would affect the immigration of women into the system or the emigration as the stocks leave the system. Additionally, the model will not consider any environmental considerations that would otherwise impact the movement of women in or out of the system. For example, the relative pay between military and civilian jobs affects military separation rates and candidate quality but will not be represented in the model.[49]

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[48] George E.P. Box and Norman Draper, *Empirical Model-Building and Response Surfaces* (John Wiley & Sons, 1987), 424.

[49] James Hosek et al., "Military and Civilian Pay Levels, Trends, and Recruit Quality" (Rand Corporation, 2018), XIII.

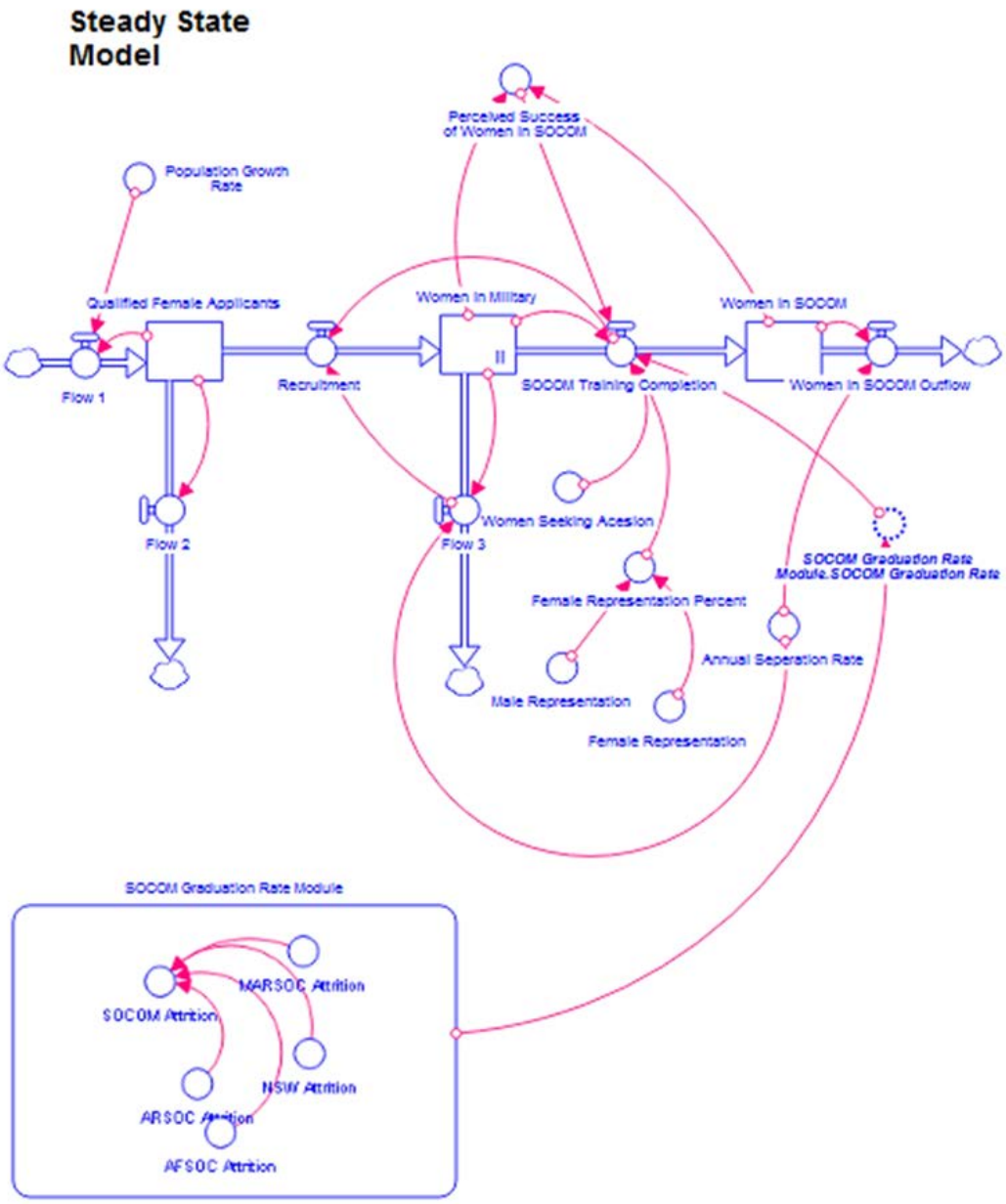

Figure 1. Steady state stock and flow model

Qualified Females applicants (F_1^x) is the first stock of the model. This stock, designated by a rectangle, represents the pool of qualified candidates that can be recruited for military service and is estimated to be 5 million women in 2018. This estimate is based on a study conducted by The Heritage Foundation which found that many young Americans are unfit for military service. Their findings suggest, "Over 24 million of the 34

million people of that age group [17-24 years old] cannot join the armed forces—even if they wanted to."[50] The biggest factors that preclude young Americans from service are health problems (32%), physical fitness (27%), education (25%), criminality (10%).[51] The value for F_1^x is determined dividing the service-ready 10 million Americans in half, assuming the factors which disqualify candidates are equally distributed between men and women. This first stock is fed directly from the general population where flowrates eventually take one of two paths: women are either recruited into the U.S. military or leave the model as women become unfit for military service.

The second stock, F_2^x, represents women actively serving in the military. For this stock's initial value, I used the numbers reported in the Department of Defense's 2010 Demographic Report which found that women accounted for 14.4% of the total force, numbering 203,695 women serving in total.[52] For separation rates, I calculated the rate at which service members left the military, regardless of reason, based on two premises: the constant size of the U.S. military and the known recruitment rates. The size of the U.S. military has not changed significantly since the end of the Cold War, hovering just under 1.5 million men and women in uniform from the mid-1990s to present (see Figure 1).[53] Using the constant size of the military and available recruitment rates, I calculated the military separation rates. Using the data from the Defense Manpower Data Center I determined the recruitment rate to be 12.99%. See Table 1.

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[50] Spoehr, "The Looming National Security Crisis."

[51] Spoehr.

[52] Office of the Deputy Under Secretary of Defense.*2010-Demographics-Report*. 2010. https://download.militaryonesource.mil/12038/MOS/Reports/2010-Demographics-Report.pdf.

[53] David Coleman, "U.S. Military Personnel 1954–2014: The Numbers," *History in Pieces* (blog), July 24, 2014. https://historyinpieces.com/research/us-military-personnel-1954-2014.

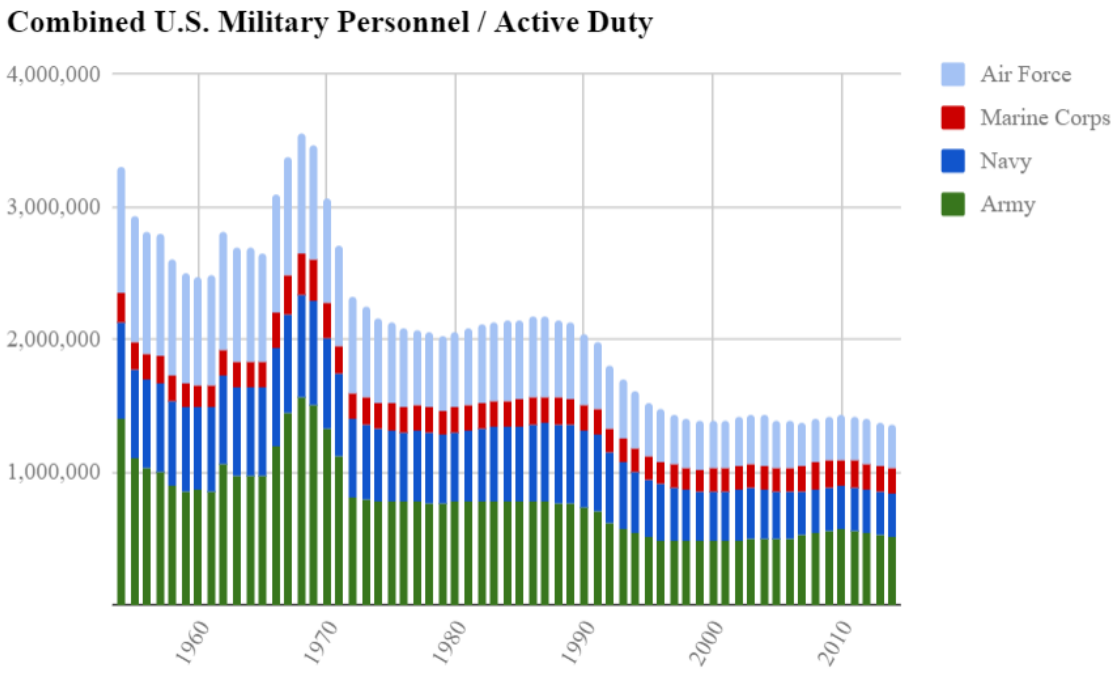

Figure 2. U.S. active duty military size over time. Source: Coleman, David. U.S. Military personnel 1954–2104.

Table 1. Separation rates calculated from Department of Defense fiscal year 2018 recruiting and retention numbers[54]

Recruitment FY 2018				
Service	**Goal**	**Actual**	**Size of Force**	**Percentage Accession**
Army	76,500	69,972	474,944	14.73%
Navy	39,000	39,018	330,290	11.81%
Marines Corps	31,556	31,567	184,911	17.07%
Air Force	29,450	30,343	325,152	9.33%
Total	176,506	170,900	1,315,297	12.99%

54 "Department of Defense Announces Fiscal Year 2018 Recruiting and Retention," U.S. Department Of Defense, accessed September 29, 2019. https://www.defense.gov/Newsroom/Releases/Release/Article/1691314/department-of-defense-announces-fiscal-year-2018-recruiting-and-retention-numbe/.

To reflect the constant size of the military over time, the two outgoing flowrates from women in the military (F_2^x), women separating from the military (r_3) and women joining SOCOM (r_4), are summed for the flowrate of women entering the military (r_2) to create self-regulating stock. This characteristic reflects in reality in the regards that the military changes the quality of recruits accepted to meet the services' demands.[55] All service members must join and complete a service branch's boot camp or commissioning source before they can attend Assessment and Selection (A&S) for a SOCOM billet. For this reason, the model requires all applicants entering SOCOM to first enter the military population despite some specific direct accession programs (SF X-ray program and SEAL enlisted contracts).

