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**DETERMINANTS OF NAVY PROMOTIONS:  
IDENTIFYING AND UNDERSTANDING THE  
POTENTIAL PREDICTORS FOR PROMOTION  
WITHIN THE NAVY MEDICAL SERVICE CORPS**

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Monterey, CA; Naval Postgraduate School

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**NAVAL  
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**MONTEREY, CALIFORNIA**

**THESIS**

**DETERMINANTS OF NAVY PROMOTIONS:  
IDENTIFYING AND UNDERSTANDING THE  
POTENTIAL PREDICTORS FOR PROMOTION  
WITHIN THE NAVY MEDICAL SERVICE CORPS**

by

Paul Winston

March 2024

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**DETERMINANTS OF NAVY PROMOTIONS: IDENTIFYING AND  
UNDERSTANDING THE POTENTIAL PREDICTORS FOR  
PROMOTION WITHIN THE NAVY  
MEDICAL SERVICE CORPS**

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Submitted in partial fulfillment of the  
requirements for the degree of

**MASTER OF SCIENCE IN MANAGEMENT**

from the

**NAVAL POSTGRADUATE SCHOOL  
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## ABSTRACT

The Navy Medical Service Corps uses sub-specialty career roadmaps to communicate expectations and opportunities to all officers. All the roadmaps share a common theme: billet diversity across three groupings—Military Treatment Facility, Operational, and Staff duty. This study measures the benefits of duty-billet diversification, as encouraged in the roadmaps, by estimating the effects of career paths taken by officers in the three major specialty groups within the Medical Service Corps: Healthcare Administrators, Healthcare Clinicians, and Healthcare Scientists. Using a linear probability model to estimate promotion probabilities, I find that the effects of duty-billet diversity vary among each specialty grouping. Healthcare Administrators can improve their promotion probabilities by focusing on Military Treatment Facilities and Staff billets. Healthcare Scientists could enhance their promotion probabilities by concentrating on Staff billets. Healthcare Clinicians are the only track that shows benefits from holding billets in all three categories. The only commonality among all three groups is the significant benefit to promotion probability when serving in an Executive Medicine billet.



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# TABLE OF CONTENTS

<b>I.</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>A.</b>	<b>A PERFECT PATH .....</b>	<b>1</b>
<b>B.</b>	<b>ORGANIZATION OF THE STUDY .....</b>	<b>3</b>
<b>II.</b>	<b>BACKGROUND.....</b>	<b>5</b>
<b>A.</b>	<b>NAVY ROADMAPS .....</b>	<b>5</b>
<b>B.</b>	<b>MEDICAL SERVICE CORPS ROADMAPS.....</b>	<b>6</b>
<b>1.</b>	<b>Background.....</b>	<b>6</b>
<b>2.</b>	<b>Roadmap History.....</b>	<b>7</b>
<b>3.</b>	<b>Current Roadmaps .....</b>	<b>9</b>
<b>4.</b>	<b>Career Guidance Access.....</b>	<b>14</b>
<b>5.</b>	<b>Improvements .....</b>	<b>14</b>
<b>III.</b>	<b>LITERATURE REVIEW.....</b>	<b>15</b>
<b>A.</b>	<b>CIVILIAN CAREER PATH.....</b>	<b>15</b>
<b>B.</b>	<b>NAVY CAREER PATHS.....</b>	<b>17</b>
<b>IV.</b>	<b>DATA AND METHODOLOGY .....</b>	<b>23</b>
<b>A.</b>	<b>DATA SOURCE.....</b>	<b>23</b>
<b>B.</b>	<b>MODEL .....</b>	<b>24</b>
<b>C.</b>	<b>VARIABLE DEFINITION .....</b>	<b>25</b>
<b>V.</b>	<b>DATA ANALYSIS.....</b>	<b>29</b>
<b>A.</b>	<b>DESCRIPTIVE STATISTICS.....</b>	<b>29</b>
<b>1.</b>	<b>Healthcare Administrator Summary Statistics .....</b>	<b>29</b>
<b>2.</b>	<b>Healthcare Clinician Summary Statistics .....</b>	<b>30</b>
<b>3.</b>	<b>Healthcare Scientist Summary Statistics .....</b>	<b>31</b>
<b>B.</b>	<b>REGRESSION RESULTS.....</b>	<b>33</b>
<b>1.</b>	<b>Healthcare Administrator .....</b>	<b>33</b>
<b>2.</b>	<b>Healthcare Clinicians.....</b>	<b>36</b>
<b>3.</b>	<b>Healthcare Scientist .....</b>	<b>38</b>
<b>C.</b>	<b>LIMITATIONS .....</b>	<b>40</b>
<b>VI.</b>	<b>CONCLUSION .....</b>	<b>41</b>

**APPENDIX A. ROADMAP EXAMPLES.....43**

**APPENDIX B. LIST OF MILITARY TREATMENT FACILITIES .....47**

**APPENDIX C. REGRESSION TABLES.....49**

**A.    HEALTHCARE ADMINISTRATORS.....49**

**B.    HEALTHCARE CLINICIANS .....52**

**C.    HEALTHCARE SCIENTISTS.....55**

**LIST OF REFERENCES.....59**

**INITIAL DISTRIBUTION LIST .....63**

## LIST OF FIGURES

Figure 1.	1991 Planning Chart for the Medical Service Corps.....	8
Figure 2.	Healthcare Clinician Track: Physical Therapist .....	12
Figure 3.	Fiscal Year 2025 Medical Service Corps Community Brief.....	43
Figure 4.	Administrator Roadmap: Health Facility Planning and Project Officer.....	44
Figure 5.	Scientist Roadmap: Physiology Road .....	45