The final stock measures the number of women who have entered SOCOM in its previously closed billets (F_3^x). This stock is affected by two flow rates: the inflow is women seeking accession (r_4) and the outflow is women separating from SOCOM (r_5). For accession several variables affect the flowrate into SOCOM. One significant factor for women entering SOCOM's previously closed billets is the attrition during the A&S pipelines themselves. Using data from 2007–2018, I determined the net average completion rate (m) for all of SOCOM's A&S pipelines. I summed the total number of graduates and divided by them by the total number of candidates to find the service-specific weighted completion rate for men from 2007–2018. The aggregate graduation rate was compiled as follows with unit specific identifier (SF, CCT, SEAL, Ranger, etc.) and either a "G" representing the graduates or a "C" to represent the total number of applying candidates (i.e. SFG would designate the total number of Special Forces that graduated from the years 2007–2018). The equation for the average completion rate becomes:

$$m = \frac{CCTG + STOG + SWCCG + SEALG + MARSOCG + RangerG + SFG}{CCTC + STOC + SWCCC + SEALC + MARSOCC + RangerC + SFC}$$

[55] James Hosek et al., "Military and Civilian Pay Levels, Trends, and Recruit Quality."

Female candidates do not have the same robust data for completion rates that exist for male candidates. One can compare the relatively small sample size of female candidates with that of the male candidates to determine if there is a statistically significant difference. In the past decade, the data showed 14,755 male candidates graduated out of 44,035 candidates that were selected for training.[56] During the same time frame, one of twelve women graduated in SOCOM's newly opened positions. Using the N-1 Chi-square test, one can predict the likelihood that two populations, one large and one small, will have the same binary output, or for this research, graduation rates. With this calculation, I predict with a 93.53% probability that the graduation rates would be different in a similar sized population. Additionally, this calculation predicts with a 96.77% confidence that, between males and females, males will have the higher graduation rates. Acknowledging the evidence that males and females will have different graduation rates, I will still use the male graduation rates for both sexes assuming the nascent graduation rates for women may not reflect the long-term averages for women. Additionally, women have yet to attempt all the available positions in SOCOM which could further skew the initial results. This critical assumption will be reemphasized during the analyses of the model's performance.

This model also features a positive feedback loop in which the number of women in SOCOM affects the number of women seeking accession. Women are generally more reticent than men to apply for jobs for which they feel unqualified.[57] A profound lack of representation of women in SOCOM could otherwise discourage women from seeking accession in SOCOM. To model this interaction, I used a susceptible, infected, and recovered model commonly referred to as a SIR model. The "infection" refers to the changing of beliefs so that women who felt underqualified or unable to apply for A&S for SOCOM are encouraged by other women's success. The susceptible population are the women in the military (F_2^x) and the recovered population are the women in SCOOM (F_2^x). Women entering SOCOM in the previously closed billets have received tremendous

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[56] Jeff Pavelko, "US Special Operations Command."

[57] Tara Sophia Mohr, "Why Women Don't Apply for Jobs Unless They're 100% Qualified," *Harvard Business Review (*August 25, 2014): https://static1.squarespace.com/static/52f84192e4b0bae912c881e6/t/564b37e6e4b03f66f2c62080/1447770086778/Why+Women+Dont+Apply+for+Jobs_HBR.pdf.

amounts of media coverage and their identities are usually known. For this reason, I assumed a 100% interaction rate between the populations with a very low infection rate (i.e., it would be difficult to encourage a new woman to apply for SOCOM). The infection rate used was 0.0001. A complete list of variables and initial conditions for the steady state model can be found in appendix A.

B. STEADY STATE RESULTS

This section reports the model's prediction for the number of women in SOCOM with no changes to policy. The variables reported include the inflow and outflow of women in SOCOM, the total number of women in SOCOM, the number of women in the military, and the number of qualified female applicants. These will be the measures of performance analyzed across all models. The model uses a twenty-year time horizon starting in 2019 and ending in 2039. By the end of the twenty-year time horizon the model predicts 71.6 women will have made it into SOCOM. This is a 597% increase in women from 2018: however, women will account for only a small percentage of SOCOM's roughly 15,500 previously closed billets. The model achieves an equilibrium where the outflow of women is equal to the inflow of women at year 46 with 79 women in SOCOM. Results for a steady state prediction appear in Table 2.

Table 2. Steady state results

Results From Steady State Model					
Year	**Women in SOCOM**	**Inflow**	**Outflow**	**Women in the Military**	**Qualified Female Applicant**
1	12.0	9.11	1.56	204k	5.0M
2	19.2	9.24	2.50	204k	5.2M
3	25.7	9.36	3.34	204k	5.5M
4	31.5	9.46	4.09	204k	5.7M
5	36.6	9.55	4.76	204k	6.0M
6	41.2	9.63	5.35	204k	6.3M
7	45.3	9.71	5.89	204k	6.5M
8	49.0	9.77	6.36	204k	6.8M
9	52.3	9.83	6.79	204k	7.2M
10	55.2	9.88	7.17	204k	7.5M
11	57.8	9.93	7.50	204k	7.9M
12	60.1	9.97	7.81	204k	8.2M
13	62.2	10.01	8.08	204k	8.6M
14	64.0	10.04	8.32	204k	9.0M
15	65.7	10.07	8.53	204k	9.5M
16	67.1	10.09	8.72	204k	9.9M
17	68.5	10.12	8.89	204k	10.4M
18	69.6	10.14	9.05	204k	10.9M
19	70.7	10.16	9.18	204k	11.4M
20	71.6	10.17	9.30	204k	12.0M

C. STEADY STATE ANALYSIS

The number of women in SOCOM remain relatively small, even over the relatively long twenty-year time period due to the system reaching equilibrium. This equilibrium is created between constant values for women in the military and the constant rate of separation form SOCOM. The only reinforcing loop for women is the perceived success of women in SOCOM, however, other variables that affect the flowrate of women into SOCOM limit the effectiveness of this feedback. The variable that most profoundly affect this flow rate is the female representation percent. Less than one percent (0.13%) of the previously SOCOM billets have been allocated to female candidates over their male counterparts between 2016 and 2018. This competition assumes women and men will have the same criteria for selection and will directly compete for the same SOCOM A&S billets. Of the women that do fit this criterion, the flow rate is restricted further by the successful the SOCOM A&S attrition rates.

For evaluating performance, I will introduce the concept of tokenism and "critical mass" in my analyses. Tokenism refers the level of integration where a minority group suffers from its individuals status before reaching the status of subgroup.[58] Tokens capture a higher awareness than their numerical representation warrants.[59] Also tokens tend to assume the role of their sub-group in an organization more and end up contributing with their own individual personalities less.[60] Tokenism can reinforce boundaries that exist between groups as the dominant group attempts to preserve their commonality in the presence of a token.[61] For these reasons, I will consider gender integration that does not achieve numerical representation beyond tokenism to be sub-optimal. For performance, I will use 20% integration to be the standard for "critical mass" in the integration of women in SOCOM. Several studies on board room performance suggest that at 20% integration, women move beyond tokenism and achieve subgroup status, where group performance is

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58 Rosabeth Moss Kanter, *Men and Women of the Corporation* (New York: Basic Books, 1977).

59 Kanter.

60 Kanter.

61 Kanter.

often enhanced.[62] I acknowledge, however, that this benchmark is not universally accepted and can still result in situations where women might retain "solo status" as the only woman in a small unit.[63] Moreover, I acknowledge the profound differences that exist between board room decisions and the duties performed under SOCOM. Despite these caveats, I will use the 20% target, therefore, as a heuristic to evaluate an individual model's performance and also for comparisons between models.

Succinctly, the steady state model does not predict a tremendous number of women in SOCOM, even over a large time horizon, and approaches nowhere near the 20% threshold for critical mass. These results assume no changes occur in the next 20 years that would significantly impact the accession of women in SOCOM. Normatively, this has not been the case. In Army Ranger school, women have been reported to receive individualized instruction, access to special programs, and an atypical amount of recycles which have given women an advantage, not extended to their male peers, without adjusting the standards.[64] Additional strategies and policies should be examined to influence integration to achieve critical mass or otherwise increase the representation of women in SOCOM.

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[62] Larelle Chapple and Jacquelyn E. Humphrey, "Does Board Gender Diversity Have a Financial Impact? Evidence Using Stock Portfolio Performance," *Journal of Business Ethics* 122, no. 4 (July 1, 2014): 709–23. https://doi.org/10.1007/s10551-013-1785-0.

[63] Schaefer et al., "Implications of Integrating Women into the Marine Corps Infantry."

[64] "Was It Fixed? Army General Told Subordinates: 'A Woman Will Graduate Ranger School,' Sources Say," PEOPLE.com, accessed November 8, 2019. https://people.com/celebrity/female-rangers-were-given-special-treatment-sources-say/.

III. ALTERNATIVE STRATEGIES

Ignorance deprives people of freedom because they do not know what alternatives there are. It is impossible to choose to do what one has never "heard of"

Ralph Barton Perry[65]

With a working model, alternatives can be replicated to predict how different strategies and policies perform over time. In this Chapter I evaluated the performance of three different strategies affecting different components of the system: recruitment, selection, and retention. First, I modeled the effects of enhancing the "upsteam" stocks by increasing the number of women who are eligible for military service and the number of women represented in the military. Second, I evaluated the performance of a policy implementing a quota, focusing on increasing the representation of women during the selection portion of the model. Last, I will model a policy aimed at increasing the retention rate of women in SOCOM affecting the outflow or "downstream" portions of the model. The aim of testing these strategies is not to necessarily give a specific recommendation on how to implement, but to examine where in the system and what magnitude is need to produce optimal results. I introduce the following alternatives individually before comparing alternative strategies in the next chapter.

A. ALTERNATIVE I: RECRUITMENT

1. Recruitment Strategy Overview

This strategy seeks to increase the number of women recruited into the military by increasing the number of both qualified women and women in the military. In order for this strategy to be effective, efforts must must be directed towards women in the developmental years before they are eligible for military service. The aim of this strategy is to identify how changes in recruitment of women in the miltary affect the accenssion of

[65] Ralph Barton Perry, *The Citizen Decides, A Guide to Responsible Thinking in Time of Crisis* (Bloomingto, IN, Indiana University Press, 1951), 9.

women in SOCOM. Providing one example, high school students who participate in Junior Reserve Officer Training Corps (JROTC) were reported to have higher GPAs, higher graduation rates, lower rates of teen pregnancy, and lower levels of gang violence.[66] Additionally, 20–25% of students in JROTC go on to serve in the military in one branch or another.[67] Resources could be allocated to recruit young women into these and other programs that increase their eligibility of service, interest in military culture, and reduce the incidences of disqualifying crime. Tailoring recruitment strategies towards young women in these ways can increase the overall size and quality of female applicants. Another avenue to reinforce the recruitment of women is to better tailor the recruitment message to women. Using successful female servicemembers as recruiters could help reinforce the idea (for both men and women) that women also have exciting and prolific careers in the military. The United States Air Force has led this effort, releasing a recruitment video specifically tailored to women, featuring female only servicemembers.[68] Since this strategy is aimed at changing the attitudes, beliefs, and the demographics of women in the recruitment pool, this strategy could have a comparatively long time horizon before affecting the number of women in SOCOM.

This strategy could face several resistances to implementation; chiefly perception of preferential treatment for women and competition for women interested in higher paying, less laborious careers. Women have steadily increased their representation in Science, Technology, Engineering, and Mathematics (STEM) career fields, normalizing the presence of women in previously male-domintated fields, even outpacing men in some categories including doctoral degrees in biology.[69] This increase in availability and opportunity of high paying and less physically demanding work has created competition

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66 Kyle Rempfer, "Army Leaders Weigh Expanding JROTC in High Schools," *Army Times* (November 9, 2019): https://www.armytimes.com/news/your-army/2019/11/07/how-increased-footprint-in-high-schools-may-help-army-fix-recruiting-shortfall/?utm_source=clavis.

67 Kyle Rempfer, "Army Leaders Weigh Expanding JROTC in High Schools."

68 Giancarlo Casem. "Fighter Pilot Embodies 'Captain Marvel' Spirit," U.S. Air Force (March 22, 2019): https://www.af.mil/News/Article-Display/Article/1792484/fighter-pilot-embodies-captain-marvel-spirit/.

69 Nancy N. Heilbronner, "The STEM Pathway for Women: What Has Changed?" *Gifted Child Quarterly* 57, no. 1 (January 1, 2013): 39–55. https://doi.org/10.1177/0016986212460085.

between women who are applying for more the more physically demanding and relatively lower income careers the military can offer. Second, allocating resources specifically targeted to the recruitment of women could breed resentment from men who might feel left behind or undervalued.

This strategy was modeled by making two modifications to the steady state model. First, I added an additional variable to reflect growing population of qualified women over time from increased interest in the military and a reduction of disqualifying criteria. Additionally, the model was initially designed to maintain the number of women in the military regardless of flow rates in and out of the stock through a balancing equation. I removed this balancing and feature and increased the flow rate in by 15%. This value was selected by evaluating an array of increased flow rates ranging from a annual increase of 5% to 25% in Figure 3. I chose the value of 15% due to that rate's ability to reach "critical mass" at 20% representation, in the military with roughly 300,000 women at the end of the 20-year time horizon.

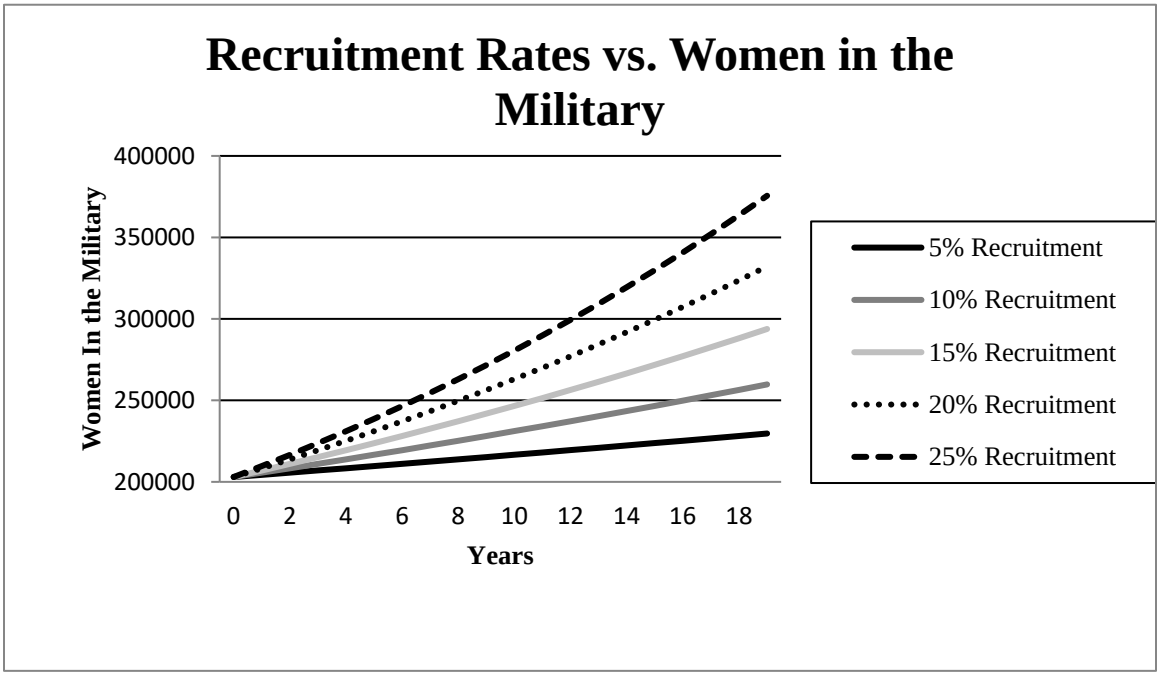

Figure 3. Recruitment rate array

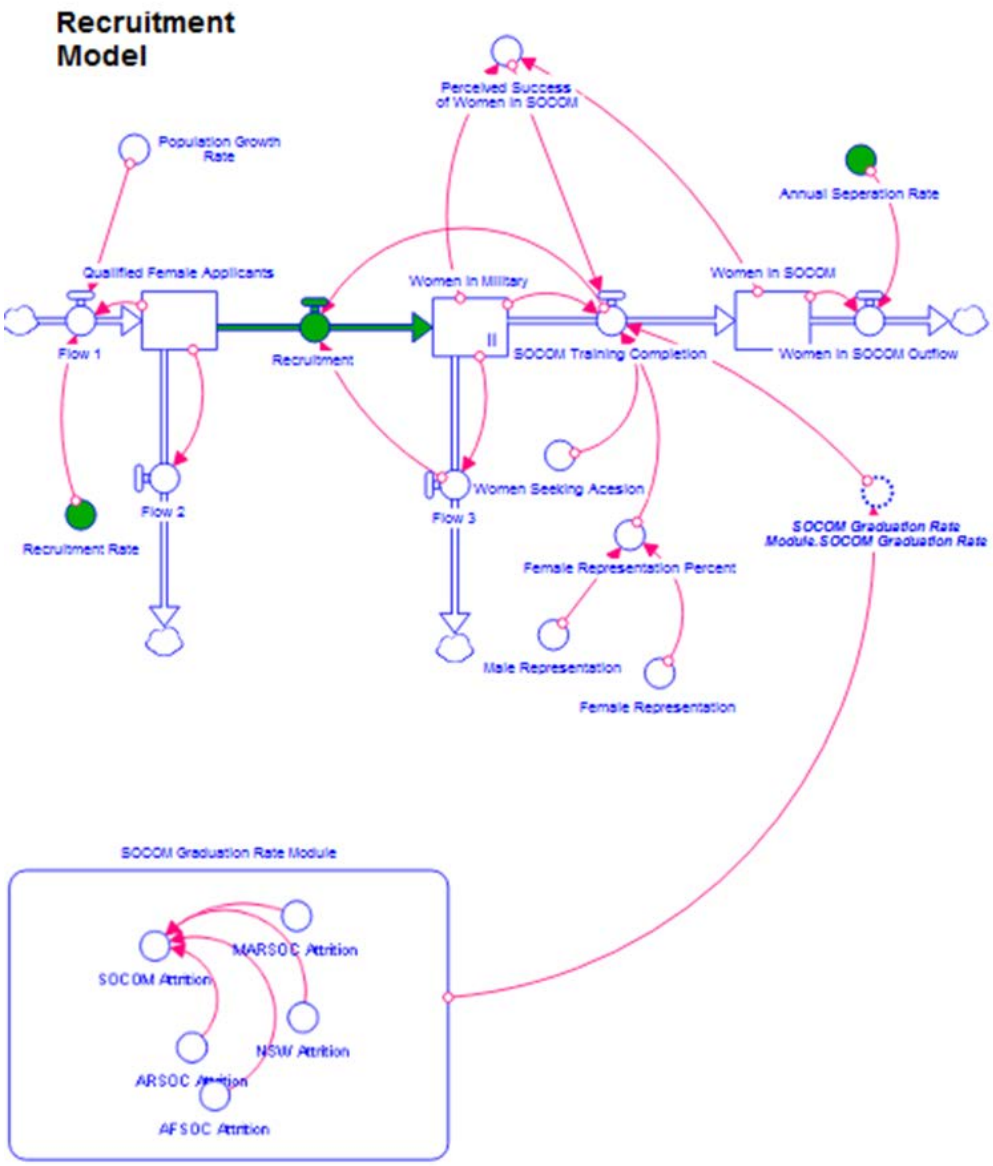

Figure 4. Recruitment strategy model 1

2. Recruitment Strategy Results

The steady state results from the model for the women in SOCOM appear in Table 3. The model uses a twenty-year time horizon starting in 2019 and ending in 2039. By the end of the twenty-year time horizon the model predicts 92.5 women will have made it into SOCOM. The model does not achieve an equilibrium and grows steadily even over

long time horizons, predicting 1.07k women at year 2119 (100 years later). Results for the recruitment strategy are below.