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## LIST OF TABLES

Table 1.	Medical Service Corps Tracks and Sub-Specialties. Adapted from BUMED (2023).....	6
Table 2.	Potential Career Path of a Navy Physical Therapist .....	13
Table 3.	Executive Medicine Designated Billets. Adapted from (USN, 2024) .....	27
Table 4.	Healthcare Administrator Sample Descriptive Statistics .....	29
Table 5.	Healthcare Clinician Sample Descriptive Statistics.....	31
Table 6.	Healthcare Scientist Sample Descriptive Statistics.....	32
Table 7.	Healthcare Administrator Promotion Outcomes.....	35
Table 8.	Healthcare Clinician Promotion Outcomes .....	37
Table 9.	Healthcare Scientist Promotion Outcomes .....	39
Table 10.	MTF List (Alphabetical Order). Adapted from BUMED (2024); FLTMPS (2024).....	47
Table 11.	HCA LCDR Promotion Outcomes.....	49
Table 12.	HCA CDR Promotion Outcomes.....	50
Table 13.	HCA CAPT Promotion Outcomes.....	51
Table 14.	HCC LCDR Promotion Outcomes.....	52
Table 15.	HCC CDR Promotion Outcomes .....	53
Table 16.	HCC CAPT Promotion Outcomes .....	54
Table 17.	HCS LCDR Promotion Outcomes .....	55
Table 18.	HCS CDR Promotion Outcomes.....	56
Table 19.	HCS CAPT Promotion Outcomes.....	57

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# I. INTRODUCTION

## A. A PERFECT PATH

Throughout their careers, many people actively seek a “golden path,” a sequence of jobs and tasks that, when followed, guarantees promotion to the highest positions in their field. My thesis evaluates whether the roadmaps of the Navy Medical Service Corps reveal such a “golden path” that ensures promotion from Ensign to Captain. If no “golden path” exists, my study will explore how closely officers should align their career paths with the published roadmaps. In particular, I investigate the correlation between these ideal paths, as defined by past duty stations and billets, and the likelihood of promotion to the next rank from Lieutenant to Lieutenant Commander, Lieutenant Commander to Commander, and Commander to Captain. In the analysis I use published roadmaps available for the various officer sub-specialty communities of the Medical Service Corps. With its 31 diverse subspecialties, the Medical Service Corps offers multiple unique opportunities for career advancement, making it an ideal subject for researching the existence of a “golden path” to promotion.

The Medical Service Corps publishes career-guiding roadmaps for each sub-specialty. These roadmaps, outlining potential duty-billetts, milestones, trainings, and professional societies, also offer advice on navigating the unique challenges of each sub-specialty. Given the information provided by the roadmaps, two questions arise: (1) Are roadmaps necessary for the Medical Service Corps? (2) Do these roadmaps highlight duty-billetts that increase the chances of promotion to a higher rank?

Current literature suggests that both in civilian and military settings, roadmaps, and career guidance benefit both the employee and the employer. Roadmaps communicate available opportunities and employer expectations, enabling employees to ascend the career ladder within the organization. For employees, roadmaps provide clear expectations and opportunities, facilitating improved personal and professional goal planning. This mutual understanding can decrease organizational friction, as employers

can more readily identify employees prepared for increased responsibility, and employees can efficiently ready themselves for senior positions.

While no positions guarantee promotion from one rank to another, within the military context, the literature indicates that certain positions show statistically significant increases in the probability of promotion compared to others. Officers may find it beneficial to focus on these positions. The increased probability of promotion from these positions should be understood in the context of the officer communities and their needs at the time. However, the data does show a difference in promotion outcomes for certain positions, such as command level leader positions and staff positions over others.

This study serves two purposes. First, it seeks to clarify the extent to which past billets and duty stations influence promotion outcomes within the Medical Service Corps. With this enhanced understanding, the community can conduct further research to determine the need to adjust roadmaps that benefit officers and meet the needs of the Medical Service Corps and the Navy. Second, it aims to inform current and future officers in the community about how adhering to or deviating from these career roadmaps to meet their personal and professional goals could impact their time in the Navy.

This analysis concentrates on the impact of duty-billets on promotion within the Medical Service Corps. It specifically examines how three distinct duty-billet groupings: Military Treatment Facility (MTF), Staff, and Operational, affect the promotion outcomes of officers within the three main specialty groups of the Medical Service Corps: Healthcare Administrator (HCA), Healthcare Clinician (HCC), and Healthcare Scientists (HCS). By the end of the study, it becomes clear that the probabilities for promotion to LCDR, CDR, and CAPT for each group are affected differently by the duty-billets, both positively and negatively.

Using data from 2000 to 2023, I find that Healthcare Administrators can increase their chances of promotion by prioritizing Staff and MTF billets over Operational duty billets. In contrast, Healthcare Scientists can boost their promotion odds by concentrating on Staff and Operational duty-billets until they reach the rank of Lieutenant Commander. After that, they should shift their focus exclusively to Staff duty-billets for promotion to

Commander and Captain. Interestingly, Healthcare Clinicians stand out as the only specialty group that shows statistically significant benefits from diversifying their duty-billets across all three categories. Lastly, all specialty groups see an increase in promotion probability with Executive Medicine duty-billets, with the most statistically significant benefits observed when promoting to Commander and Captain.

## **B. ORGANIZATION OF THE STUDY**

The thesis is organized into five chapters. The first chapter provides a background of the Medical Service Corps and traces the history of career roadmaps in the community up to the present day. The second chapter reviews previous literature that studies career paths and their effects on promotion outcomes in both the civilian sector and the Navy. The third chapter discusses the data source, defines the variables, and explains the methodology. The fourth chapter presents the summary statistics and regression results. The fifth chapter concludes the study and offers recommendations for future analysis on the topic.

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## **II. BACKGROUND**

### **A. NAVY ROADMAPS**

Organizations like the Navy promote from within and follow an “up or out” policy. Both the Navy and servicemembers must understand any predictors of promotion within the organization. This understanding enables the Navy to manage workforce levels effectively for current operations and future requirements. Similarly, individual servicemembers must be aware of and understand these predictors for their decision-making, whether they choose to remain in the service or seek other opportunities.

The Navy creates and publishes roadmaps for its enlisted and officer communities. These roadmaps outline career paths from the most junior ranks, E1 and O1, to senior ranks, E9 and O6. The Navy values these roadmaps as they provide a structured mechanism to communicate expectations and opportunities to expand knowledge, hone skills, and develop leadership qualities. The roadmap serves as a crucial tool for servicemembers, helping them shape their desired career within the Navy and plan for opportunities outside of the service, such as family planning, pursuit of education, or transition from service. Servicemembers can find enlisted and officer roadmaps on their respective community management pages on MyNavyHR, the Navy’s Human Resource webpage (Navy Personnel Command, 2024).

As the roadmaps provide career information from the Navy to the servicemember, it is crucial that they convey accurate and useful information. Each Navy community maintains its own roadmap, deciding which billets, duty stations, trainings, and skills are important over the course of a career. Each community bears the responsibility for the validity of these roadmaps, regardless of their specificity, to maintain the community’s health and the servicemember’s ability to control their own careers.

## **B. MEDICAL SERVICE CORPS ROADMAPS**

### **1. Background**

The Navy Medical Service Corps is one of the four officer communities that make up Navy Medicine, alongside the Nurse Corps, Dental Corps, and Medical Corps. The Army-Navy Medical Service Corps Act of 1947 established the Medical Service Corps on 4 August 1947, following World War II (Bureau of Medicine and Surgery [BUMED], 2017). While its original creation was to supplement the Medical and Dental Corps, today the Medical Service Corps’ mission is to “support operating forces, shore establishments, and other beneficiaries through clinical, science, and administrative professions in support of medicine and dentistry” (BUMED, 2017). Approximately 3,000 active and reserve officers comprise the Medical Service Corps, which divides into three distinct tracks: Health Care Administrators, Health Care Clinicians, and Health Care Scientists (Bureau of Medicine and Surgery [BUMED], 2023). Officers in the Medical Service Corps directly support Navy and Marine Corps commands and deploy in support of various missions, from combat operations support to humanitarian assistance and disaster relief. These three distinct tracks include 31 different subspecialties (see Table 1).

Table 1. Medical Service Corps Tracks and Sub-Specialties.  
Adapted from BUMED (2023)

<b>Administrators</b>	<b>Clinicians</b>	<b>Scientists</b>
General Health Care Administration	Audiology	Aerospace and Operational Physiology
Education and Training Management	Clinical Psychology	Aerospace Experimental Psychology
Financial Management	Clinical Social Worker	Biochemistry
Health Information Technology	Dietetics	Entomology
Health Facility Planning and Projects	Occupational Therapy	Environmental Health
Manpower & Personnel	Optometry	Industrial Hygiene

<b>Administrators</b>	<b>Clinicians</b>	<b>Scientists</b>
Medical Logistics Administration	Pharmacy	Medical Laboratory Science
Operations Research & Analysis	Physician Assistant	Microbiology
Patient Administration	Physical Therapy	Physiology
Plans, Operations, and Medical Intelligence	Podiatry	Radiation Health
		Research Psychology

## **2. Roadmap History**

The Medical Service Corps’ focus on career development dates back to 1985, with the U.S. Navy Medical Department Officer Career Guide. Despite its name, this first iteration of the career guide did not present a general overview of billets or identify a path for reaching command level (Bureau of Medicine and Surgery [BUMED], 1991). The lack of formal selection criteria or a career path for identifying officers for leadership positions became apparent after a formal review of Navy Medicine led by the Vice Chief of Naval Operations and the publication of the Final Report of the Medical Blue Ribbon Panel on November 21, 1988 (Bureau of Medicine and Surgery [BUMED], 1988). The report recommended that medical department officers receive a system similar to what the unrestricted line officers had; career paths that provide a “stepping-stone approach” to develop and foster leadership skills and increasing responsibility leading to command (BUMED, 1988). In response to this Blue-Ribbon Panel report, Navy Medicine published the revised “Medical Department Officer Career Guide” in 1991, providing general medical officer career guidance as well as specific guidance for each of the four communities. The “Medical Department Officer Career Guide” establishes official career paths and provides visual roadmaps showing officers of all ranks the billet options available across four tracks: administrative, clinical, operational, and research.