Table 3. Recruitment strategy results

Results from Recruitment Strategy Model					
Year	**Women in SOCOM**	**Inflow**	**Outflow**	**Women in the Military**	**Qualified Female Applicant**
1	12.0	9.08	1.56	203k	5M
2	19.3	9.39	2.51	207k	5.22M
3	25.9	9.70	3.37	211k	5.45M
4	32.1	10.01	4.17	215k	5.70M
5	37.8	10.31	4.91	219k	5.96M
6	43.0	10.62	5.59	224k	6.23M
7	47.9	10.92	6.23	228k	6.51M
8	52.5	11.23	6.82	233k	6.81M
9	56.8	11.54	7.38	237k	7.12M
10	60.9	11.85	7.91	242k	7.45M
11	64.7	12.17	8.42	247k	7.79M
12	68.4	12.49	8.90	251k	8.25M
13	72.0	12.81	9.36	256k	8.92M
14	75.4	13.14	9.80	261k	9.06M
15	78.7	13.48	10.23	267k	9.33M
16	81.9	13.82	10.65	272k	9.77M
17	85.1	14.17	11.06	277k	10.2M
18	88.1	14.52	11.46	283k	10.7M
19	91.2	14.89	11.86	288k	11.2M
20	94.2	15.26	12.25	294k	11.7M

3. Recruitment Strategy Analysis

The number of women in SOCOM remains small, even after a long period of time. The significant factors limiting the growth of women in SOCOM in the steady state model remain unchanged. Women encounter a tremendous decrease in the flow rates occurring between women in the military and women in SOCOM. The projected increase to 92.5 women in SOCOM 20 years later is a 32% increase from the 70.3 women predicted by the steady state model. At year 20, women are projected to hold women at 0.4 % of the new open positions within SOCOM.

Despite a minimal impact to the total number of women in SOCOM, this strategy was modeled to allow the representation of women of the military to grow. By the end of the 20-year time horizon, women in the military grew to 294k which puts them near 20% of the active duty forces, assuming no significant growth or reduction of forces from the roughly 1.5M active duty military personnel today, approaching my heuristic value of 20% representation. Additionally, the benefits from decreasing the number of young Americans who have felonies, are overweight, are medically unfit, or lack a high school diploma are not captured in this model or thesis but bear recognition. It appears the secondary benefits of this strategy may actually outweigh the measurable performance for women entering SOCOM, which is modest. Despite these shortcomings, this strategy might be worth pursuing purely for the benefits to young women and achieving 'critical mass' for women in the military.

B. ALTERNATIVE II: SELECTION FOCUSED STRATEGY

1. Selection Strategy Overview

As previously mentioned, between 2016 and 2018, women only represented 0.13% of the SOCOM candidates when women directly competed with men for training billets in SOCOM. This difference could be due to the bias of the physical standards which produce inequal outcomes between men and women however those physical standards have been validated against occupational requirements and thus have been accepted as "fair."[70]

[70] Szayna et al.

Additionally, when considering fairness, a Rand report, found that normative standards could be perceived as unfair when used between groups:

> If normative standards that compare the relative standing oftest takers to each other are used (e.g., 90th percentile of all test-takers—regardless of gender), that male and female test scores are combined to form one norm group. The use of genderspecific norms to select candidates (e.g., 90% of female test takers and 90th percentile of male test takers) is not consistent with currently accepted definitions and interpretations of gender neutral standards.

This strategy is aimed specifically at addressing this factor by implementing a quota for female candidates entering A&S. Since this strategy can be directed administratively, it has the potential to have significant and immediate impacts on the accession of women. Additionally, this strategy could be treated as a temporary or transitional policy to create a meaningful population of women in SOCOM after decades of exclusion. While the official entrance standards have been recently been validated against occupational requirements, there is a concern that the optimal entrance standards could have normatively been set so high that the criteria used to evaluate candidates excludes qualified and diverse candidates like women.[71] While this strategy is useful to rapidly increase the accession of women into SOCOM, issues of fairness and equality may arise. The presence of two normative standards between genders could hurt trust and cohesion within units and could damage the perception of women who may not have benefited from the different sub group standards for selection.

To illustrate how quotas might influence selection, I will briefly discuss Canada's strategies, quotas, and their effects to inform the model. Canada initiated complete integration of its forces starting in 1990[72] but despite all positions being open, women were not represented in large numbers even decades later. By 2016 women only accounted for

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[71] Hardison, Hosek, and Saavedra, *Establishing Gender-Neutral Physical Standards for Ground Combat Occupations*.

[72] National Defence Government of Canada, *Backgrounder; Women in the Canadian Forces*. No.BG-98-002, Canadian Armed Forces Report, 1998. http://www.forces.gc.ca/en/news/article.page?doc=women-in-the-canadian-forces/hnlhlxa3.

14.9% of the Canadian Armed Forces (CAF).[73] Canada's National Action Plan on Women, Peace, and security 2017—2022 sought to increase the representation of women by 1% per year until 2026 or until it achieved a 25% representation.[74] Canada's Department of National Defence (DND) implemented a 25% "soft quota" for the intake of women recruits in the Army in support of this target growth.[75] Since, the DND found it was to early to distinguish if the efforts have placed their recruitment on track or not, but recorded only 14.9%of their recruits as women at the end of the March 2018 reporting cycle.[76] One by-product of this quota is the increased gendering of specific occupational specialties within the CAF. Canada has employed employment equity (EE) targets in their selection of recruits for certain occupations. EE sheets specifically identified jobs in which CAF recruiters were "Accepting applications from females only."[77]

For the model, I calculated the effects of a quota which guarantees women 10% of the available positions for women entering the SOCOM pipeline. This assumes the total number of candidates will remain constant from year to year. Calculating 10% of the total SOCOM candidates per year yields 206.2 women candidates per year.

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[73] "Canada's National Action Plan on Women, Peace and Security 2017-2022 – Department of National Defence and The Canadian Armed Forces – Progress Report for Fiscal Year 2017/2018," accessed November 10, 2019. https://www.international.gc.ca/world-monde/issues_development-enjeux_developpement/gender_equality-egalite_des_genres/DND-wps-fps-MDN-17-22.aspx?lang=eng.

[74] "Canada's National Action Plan on Women, Peace and Security 2017-2022 – Department of National Defence and The Canadian Armed Forces – Progress Report for Fiscal Year 2017/2018."

[75] Government of Canada, "Backgrounder, Women in the Canadian Forces."

[76] "Canada's National Action Plan on Women, Peace and Security 2017-2022 – Department of National Defence and The Canadian Armed Forces – Progress Report for Fiscal Year 2017/2018."

[77] "The Canadian Forces Jobs Where Only Women Need Apply, National Post," accessed November 10, 2019. https://nationalpost.com/news/canada/the-canadian-forces-jobs-where-only-women-need-apply.

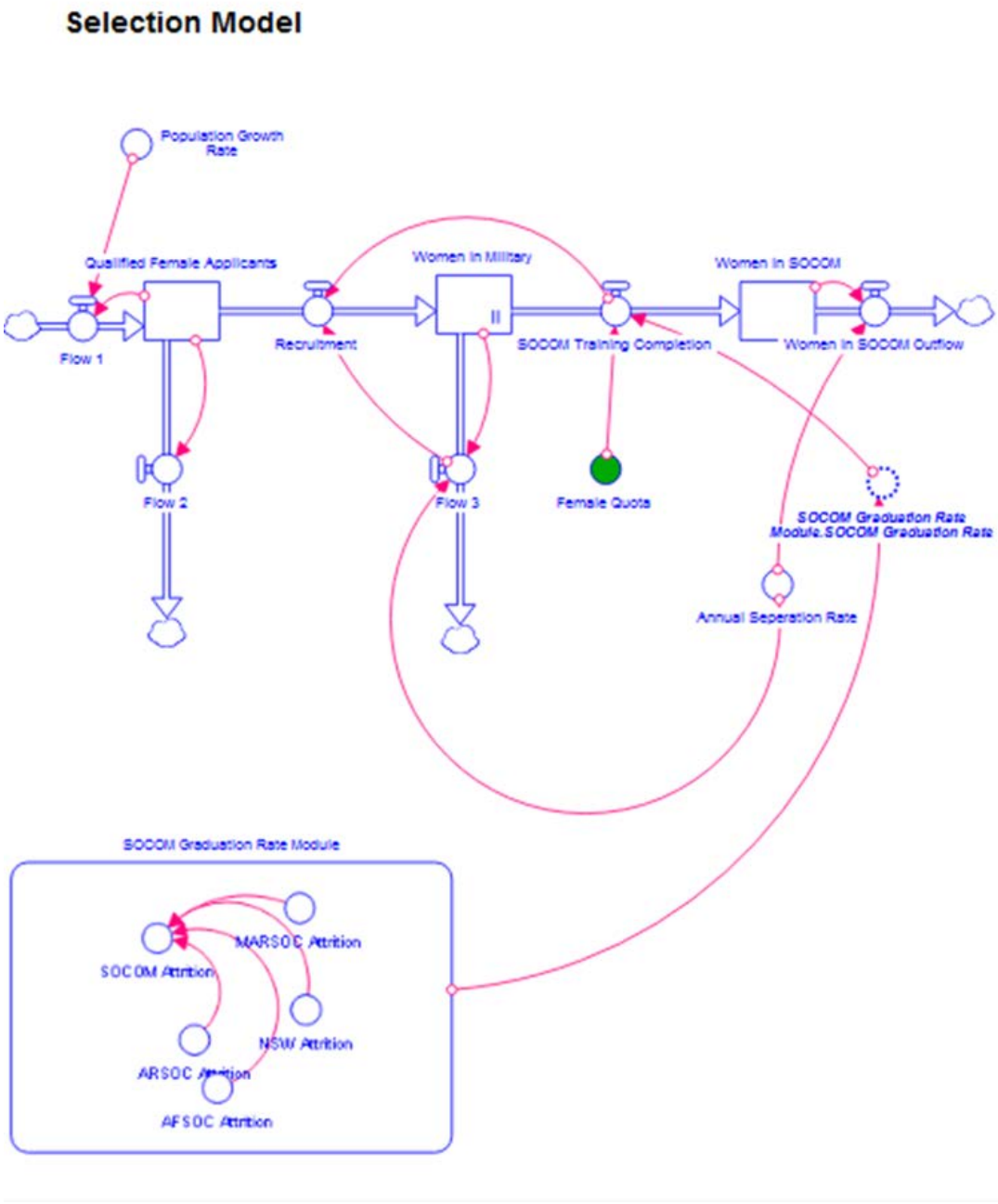

Figure 5. Selection strategy model

2. Selection Strategy Results

The results from the selection model for the women in SOCOM are below. The model uses a twenty-year time horizon starting in 2019 and ending in 2039. The number of women entering SOCOM is regulated by the 10% quota predicting 206.2 women per

year. This number is derived by taking 10% of the average number of selected candidates (2,0602 candidates) in newly opened positions within SOCOM from the last 10 years.[78] By the end of the twenty-year time horizon the model predicts 1,459.3 women will have made it into SOCOM. This is a tremendous increase in the number of women in SOCOM, especially when compared to other possible strategies. The model grows quickly and reaches equilibrium at 1,587 women. This equilibrium is achieved by the number of women entering SOCOM (206.2 women) remaining constant and the stock growing until the outflow matches the inflow due to the separation rates. The growth of women in SOCOM for these sets of conditions stops at 1,587 women, there the model reaches equilibrium at year 64. Results for steady can be found in Table 4.