Despite these improvements, the Medical Service Corps guide acknowledged that the guidance was vague due to the extreme diversity of the specialties in the Medical Service Corps (BUMED, 1991). This vagueness was the subject of Finley’s 1993 study,



which researched ways to improve the 1991 roadmaps. Finley argued that despite the community’s extreme diversity, the career guides were too basic and lacked the clarity seen in unrestricted line officer career guides. In Figure 1, the Planning Chart, Department Head appears eight times between the administrative and clinical tracks across three different ranks, with no explanation of the differences between the eight. Similarly, Assistant Department Head appears three times between the administrative and clinical tracks across four ranks. Again, no context is provided for the differences between an Assistant Department Head as a Commander versus an Assistant Department Head as an Ensign, Lieutenant Junior Grade, or Lieutenant.

**MEDICAL SERVICE CORPS CAREER PLANNING CHART**

GRADE	YEARS	PHASE	ADMINISTRATIVE / 2XXX	CLINICAL (CONUS/OCONUS)	OPERATIONAL	RESEARCH
FLAG	24 - 30	EXECUTIVE	1A Director, Medical Service Corps / Assistant Chief, BUMED			
			2A CO	2B CO	2C CO	2D CO
CAPT	22 - 30	SENIOR	3A XO 4A OIC 4B Director, Administration 5A Dept Head 5B HQ Directors 5C CO	5D Dept Head	3B XO 4C OIC 5E HQ Major Staff 5F HQ Staff	3C XO 5G Research Management
			6A XO 7A OIC 8A Director Administration 9A Administrative Officer 9B Dept Head 9C HQ Staff	6B XO 9D Dept Head 9E Asst Dept Head	6C XO 7B OIC 8B HQ Major Staff 9F HQ Staff	6D CO 7C XO 9G Research Management
LCDR	6 - 16	INTERMEDIATE	10A OIC 11A Dept Head 12A HQ Staff 13A Dept Head DUINS	11B Dept Head 13B Dept Head DUINS	10B XO 11C Staff 13C Company Commander	13D Research Management DUINS
ENS - LT	1 - 10	BASIC	14A Asst Dept Head	14B Asst Dept Head 14C Asst Dept Head	14D Staff	14E Specialty Tour
PROFESSIONAL SCHOOL						

Source: BUMED (1991)

Figure 1. 1991 Planning Chart for the Medical Service Corps

Neither the roadmap from Figure 1 nor the “Medical Department Officer Career Guide” provide any information that would offer context on differences between positions at different ranks or tracks. Officers must figure out any additional information

they would want to help explain the roadmap. Finley (1993) claimed that by adding command information, e.g., clinic versus hospital, the career guide would provide more clarity for officers to understand the size and scope of responsibility of each billet at a command. Despite its lack of clarity, the career guide established in the 1991 “Medical Department Officer Career Guide” was a step in the right direction for developing officers in the Medical Service Corps.

### **3. Current Roadmaps**

Today, Medical Service Corps Officers can seek career guidance from four documents: The Navy Personnel Command (PERS) Staff Corps Community Brief, the Junior and Senior Officer Seabag Guides, and the sub-specialty roadmaps.

#### ***a. PERS Community Brief***

Officers can view the PERS community brief, shown in Appendix A, as a primer for expectations and a general list of billets available to all sub-specialties. The brief divides a career into three blocks: Junior Officer, Mid-Grade, and Senior, and lists four areas of focus for career progression in each block. It also lists example assignments across a 26-year period (Navy Personnel Command, 2024). As a primer, it effectively communicates billet opportunities within the Medical Service Corps. It resembles the 1991 “Medical Department Officer Career Guide” roadmap in its generality, but its purpose is to provide basic information universally while the sub-specialty roadmaps provide the finer details of specific specialty fields.

#### ***b. Seabags***

##### **(1) Junior Officer Seabag**

The Seabag Guides offer a wide range of topics for junior and senior Medical Service Corps officers. The Junior Officer Seabag guides officers on how to manage a personal record, what to look for and put in a Fitness Report, relevant service schools and trainings, and other training opportunities (Medical Service Corps Career Development Board & Professional Development Strategic Goal Groups, 2021). It also lists collateral duties that Medical Service Corps officers often assume (Medical Service Corps Career

Development Board & Professional Development Strategic Goal Groups, 2021). Although the guide provides information that junior officers need to know, it does not offer any career roadmap, generic or specific, for a junior officer to follow throughout a career in the Medical Service Corps. The guide aims to help junior officers build a strong foundation for a Navy career. When updates are necessary, the community creates a working group of senior and junior Medical Service Corps officers focusing on career and professional development.

## (2) Senior Officer Seabag

Unlike the Junior Officer Seabag, the Senior Officer Seabag addresses the Medical Service Corps career ladder but explicitly states, “there is no specific billet that will get you promoted to Commander or Captain...while some billets provide a greater opportunity to showcase our leadership capabilities...there are no absolute ‘O6’ maker jobs” (2021/2022 Development Team, 2022, p. 5). The guide suggests career progression such as diversity of assignments, expertise, and leadership, and lists senior billets that are not traditional milestone or commanding officer/executive officer billets but still offer leadership opportunities. The senior officer guide provides three roadmaps. Two of the roadmaps are for two specific milestone billets within the Medical Service Corps, Officer in Charge and Director for Administration. The roadmaps display the billets, collateral duties, and trainings that offer opportunities to develop knowledge, skills, and abilities throughout a career that will help anyone be successful as an Officer in Charge or Director for Administration.

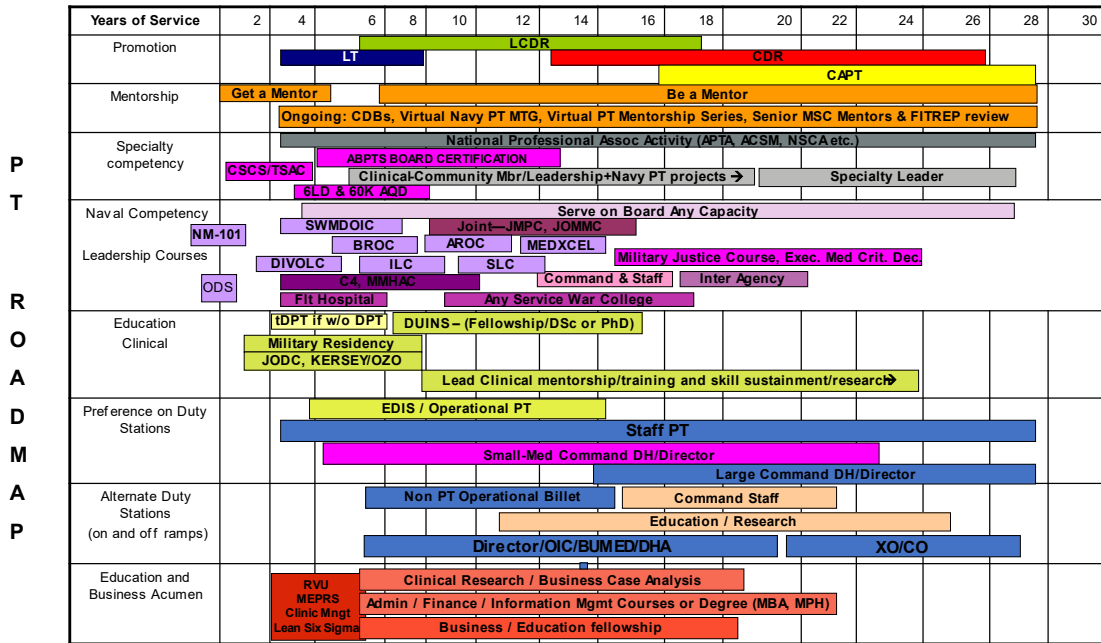
The third map, tailored toward training, highlights specific trainings that will help develop leadership, skills, and abilities from ensign to admiral. While more in-depth than the junior officer seabag, the senior officer seabag offers a wide range of information to help senior officers. Like the junior officer seabag, when updates are necessary, a working group of senior officers is assembled to focus on career and professional development.

*c. Sub-Specialty Roadmaps*

The third source of career guidance for officers is the sub-specialty roadmap. These roadmaps offer the most comprehensive career guide that an officer can use to plan their career. The roadmaps divide a career into nine facets: years of service, rank, mentorship, professional development, naval competency/leadership, education (related to specialty), duty station, alternate duty station, and professional business acumen or other career certifications (milSuite & Navy Medical Service Corps, n.d.). Specialty leaders, who are senior officers belonging to the respective sub-specialty community, maintain the roadmaps. They review and update the roadmaps as needed and provide advice and insight about their specialty to the Navy Surgeon General and the Medical Service Corps Chief (BUMED, 2017). They also guide and recommend officers within their sub-specialty on career decisions, including duty stations, billets, and other career-enhancing opportunities. Specialty leaders work closely with detailers to recommend the detailing of officers to billets that serve both the Navy and the servicemember's needs (Hardin, 2023).

Appendix A shows roadmaps from two Medical Service Corps tracks: administrative and scientist. Figure 2 presents a roadmap from the clinical specialty, Physical Therapist. The roadmaps provide recommendations for various facets of a career, from preference of duty station, leadership training, to clinical education and business education. The career facets are not listed in a specific order, and the recommendations within each facet do not favor one over another.

The first two categories, promotion, and mentorship, show the general time to be in each rank and when to get a mentor and when to be a mentor. The next three categories, specialty competency, naval competency, and educational/clinical competency, focus on developing professional skills and leadership ability. The specialty competency focuses on the professional societies and certifications beneficial for Physical Therapists. The naval competency focuses on military fundamentals and leadership development. The education/clinical category focuses on the specialty but in the clinical setting, depicting when in a career to complete a residency or pursue other opportunities like fellowships or a doctoral degree.



Source: milSuite and Navy Medical Service Corps (n.d.); email to author Plazio, Nicole, personal communication, November 29, 2023.

Figure 2. Healthcare Clinician Track: Physical Therapist

The next two categories focus on the billets and duty stations a servicemember should look for and are eligible for. The preference duty station relates to the subspecialty while the alternate allows for the servicemember to diversify and gain experience in other areas. The preference of duty station focuses on the delivery of care in a clinical or operational environment. The alternate duty station section shows other opportunities away from healthcare delivery in the administrative realm, either serving in leadership roles or staff billets not related to clinical care.