78 Jeff Pavelko, "US Special Operations Command."

Table 4. Selection strategy model results

Results From Selection Strategy Model					
Year	**Women in SOCOM**	**Inflow**	**Outflow**	**Women in the Military**	**Qualified Female Applicant**
1	12.0	206.2	1.6	204k	5.0M
2	206.9	206.2	26.9	204k	5.2M
3	377.7	206.2	49.1	204k	5.5M
4	527.3	206.2	68.5	204k	5.7M
5	658.5	206.2	85.5	204k	6.0M
6	773.4	206.2	100.5	204k	6.3M
7	874.1	206.2	113.5	204k	6.5M
8	962.3	206.2	125.0	204k	6.8M
9	1039.7	206.2	135.1	204k	7.2M
10	1107.4	206.2	143.9	204k	7.5M
11	1166.8	206.2	151.6	204k	7.9M
12	1218.8	206.2	158.3	204k	8.2M
13	1264.4	206.2	164.3	204k	8.6M
14	1304.4	206.2	169.4	204k	9.0M
15	1339.4	206.2	174.0	204k	9.5M
16	1370.1	206.2	178.0	204k	9.9M
17	1397.0	206.2	181.5	204k	10.4M
18	1420.5	206.2	184.5	204k	10.9M
19	1441.2	206.2	187.2	204k	11.4M
20	1459.3	206.2	189.6	204k	12.0M

3. Selection Strategy Analysis

This strategy produces impressive results that achieve an promising equilibrium, however, the establishment of a quota could result in lower caliber of candidates and undermine the perception of women in SOCOM. As stated, the system achieves an

equilibrium of 1,587 women. When compared to the totality of SOCOM, that equilibrium pushes women much closer to what may be considered critical mass with a representation of 9.41% women. Another benefit of this strategy is that the quota rates are administratively controlled. If the demand for female operators changes then the quota can be adjusted accordingly to fit that demand. The main drawbacks of this strategy are two-fold; this strategy could admit potentially less qualified candidates into the highly competitive SOCOM A&S pipelines, displacing more qualified candidates and this quota could injure the perceptions of women entering SOCOM. This strategy could foster resentment from their male-counterparts for which no gender subgroup preference exist. It should be emphasized that as proposed, the strategy would still require females to meet the minimum standards for A&S. Presently, most applicants accepted in SOCOM submit scores significantly higher than the minimums. For example, on the official SEAL and SWCC website, NSW publishes both the minimum standards and optimal standards. For enlisted, the optimal calisthenic standards are 50% higher than the minimum standards (50 push-ups minimum, 50 curl-ups minimum, and 10 pull-ups minimum versus 75 push-ups, 75 curl-ups, and 15 pull-ups as optimal).[79] The optimal swim and run times are significantly faster than the minimum s as well (minimum for the 500 yard swim is 12:30, optimal is 9:30 and minimum for the 1.5 mi run is 10:30 and optimal is 9:30).[80] For officers the optimal standards are even higher at roughly double the minimum scores and an even faster optimal swim and run times.[81] No service chief sought an exception for gender integration; a position which was caveated that standards would not changed or double standards created.[82] It is unclear how women might be perceived if they were accepted under a quota if their scores were between the minimum and optimal scores. Reflections on racial quotas imparted under the Philadelphia Plan cast doubt in the methods used to achieve the goals. Laurence Silberman, who helped justify the legality of the plan later stated, " I now realize

[79] Navy SEAL + SWCC Scout Team Center Naval Special Warfare, "NAVY SEAL TRAINING," SEALSWCC.COM, accessed October 19, 2019. https://www.sealswcc.com/navy-seal-training.html.

[80] Navy SEAL + SWCC Scout Team Center Naval Special Warfare.

[81] Navy SEAL + SWCC Scout Team Center Naval Special Warfare.

[82] "Statement from USSOCOM on SECDEF's Women in Service Review Decision."

that the distinction we saw between goals and timetables on the one hand, and unconstitutional quotas on the other, was not valid. Our use of numerical standards in pursuit of equal opportunity has led ineluctably to the very quotas, guaranteeing equal results, that we initially wished to avoid."[83] SOCOM's "unoffical-offical" benchmarks of performance could contribute to perceptions of a double standards and which in turn could affect cohesion and performance.

C. ALTERNATIVE III: RETENTION

1. Retention Overview

For this last strategy, focuses on the retention aspect of the model to increase the overall number of women in SOCOM. Canada has used a combination of exit interviews/ surveys, tracking release data, and consultation with other militaries to better understand the trends associated with Canadian Armed Forces (CAF) female separation.[84] The CAF has identified that "aspects such as family balance, job enjoyment, selection for professional development, velocity of promotion and a safe and harassment free work environment are all factors that contribute to making the CAF an Employer of Choice."[85] This strategy is aimed at addressing these factors that contibute to the separation of women from the military. Additionally, injury rates profoundly affect graduation during A&S, estimated to be 80% in NSW,[86] and the general health, longevity, and performance of operators. Not all injuries are preventable, however, evidence suggests that some lower extremity injuries can be avoided with higher mean fitness levels and training programs designed around higher intensity and lower intervals.[87] A United Kingdom Ministery of

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[83] Paul Craig Roberts, Lawrence M. Stratton, and James S. Robb, "Proliferation of Privilege," *National Review, New York*, November 6, 1995.

[84] "Canada's National Action Plan on Women, Peace and Security 2017-2022 – Department of National Defence and The Canadian Armed Forces – Progress Report for Fiscal Year 2017/2018."

[85] "Canada's National Action Plan on Women, Peace and Security 2017-2022 – Department of National Defence and The Canadian Armed Forces – Progress Report for Fiscal Year 2017/2018."

[86] B.L. Losey. "Female Integration Implementation Plan for Naval Special Warfare," Official memorandum. San Diego, CA: Department of the Navy Naval Special Warfare Command, 2015. https://dod.defense.gov/Portals/1/Documents/pubs/WISR_Implementation_Plan_Navy.pdf.

[87] *Journal of Special Operations Medicine* (U.S. Special Operations Command, 2009).

Defense study found that "in initial military training, women have twice as much risk of musculoskeletal injury as men, and 15% to 20% higher rates of non-battle injuries in recent operations."[88] With respect to careers opportunities, women may not feel the same optimism as due to the lack of representation of women at the highest echelons within the U.S. military. Last, women can feel forced to choose between their careers and starting a family. Policies on career intermission programs, physical fitness permissions post-partum, and maternity leave can better facilitate a meaningful military career without foregoing the opportunity to have a family.

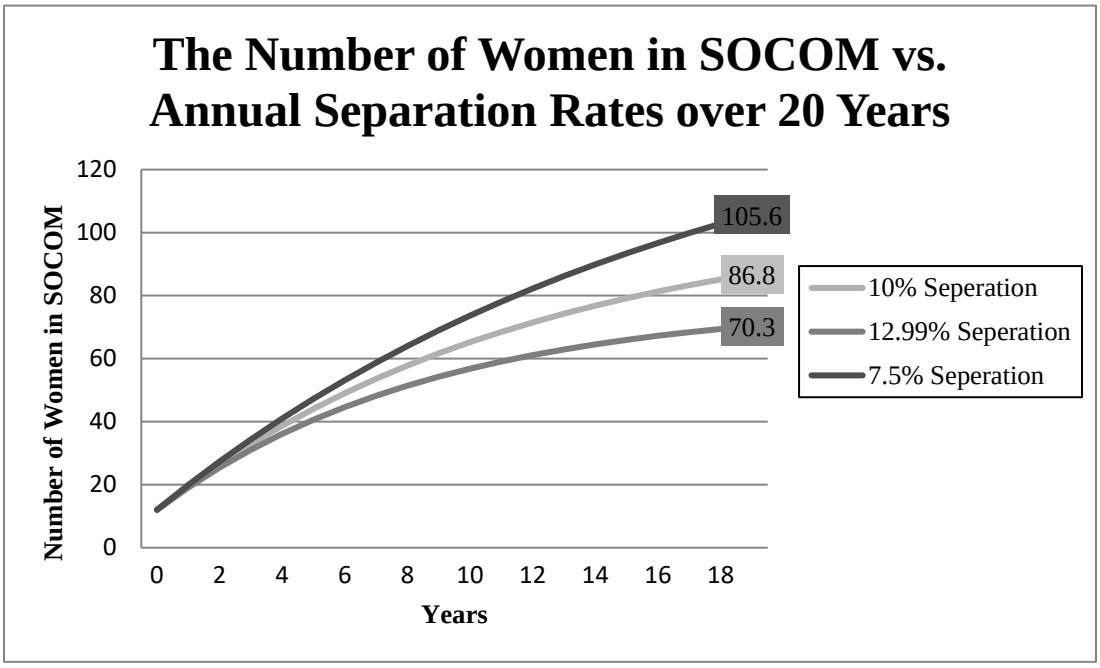

Figure 6. Retention rate array

[88] Randolf Fitriani and Ron Mathews, "Women in Ground Close Combat," *The RUSI Journal* 161, no. 1 (March 11, 2016): https://doi.org/10.1080/03071847.2016.1152117