In the last category, the roadmap provides recommendations for opportunities outside the specialty but still beneficial to personal and professional development like additional research or another graduate degree in a new field. All the categories and options presented are listed in a way that individuals can track along years of service to allow for continued planning. The main takeaway from the roadmaps is that the development of a well-rounded naval officer is a combination of several lines of effort.

Table 2, interpreted from the roadmap in Figure 2, presents a potential career path for a Physical Therapist from Lieutenant to Captain. This table condenses the roadmap into four facets: duty stations (preference/alternate), educational opportunities with mentorship (Clinical and Business), and competencies. It can guide an officer in navigating their career progression.

Table 2. Potential Career Path of a Navy Physical Therapist

Rank	Duty Stations	Naval Competency	Specialty Competency	Education
LT	(1) Staff PT (Clinic) (2) Operational PT (CVN)	<ul style="list-style-type: none"> <li>• Division Officer Leadership</li> <li>• Basic Readiness Officer Course</li> </ul>	<ul style="list-style-type: none"> <li>• Human Performance Specialist Qualification</li> <li>• Strength and Conditioning Certification (CSCS)</li> <li>• Musculoskeletal Screener Qualification</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of residency</li> <li>• Get a Mentor</li> <li>• Clinic Management Course</li> </ul>
LCDR	(1) Non-PT Operational Billet w/ USMC (2) Small-Med Command Leadership Position (Department Head)	<ul style="list-style-type: none"> <li>• Intermediate Leadership Course</li> <li>• War College Completion</li> <li>• MedXcellence</li> </ul>	<ul style="list-style-type: none"> <li>• Board Certification</li> <li>• Professional Association Membership</li> </ul>	<ul style="list-style-type: none"> <li>• Clinical Mentorship</li> </ul>
CDR	(1) Medium Command Leadership Position (Director) (2) Large Command Leadership Position (Director)	<ul style="list-style-type: none"> <li>• Senior Leadership Course</li> <li>• Advanced Readiness Officer Course</li> </ul>	<ul style="list-style-type: none"> <li>• Clinical Community Member</li> <li>• Professional Association Membership</li> </ul>	<ul style="list-style-type: none"> <li>• Clinical Mentorship</li> </ul>
CAPT	Staff PT	<ul style="list-style-type: none"> <li>• Board Membership</li> </ul>	<ul style="list-style-type: none"> <li>• Specialty Leader</li> <li>• Professional Association Membership</li> </ul>	<ul style="list-style-type: none"> <li>• Clinical Mentorship</li> </ul>

In the first row of Table 2, we see the roadmap for a Lieutenant. In the Lieutenant rank, the first two duty stations they will be assigned to include an initial assignment at a clinic as a Staff Physical Therapist, followed by a role as a Physical Therapist on an Aircraft Carrier. During this period, the Lieutenant will develop both competencies and education as delineated in Table 2. Upon promotion to Lieutenant Commander, the officer will fulfill the competencies and education specified for that rank. Assuming

sustained superior performance, the officer promotes to the next rank, up to Captain, upon timely completion of each row's requirements.

#### **4. Career Guidance Access**

The Junior/Senior Officer Seabag and the sub-specialty roadmaps are located on the Medical Service Corps milSuite website. MilSuite is the Department of Defense Enterprise Social Network available for Department of Defense members to consolidate, collaborate, and communicate in a central location (milSuite, n.d.). The Medical Service Corps community maintains the Medical Service Corps page and regularly publishes relevant information for the community. Within the milSuite page, there are sites for every sub-specialty that offer additional specific information on the sub-specialty community.

#### **5. Improvements**

The Medical Service Corps has significantly enhanced its officers' ability to plan their careers by providing numerous resources. As the Final Report of the Medical Blue Ribbon Panel noted, establishing a career path guide is crucial for both the service and the servicemember (BUMED, 1988). The service needs to maintain a method to determine if officers have had the opportunity to grow and develop into leaders ready for command. Servicemembers need to have the opportunity to be aware of their options and understand the knowledge, skills, and abilities expected of them. Navy Medicine created a roadmap in 1991, which has since been updated. Now, every sub-specialty has a career guide that communicates the community's needs and provides servicemembers with opportunities for personal and professional growth. This research aims to validate the accuracy and validity of these roadmaps.

### III. LITERATURE REVIEW

This chapter examines the literature on employee knowledge of their career paths and the effects of billet and UIC history on promotion in the Navy.

#### A. CIVILIAN CAREER PATH

Westerman and Lundberg (2023) conducted research on the importance of employee career paths and described an approach to successfully implement career paths within an organization. They used an online survey of 1,016 employees across the United States and interviews with talent and learning leaders from more than 25 organizations to identify areas where companies can improve employee retention and support growth (Westerman & Lundberg, 2023). They identified three major elements of career development: (1) making opportunities and career pathways visible, (2) providing opportunities to learn and practice, and (3) delivering rich feedback and coaching (Westerman & Lundberg, 2023).

For the first element, the research found that many companies have identified career pathways, but only for those employees deemed as “fast-track” or “superstar employees.” However, these career paths do not exist for all other employees, including those not designated on the “fast-track.” This lack of valuable career guidance for all employees limits the opportunity for optimal matching that better serves the employee’s and organization’s interests (Westerman & Lundberg, 2023).