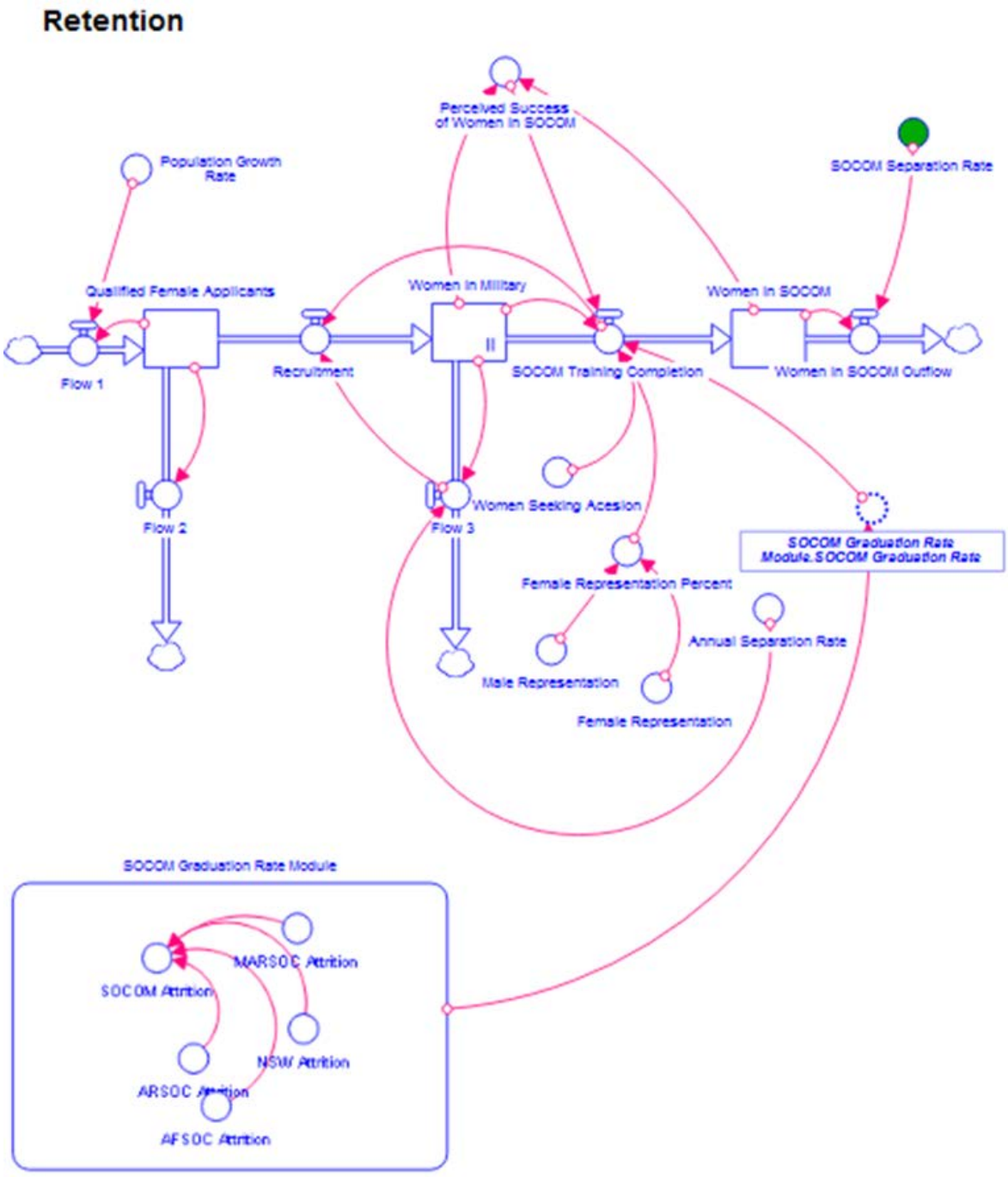

Figure 7. Retention strategy model

2. Retention Results

The results from the Retention model for the women in SOCOM are below. The model uses a twenty-year time horizon starting in 2019 and ending in 2039. By the end of the twenty-year time horizon, the model predicts 107.5 women will have made it into SOCOM and eventually reaching an equilibrium at 155 women. This strategy does not perform particularly well since the inflow of women into SOCOM remains small. Results for steady state Are found in Table 5.

Table 5. Retention strategy results

Results From Retention Strategy Model					
Year	**Women in SOCOM**	**Inflow**	**Outflow**	**Women in the Military**	**Qualified Female Applicant**
1	12.0	9.11	0.90	204k	5.0M
2	20.0	9.26	1.50	204k	5.2M
3	27.6	9.39	2.07	204k	5.5M
4	34.8	9.52	2.61	204k	5.7M
5	41.6	9.64	3.12	204k	6.0M
6	47.9	9.75	3.60	204k	6.3M
7	54.0	9.86	4.05	204k	6.5M
8	59.7	9.96	4.47	204k	6.8M
9	65.0	10.06	4.88	204k	7.2M
10	70.1	10.15	5.26	204k	7.5M
11	74.9	10.23	5.62	204k	7.9M
12	79.4	10.31	5.95	204k	8.2M
13	83.7	10.39	6.27	204k	8.6M
14	87.7	10.46	6.58	204k	9.0M
15	91.5	10.53	6.86	204k	9.5M
16	95.1	10.59	7.13	204k	9.9M
17	98.5	10.65	7.38	204k	10.4M
18	101.7	10.71	7.62	204k	10.9M
19	104.7	10.76	7.85	204k	11.4M
20	107.5	10.81	8.06	204k	12.0M

3. Retention Analysis

Alone, this strategy only slightly alters the outcome from what would normally be expected from the steady state model. Despite using a value that would be difficult to achieve and nearly halving the separation rate (7.5% from 12.99%) it still takes more than

20 years to reach equilibrium. Additionally, the inflow does not change appreciably (10.6 in the retention model, up from 9.99 from the steady state model by year 20). This strategy seems best be used in conjunction with other strategies which could increase the inflow of women into SOCOM.

Independent of increasing the number of women in SOCOM, this strategy requires an investment in individuals. This strategy directly reinforces to the first SOF truth, "Humans are more important than hardware."[89] Managing that human talent, especially operators with unique attributes, makes implementation of this strategy attractive to leaders in SOCOM. An emphasis on identifying, training, and retaining talent already exists in SOCOM via multiple forms,[90] however this strategy is specifically aimed at the unique considerations for maximizing a female operator's career.

89 "SOF Truths Page," accessed October 22, 2019. https://www.soc.mil/USASOCHQ/SOFTruths.html.

90 "USSOCOM Taking Care of the Force and Families to the next Level," accessed November 15, 2019. https://www.socom.mil/Pages/USSOCOMtakingcareoftheForceandFamiliestothenextlevel.aspx.

IV. META-ANALYSIS

The analysis of data will not, by itself, produce new ideas

Edward De Bono[91]

A. META ANALYSIS OVERVIEW

Having explored results and analyses for different gender integration strategies, I will now take a holistic approach to compare these strategies which have focused on separate aspects of the model (recruitment, selection and retention). For this cross-strategy comparison, I defined five criteria for analysis: numerical performance, cost of implementation, reactivity and controllability, tenability, and perceived impacts to performance. With these criteria, I performed a meta-analysis to determine which strategy or strategies should be implemented and to what degree. As a reminder, the retention strategy examined the effectiveness of increasing the number of women in SOCOM by increasing the number of women recruited into the military through shaping women's interest in a military career and number of eligible candidates. The selection strategy modeled the implementation of a quota to increase the number of women who are admitted into training. The last strategy emphasizes the retention of women in the military through programs aimed at increasing occupational longevity, career flexibility, and job satisfaction of females serving in SOCOM. I evaluated the performance of different strategies using the results and initial conditions discussed in the previous chapter.

B. NUMERICAL PERFORMANCE CRITERIA

Of all the strategies, the selection focused quota produced the biggest magnitude of changes. This is unsurprising given the magnitude of the reduction in the stock and flow model caused by the female representation percent (q) at 0.12%, meaning less than 1% of the available A&S billets were granted to women. For my analysis, I chose a flat

[91] Edward De Bono, *I Am Right, You are Wrong: From this to the New Renaissance: from Rock Logic to Water Logic* (USA, Penguin group, 1991).

representation percent of 10% of the total candidates per year for SOCOM amounting to 1,459.3 women at the end of the 20-year time horizon.

By comparison, neither the recruitment or retention strategies produced significant changes to the number of women in SOCOM from the steady state model. The retention strategy performed slightly better (107.5 women) than the recruitment strategy (94.2 women) at the end of the 20-year time horizon. It should be noted, however, the retention strategy reaches an equilibrium at 152 women whereas the recruitment strategy grows indefinitely. The recruitment strategy overtakes the retention strategy at year 32. A different timeline could lead to a different conclusion; however, the longer the time horizon, the less apt the model is to accurately predict outcomes due to changes outside the system.

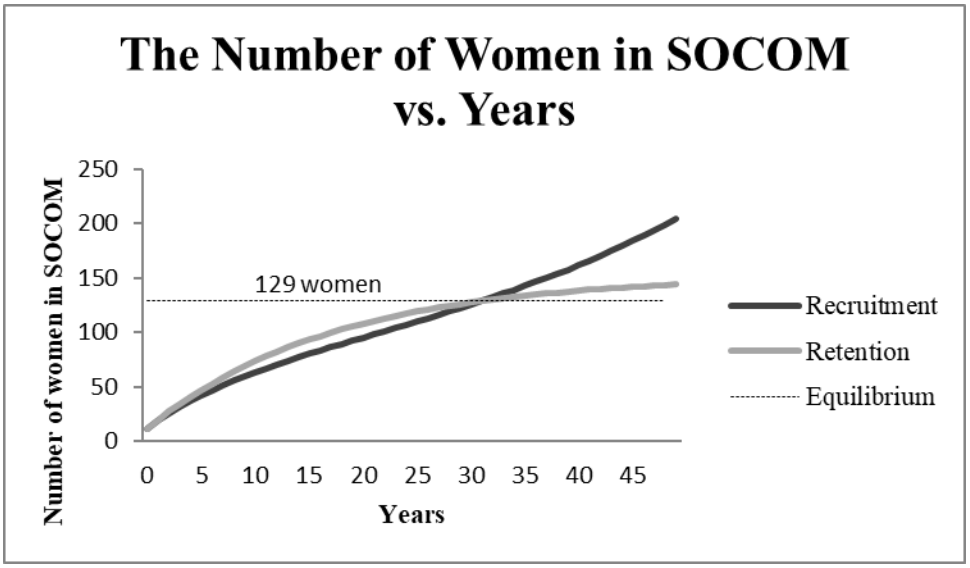

Figure 8. Recruitment and retention long-term performance

C. COST OF IMPLEMENTATION

In this section I examine an aspect of strategy implementation not previously evaluated: cost. I will provide rough estimates towards this pursuit; however, without exacting the cost, one can still compare the costs of these strategies due to the great differences that exists between them. Given the lack of granularity given to the cost

analysis, I will not overestimate the weight of the cost analysis during the meta-analysis or assign an exacting dollar amount. I considered two factors for evaluating costs: return on investment (ROI), where ROI is defined as the increase in female representation in SOCOM compared to dollars spent, and total cost defined as the magnitude of the absolute cost. Performance will be evaluated in another section.