A 2021 Pew Research study supports Westermann and Lundberg’s (2023) research finding that 63% of people who changed jobs in 2021 did so because of a lack of advancement opportunities (Parker & Horowitz, 2022). The Westerman and Lundberg study identified two existing methods among the respondents: delegating the responsibility of creating a career path to the first line supervisor or leaving the creation of a career path up to the employee. Both methods fall short of meeting the needs of the employee. A first line supervisor might not know all the opportunities available outside their division/department, unlike the Human Resources Department. Additionally, not all employees feel comfortable exploring different opportunities due to fear of reprisal or



lack of support in learning about the opportunities that may be available. The study further elaborates on the role of employers' responsibilities, which extend beyond just creating career pathways. Employers also need to create training opportunities and provide meaningful feedback for a holistic approach in fostering employee growth.

Westerman and Lundberg (2023) identified the benefits of creating and communicating career paths for all employees. They discussed that many companies do have career paths for their high-performing employees, but the career path information needs to be expanded to all employees, regardless of their performance level. While Westerman and Lundberg's (2023) research conclusions appear to be sound, there are problems with the study. The survey was online and only included a sample of 1,016 employees across the United States. The employees who responded could have bias in that they might not be the high-performing employees, so their view of their employer's method of career development could be more negative. There is also a potential for bias from the corporate talent and learning leaders. From their perspective, they may not fully understand what an employee wants for career development.

Additionally, the research builds on previous research and discussions from a select number of academic and corporate leaders the authors had access to. This limited group could add to the bias due to previous findings and intended use of this research. Lastly, it is difficult to separate the effects of career path availability and the ability of an employee. Employees that perform at a higher level can do so absent of clearly defined paths by creating their own path tailored to their career wants and needs.

The study does not discuss the effect of the identified career paths on the employee's ability to promote into different positions. Readers are meant to infer that if all employees, high, average, and low performers, are given access to career paths, opportunities to learn and practice, and provided feedback they will (1) perform better than those employees who do not and (2) increase the likelihood of staying with the organization, but there is no evidence offered in support of those conclusions (Westerman & Lundberg, 2023). Because there is no further evidence provided about the effects of increased access to career paths, it is hard to understand the benefits, if any.

Westermann and Lundberg's (2023) findings on career progression in the private sector are further supported by additional research. Smart and Chamberlin (2017) analyzed data from Glassdoor, studying 5,006 job transitions from 2007 to 2016 to identify predictors of employee turnover. Although limited to the data collected through Glassdoor services, their research indicates that job stagnation significantly contributes to employee turnover. Employees who feel stagnant in their roles often become discouraged about their career progression within the company, which may lead them to seek better prospects elsewhere (Smart & Chamberlain, 2017). More specifically, if an employee stays in a role for an extra 10 months without a clear progression path, the probability of them leaving increases by 1%. This finding holds statistical significance in their model (Smart & Chamberlain, 2017). Chamberlin (2017) proposes a simple solution for companies aiming to retain their employees. By establishing clear career paths that allow for progression over time, companies can instill a sense of future career opportunities in their employees (Chamberlain, 2017). The research underscores that the implementation of career paths can be instrumental in helping employers retain their employees and assisting employees in advancing their careers (Chamberlain, 2017; Smart & Chamberlain, 2017).

## **B. NAVY CAREER PATHS**

In contrast to civilian firms where career path information is more informal, the Navy provides a structured setting to address this issue, as the knowledge of a golden career path is often outlined in policy documents.

Finley (1993) conducted a study specifically for the Medical Service Corps, investigating the validity of the current career planning guidelines. The aim was to determine if these guidelines could be improved, particularly in terms of accuracy and detail. Here, accuracy refers to a career guide that recommends specific duty stations and the sequence in which they should be assigned. Finley also explored whether the career guides for the Medical Service Corps could provide more detailed information on the necessary training for Medical Service Corps Officers.

This inquiry stemmed from the 1988 Final Report of the Medical Blue Ribbon Panel, which recognized that unrestricted line communities in the Navy had established career paths that effectively developed leadership skills. The panel recommended creating similar career paths to foster leadership skills among medical officers. In response, the Bureau of Medicine and Surgery (BUMED) published the 1991 U.S. Navy Medical Department Officer Career Guide (Finley, 1993). Despite BUMED's endorsement of the career guide, the Medical Service Corps career planning guide was still found lacking when compared to unrestricted line guides, especially considering the number of different specialties within the Medical Service Corps community.

Finley (1993) identified three main shortcomings. First, the lack of descriptive information for suggested duty tours, such as the difference between a sea, shore, and staff billet. Second, the guide lacked billet categorization by the size of a duty station, for instance, an assistant department head billet is intended only for a large hospital. Lastly, the absence of a specified tour rotation plan between shore, staff, and operational. While the desire for a "well-rounded" leader exists, there is no guide to ensure the development of such a leader. Given these shortcomings, Finley aimed to provide recommendations to help the Medical Service Corps community prepare officers and develop leaders ready for increased responsibility.

Finley (1993) analyzed the tour trends of 2,765 active-duty Medical Service Corps officers from FY1991 by examining their eight most recent duty stations. The research sample was divided between junior (O3 and below) and senior officers (O4 and above), male and female, and Healthcare Administrators and Healthcare Scientists. Finley grouped the tour types into 10 distinct categories to account for all the duty stations and billets Medical Service Corps officers have served in. Focusing on the 1,025 senior officers in the data, she identified the most common duty stations assigned and the most common trainings completed by the senior officers. She also highlighted the differences between male and female, and healthcare administrators and healthcare scientists.