For the recruitment strategy, the total cost is high and the ROI low since the strategy focuses on changing the perceptions and eligibility over a large population. Over 18 million women are old enough to serve in the military, but only 5 million are eligible for service.[92] Limiting the scope of this strategy, tailoring programs, and focusing on "fence sitters" could help reduce the total cost of implementing this strategy. The term "fence sitters" refers to individuals who already have a favorable disposition towards the military but are not set on pursuing a career in the military or individuals who are interested in pursuing a military career but are ineligible or at risk for other reasons (i.e., not graduating high school, felonies, overweight, and health reasons). While performing well in other categories (increasing the number of eligible women and women in the military), this strategy does not perform particularly well at increasing the number of women in SOCOM, making the ROI low.

Comparatively, the total cost of implementing a quota during selection is low and the ROI high. Costs associated with these programs could include additional restrooms and medical facilities to accommodate an influx of females in the A&S pipelines. In most instances, existing personnel and facilities would be able to fulfill most of these needs so any additional requirements would likely be small in scale and cost. The remaining costs of implementing a gendered quota would be largely administrative, adding little to the total cost. Between the low total cost of implementation and the highest number of additional women this strategy produces, this strategy has a high ROI.

The costs associated with implementing the retention strategy are also low but perceived to be higher than that quota implementation and with a lower ROI. Costs

92 "The Looming National Security Crisis: Young Americans Unable to Serve in the Military, The Heritage Foundation," accessed September 14, 2019. https://www.heritage.org/defense/report/the-looming-national-security-crisis-young-americans-unable-serve-the-military.

associated with this strategy would include the hiring of trainers, dieticians, and medical professionals who are familiar with the unique aspects of elite female athletes and prolonging their careers. Like the Canadian Armed Forces, SOCOM could fund research to track female military separation data like the CAF to include reasons for departure, exit interviews, and job satisfaction surveys to better characterize women's separation from SOCOM.[93]

D. CONTROLLABILITY AND REACTIVITY

For my analysis, I examined aspects of controllability and reactivity as to how easily SOCOM can regulate the changes for the accession of women into SOCOM and how quickly those changes manifest themselves in the results. For the recruitment strategy, the controllability is high, but the reactivity is low. The military has proven to be very efficient at maintaining its readiness despite dynamic personnel demands, interest, and levels of conflict. Increasing the number of eligible candidates and shaping favorable attitudes towards the military may take time. The selection strategy by comparison is both highly controllable and reactive to inputs. Admittance to SOCOM A&S is controlled administratively and could be tweaked relatively easily to reflect dynamic gender integration goals making this strategy highly controllable and reactive. This strategy does have limits, however, for example, it may not be possible to increase the quota beyond the number of qualified and interested female candidates already within the military. The retention strategy has low controllability and reactivity since this strategy has no bearing on the flow of women into SOCOM. This strategy is only capable of exerting control on the outflow of women from SOCOM, giving it little control or reactivity. The retention strategy could increase the separation rate easily, an aspect that is presently of little use as SOCOM looks to grow the number of women in SOCOM.

93 "Canada's National Action Plan on Women, Peace and Security 2017-2022 – Department of National Defence and The Canadian Armed Forces – Progress Report for Fiscal Year 2017/2018," accessed November 10, 2019. https://www.international.gc.ca/world-monde/issues_development-enjeux_developpement/gender_equality-egalite_des_genres/DND-wps-fps-MDN-17-22.aspx?lang=eng.

E. TENABILITY

We examined the tenability and perception of implementation from the perspective of three different stakeholders: SOCOM, Congress, and the American people. I chose these stakeholders to represent the service provider (SOCOM), the legislative authority (Congress), and the beneficiary of the services provided (the American people). This section is subjective, but by evaluating policies, polls, and statements one can approximate how different strategies would likely be received by different stakeholders.

The recruitment strategy would likely receive support from all three stake holders. Both SOCOM and the American people would benefit from this strategy in terms of higher representation of women for SOCOM and the numerous secondary benefits of this strategy discussed in Chapter III. Congress, which would allocate financing for this strategy, and the White House are battling over the reduction of the budget of current social programs and would likely be reluctant to fund additional social programs.[94]

The selection strategy using a quota would likely lack support from the American people and SOCOM but still garner support within Congress. Unofficial polls of the American people show a lack of approval in general for the integration. In an unofficial poll in 2013, 78% of respondents responded "no" when asked if women should serve in the Navy SEALs.[95] Many people went to social media sharing their skepticism (and doubts) that women would make it through A&S without changing the standards. SOCOM has remained constant regarding its attitudes towards separate standards and perception of double standards.[96] Using a quota deviates from both of these tenets and is likely to face harsh criticism from SOCOM if implemented. Congress, however, would likely be supportive (or at least accepting) of such a retention strategy, considering the series of

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[94] Richard Krogan et al."Cuts to Low-Income Assistance Programs in President Trump's 2020 Budget Are Wide-Ranging," Center on Budget and Policy Priorities, May 15, 2019. https://www.cbpp.org/research/federal-budget/cuts-to-low-income-assistance-programs-in-president-trumps-2020-budget-are.

[95] Matthew T. Hall, "Prospect of women Navy SEALs called good, crazy," *San Diego Union-Tribune* (June 17, 2013): https://www.sandiegouniontribune.com/opinion/the-conversation/sdut-women-navy-seals-reaction-2013jun17-htmlstory.html.

[96] Hall.

socially progressive military legislation passed in the past decade[97] and recent support from rulings by the Supreme Court,[98] therefore, the retention strategy would likely be accepted by all stakeholders. Support for furthering women's careers would face little criticism from the American people and SOCOM have repeatedly emphasized the acceptance of women into its ranks with current, validated standards and would benefit from increased representation of women, especially at senior levels. Congress would likely be supportive of a method of implementation given its support for other programs aimed at maximizing SOF careers and performance like Preservation of the Force and Family (POTFF) and more specifically Human Performance Program (HPP).[99]

F. PERCEIVED IMPACTS TO PERFORMANCE

In this study, I have not discussed how these strategies might impact performance beyond the benefits of integrated teams. The way in which these strategies increase the number of women in SOCOM differ in the quality and type of candidates they produce, which ultimately contributes to combined performance. The recruitment strategy aims to increase the participation and eligibility of "fence sitters" who otherwise might not pursue a career in the military. Recruits who need additional persuasion or would otherwise be ineligible due to obesity would likely lack the physical requirements or possess the desire to compete for screened training billets within SOCOM. In the Navy, even the top female scores on the Physical Screening Testing, used by navy divers, EOD, SEALs, and SWCC, scored lower than the average males on the tests.[100] If the top performing women are still scoring in the bottom half of male applicants, then it is unlikely the newly eligible candidates would be submitting competitive scores. Of these three strategies, the

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97 Colton C. Campbell and David P. Aueswald, *Congress and Civil-Military Relationships* (Georgetown University Press, 2015).

98 "Eyder. Peralta "Supreme Court Upholds University Of Texas' Affirmative Action Program," NPR, last modified June 23, 2016. https://www.npr.org/sections/thetwo-way/2016/06/23/483228011/supreme-court-upholds-university-of-texas-affirmative-action-program.

99 "About POTFF," accessed November 30, 2019. https://www.socom.mil/POTFF/Pages/About-POTFF.aspx.

100 Chaitra Hardison, Susan Hosek, and Anna Saavedra, *Establishing Gender-Neutral Physical Standards for Ground Combat Occupations: Volume 2. A Review of the Military Services' Methods* (RAND Corporation, 2018), 2. https://doi.org/10.7249/RR1340.2.

recruitment strategy is predicted to produce the lowest quality of candidates and produce the biggest detriment to performance.

The selection strategy, or quota implementation, would also likely negatively affect performance. This strategy creates a separate standard for female candidates than men and could produce less physically qualified candidates. I focused largely on the difference in physical scores between sexes but implementing a quota could lead to a disparity between Armed Service Vocational Aptitude Battery (ASVAB) scores, evaluations of character, leadership experience, Computerized Special Operations Resilience Test (C-SORT) results, and academic performance. Further, the statistical analysis of historic graduation rates suggests women will not graduate at the same rates as men when they compete directly for SOCOM A&S billets. Admitting less competitive candidates would likely result in even lower graduation rates. In an evaluation of NSW A&S standards, the Rand Corporation found physical tests administered during training relate to training success and that the candidates submitting physical scores near or at the minimums had "essentially no chance of being accepted,"[101] a consequence which could result in a reduction in the total output of SOCOM operators.

Finally, the retention strategy has the potential to increase overall performance within SOCOM by increasing the participation of women in the higher levels of leadership. Though criticized by the Secretary of the Navy, Ray Mabus,[102] the Marine Corp's results for gender integrated units on combat suggests a decrease in combat performance of gender-integrated units compared to all male units.[103] All-male teams performed better at 93 of the 134 tasks evaluated and suffered injury at roughly half the rate of women.[104] Critics of the study pointed out that the conclusions were based on averages of

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101 Hardison, Hosek, and Saavedra, 2.

102 The Secretary of the Navy is the civilian appointee who oversees the Navy and Marine Corps.

103 "Controversial Marine Corps Study On Gender Integration Published In Full," NPR.org, accessed December 1, 2019. https://www.npr.org/sections/thetwo-way/2015/11/04/454672813/controversial-marine-corps-study-on-gender-integration-published-in-full.

104 "Marine Corps Gender Integration Research Executive Summary, United States Marine Corps, Military," Scribd, accessed February 7, 2019. https://www.scribd.com/doc/280017557/Marine-Corps-gender-integration-research-executive-summary.

performance, instead of individual performances, potentially masking the results from high performing women.[105] The Marine Corps defended these results by specifying Marines work as teams, not individuals.[106] Other criticisms of the study include the disparity of experience between the men and women selected for the study, the lack of cohesion during the study, and the recently repealed segregation of marine corps boot camp as biases introduced into the study.[107] Despite this harsh criticism of the study's methodology and biases, no further research was commissioned to address or counter the study's findings. By comparison, strong evidence suggests real benefits of integrating women into board rooms and decision-making teams, especially in risk analysis.[108] Extending the careers of women from the entry level positions of SOCOM into these senior-level positions would likely improve groups performance. Virtually every command within SOCOM has females and female leaders in its ranks, with women with Gender Advisors (GENADs) regularly participating in senior level decision making. Women in the newly opened SOCOM billets would have the opportunity to take on new roles, including commanding officers, in these groups. An overview of the strategy analyses can be found in Table 6.

105 Matthew Cox, "New Details Question Validity of Marine Corps Gender-Integration Study," Military.com, accessed December 1, 2019. https://www.military.com/daily-news/2015/10/02/new-details-question-validity-marine-gender-integration-study.html.

106 "Controversial Marine Corps Study On Gender Integration Published in Full."

107 Cox, "New Details Question Validity of Marine Corps Gender-Integration Study."

108 Larelle Chapple and Jacquelyn E. Humphrey, "Does Board Gender Diversity Have a Financial Impact? Evidence Using Stock Portfolio Performance," *Journal of Business Ethics* 122, no. 4 (July 1, 2014): 709–23. https://doi.org/10.1007/s10551-013-1785-0.

Table 6. Strategy meta-analysis overview

Criteria	Strategies: Recruitment	Strategies: Selection	Strategies: Retention
Numerical Performance	Low; modest results that grows over time	High; significant growth over the 20-year time horizon	Low; modest results that reach equilibrium
Cost of Implementation	High cost; changing the eligibility and attitudes of large populations requires significant resources	Low cost; implementation is predominately administrative and additional costs are minor	Low/moderate cost; additional studies and personnel will represent bulk of the costs
Controllability and Reactivity	High controllability, low reactivity; flexible recruitment rates and generational attitude changes	High controllability, high reactivity; largely administratively controlled and flexible	Low controllability, low reactivity; strategy only affects SOCOM outflow
Tenability	Net high; little concerns over helping young women or shaping a positive view of the military	Net low; significant deviation from norm with likely negative effects on cohesion	Net high; post A&S individual investment are high and does not deviate
Impacts to Performance	Net negative; additional recruits might lack high motivation or physical scores for SOCOM	Net negative; lower caliber of candidates might produce few graduates	Net positive; increased number of women in senior roles

G. META-ANALYSIS

Having compared the three different strategies across the five criteria, one is now equipped with the requisite analyses to perform a meta-analysis. For this analysis I assigned a composite for each criteria one (least desirable) through five (most desirable) and sum the scores for each strategy to determine the best performing strategy. The definition for scores of one, three, and five will be provided in the Table 7.

Table 7. Meta-analysis criteria definition

	Numerical performance	**Cost of implementation**	**Controllability and reactivity**	**Tenability**	**Impacts to Performance**
5 (Highest)	Strategy performs optimally within prescribed time horizons	Strategy has low total cost of implementation and High ROI	Strategy exhibits high levels of controllability and reactivity	Strategy is highly tenable with all three stakeholders	Dramatic net improvement to organizational performance
4					
3	Strategy exhibits moderate performance but does not achieve optimal results within prescribed time horizons	Strategy either exhibits average total cost and ROI or some combination of high or low total cost and ROI	Strategy either exhibits average controllability and reactivity or some combination of high and low controllability and reactivity	Between three stakeholders, net tenability is neutral	Neutral or no change to organizational performance
2					
1 (lowest)	No change or detrimental change when compared to steady state model	Strategy predicts high total cost and low ROI	Strategy exhibits low levels of controllability and reactivity	Strategy is untenable for all three stakeholders	Dramatic net negative impact to organizational performance

Using the above definitions and my analyses, I determined the selection and retention strategies tie with the best net score of 16 each. The recruitment strategy falls behind the other two strategies with a net score of 11. I acknowledge the utility of such a rank ordering while acknowledging that the final verdict requires a deeper examination. Rather than declare a tie between the selection and retention strategies, I further dissected each strategy's performance and my own estimations to inform my final recommendation.

Referencing Table 8, I struggled with what would be the correct or "fair" estimations of two specific values: the tenability of the selection strategy and the impacts to performance for the retention strategy. For the tenability of the selection strategy, I assigned a value of two. I believed to assign a value of one, the analysis required all three stake holders believing the strategy to be untenable. For the tenability of the selection strategy, both SOCOM and the American people rejected this strategy. Since the support criteria was binary, I believed congress could support this strategy; but perhaps a better estimation might be that Congress "consents" to this strategy. I do not perceive significant support at the congressional level to aggressively advance representational policies as have been seen in previous decades or in other countries.[109] Congress's neutrality towards this policy places it at a two by the narrowest of margins. If I had not so rigidly defined the scoring, a 1.5 might have been a more accurate representation of this strategy's actual performance. The other value assignment for contemplation is the impact to performance of the retention strategy. I scored this strategy at a 4, citing the benefits it produced, especially in the senior, higher-level decision-making environments. Again, my hyperbolic language limited the accuracy of strategy's performance. The retention strategy is the only strategy which is predicted to produce net positive results to performance. This factor alone distinguishes this strategy notably above the others and might be closer to a 4.5, comparatively.

Both the micro shifts in the scoring matrix suggest that the retention strategy is the best performing strategy, making it my recommendation for implementation. Additionally, the retention strategy was the only one that was predicted to produce a net positive impact to performance. Despite modest performance and a severe lack of controllability, this strategy is highly tenable, low in cost, and likely to improve the performance of SOCOM as an organization.

109 "Canada's National Action Plan on Women, Peace and Security 2017-2022 – Department of National Defence and The Canadian Armed Forces – Progress Report for Fiscal Year 2017/2018."

Table 8. Meta-analysis scoring matrix

		Strategies		
		Recruitment	**Selection**	**Retention**
Criteria	**Numerical Performance**	2	4	2
	Cost of Implementation	1	5	4
	Controllability and Reactivity	2	4	1
	Tenability	4	2	5
	Impacts to Performance	2	1	4
	Net Score	11	16	16

V. CONCLUSION

If you want a happy ending, that depends, of course, on where you stop your story

Orson Welles[110]

To the original question, "How should SOCOM look to increase the representation of women?" one arrives at a mixed conclusion. By using a retention-focused strategy, SOCOM can best leverage the benefits of gender integration, but this strategy alone does not reach the threshold of critical mass. The only strategy that produces critical mass—selection and quota focused—requires significant concessions in tenability and performance, making it, in my estimation, invalid. Focusing on recruitment produces little results for the integration of women in SOCOM. Scrutiny should be placed on efforts to recruit "fence sitters" into SOCOM who otherwise were ineligible or not interested in pursuing a military career due to this strategy's high costs and inconsequential results.

Second, if legislators and SOCOM can agree on optimal goals for gender integration, then the model could be used calculate what magnitude of changes would be needed to produce those results. Additionally, the time horizon can be shifted to align with the established timelines for implementation. Using a hybrid of strategies discussed may prove an efficient way to achieve these results. A combination of selection and retention policies could produce superior net results than any one strategy alone. Again, I only explored three different strategies. There could be any number or strategies that might affect the model in unique ways not explored in this thesis.

Finally, the logical question that follows is, "How does SOCOM leverage women to maximize the benefits of mixed gender teams?" If you believe necessity is the mother of invention, then a solution may have already been found. I believe the *ad hoc* female engagement teams, specifically the CST model, could more reliably provide SOCOM with the benefits of mixed gender teams, and in greater numbers, without requiring women to

[110] Orson Wells, *The Big Brass Ring* (Santa Barbra, CA, Santa Teresa Press, 1987).

go through the same A&S to access the unique gender benefits of integrating women. Even with the benefits of the retention strategy, out model predicts only 105.6 women across the 15,500 newly opened SOCOM billets after 20 years. Women will continue to apply, get selected, and graduate through the established SOCOM A&S pipelines, but to ensure the unique capabilities women provide are reliably accessible to the SOCOM community, the auxiliary role of all female units could be codified and supported. This remedy is outside the scope of this thesis, however, and requires further research and review for consideration.

APPENDIX. STEADY STATE VARIABLE LIST

Steady State Model				
Variable	Description	Type	Function	Initial Value
F_1^x	Eligible Female applicants	Stock	$F_1^x = (F_1^{x-1})(g) - (r_2 + r_3)$	5M
F_2^x	Women in the military	Stock	$F_2^x = F_2^{x-1} + v_1 - y_2$	203k
F_3^x	Women in SOCOM	Stock	$F_3^x = F_3^{x-1} + (F_2^{x-1})(r_1)(r_2)(r_3)$	12
r_1	Flowrate from general population to recruitment age	Flowrate	$r_1 = g(F_1^{x-1})$	250k
r_2	Flowrate from recruitment age to military	Flowrate	$r_2 = r_4 + r_5$	26.5k
r_3	Flowrate from recruitment age back to general population	Flowrate	N/A	0
g	Population growth Rate	Variable	N/A	.05
r_4	Separation rate from the military	Flowrate	$r_4 = (F_2^x)(s)$	26.5k
r_5	SOCOM Assessment and Selection	Flowrate	$r_5 = ((F_2^x)(a) + p)(m)(q)$	N/A
r_6	Women in SOCOM separation	Flowrate	$r_6 = (F_3^x)(s)$	N/A
q_f	Female representation	Variable	N/A	12
q_m	Male representation	Variable	N/A	9.28k
q	Female representation percent	Variable	N/A	.00129
p	Perceived success of women in SOCOM	Variable	$p = (F_2^x)(F_3^x)(0.0001)$	2.9k
g	Population growth rate	Variable	N/A	1.05
a	Women seeking accession	Variable	N/A	0.05
s	Military separation rates	Variable	N/A	0.1299

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