Based on the identified trends of the senior officers' most recent eight duty stations across the 10 tour categories, Finley (1993) determined what percentage of senior

officers completed tours at different points in their career. For example, the percentage of senior officers that serve at a “Big 4” hospital remains constant across the previous eight duty stations; the percentage of senior officers that serve in the Washington, D.C., area decreases from the most recent duty station to the eighth duty station; the percentage of senior officers who served on ships increases from the most recent duty station to the eighth duty station. Based on these trends, Finley suggested two revisions to the career path guidelines: (1) identify which tour assignments are most beneficial by rank and (2) identify by rank which assignment has the advantage in available tours for male or female and administrators or scientists (Finley, 1993).

In addition to the Medical Service Corps other Navy communities, such as the Surface Warfare community and the Nurse Corps, have also been studied for the effect of previous billets and duty stations. Parish (1978) discovered that operational jobs have higher promotion rates than shore duty. He conducted research on the impact of commissioning source and billet history on promotion from O4 to O5 in the Surface Warfare community. Parish (1978) sought to understand which billet paths O4 SWOs most frequently select, and the promotion outcomes based on those billet choices. Using a sample of 937 officers from the Surface Warfare cohorts of 1958, 1959, and 1960, Parish (1978) found that officers who filled student billets and sea billets had more positive promotion outcomes compared to officers filling shore billets. In his study, Parish (1978) categorized billet history into four categories and billets into 13 different categories. “Historical billet 1” refers to the most recently completed billet, continuing until “Historical Billet 4.” His analysis examined the relationship of billet history and promotion outcome in three different models. First, he looked at the promotion outcomes of the billet categories independently within each historical billet. In the second model, he analyzed all 13 billet categories within all four historical billets together to determine which billet category was most significant in promotion outcomes. In his final model, he evaluated the promotion outcomes using historical billet 1 conditional on historical billet 2, as well as promotion outcomes using historical billets 1 and 2 conditional on historical billet 3. Parish (1978) found that officers who served in sea billets at any point over their last three historical billets had higher promotion rates than officers who had not served in

sea billets at any point over their last three historical billets. Even when excluding performance, the significance of being in the right billet at the right time greatly affects promotion outcomes from both an individual and organizational standpoint. From an individual's perspective, it becomes increasingly important to know which billets improve promotion outcomes and to seize the opportunity to serve in those billets. From an organizational perspective, it is crucial to understand which billets increase promotion and to decide whether it is worth adjusting tour length to allow for increased opportunities to serve in these billets or to provide some incentive to serve in billets that do not help promotion outcomes (Parish, 1978).

Ray (2012) discovered that being stationed in multiple locations affects the promotion outcomes of midlevel and senior officers differently. Her primary research focuses on the promotion of the Navy Nurse Corps during war and how deployment affects promotion outcomes. In addition to her main research, she also examines the effect of locations served. She used data from over 7,000 Navy Nurses from September 11, 2001, to July 1, 2010, and found that there are both positive promotion outcomes for O3's promoting to O4 and negative promotion outcomes for O4's promoting to O5 related to their duty station. Ray (2012) analyzed the locations where nurses were stationed in the current rank, if they were stationed at one of the Big Three hospitals, stationed overseas, and how many states the nurse was stationed in at each rank. The Big Three (BIG3) are Naval Medical Center San Diego, Naval Medical Center Portsmouth, and National Naval Medical Center in Bethesda, Maryland, now known as Walter Reed National Military Medical Center. While not looking directly at billet or specific UIC history, serving in multiple states can imply serving in different UICs and billets. Ray (2012) found that for O3's promoting to O4, the location served was highly significant for promotion. Those that served in the Big Three Medical Centers (San Diego, Portsmouth, Bethesda) saw the probability of promotion increase by 13.9 percentage points compared to those who had not served at the Big Three. Serving in two or more states increased the probability of promotion by 13 percentage points (Ray, 2012). For O4's promoting to O5, serving in an overseas billet decreased the probability of promotion by almost 14.6 percentage points (Ray, 2012). Ray's conclusions offer critical

information for individual and community managers understanding the importance and implications of billets in the Nurse Corps. For O3's promoting to O4, mobility is viewed as a benefit while at the same time for O4's promoting to O5, going overseas is a detriment. Both outcomes provide critical information for both individuals and the Nurse Corps on how to direct careers.

The literature underscores the importance of career path guidelines, billet type, and duty station for promotion, but there are gaps that new research can address. Three issues exist in the literature: (1) the two Navy-specific studies, Parish (1978) and Finley (1993), have become outdated by at least 30 years; (2) these studies cover only certain communities (Surface Warfare and Nurse Corps); (3) these studies use different measures of location/billet history. None of these studies explore whether a perfect career path exists and what that path might be.

The studies by Parish (1978) and Finley (1993) are quite old, and the Navy has undergone significant changes since their publication. For instance, at that time, the Navy did not permit females to serve in surface ship billets. Now, both women and men can assume the same roles, necessitating an updated analysis of career guides and promotion outcomes.

Parish's (1978) study focused on the Surface Warfare community, which has a different mission than the Medical Service Corps. The Surface Warfare community is also much larger than the Medical Service Corps community, so it makes sense to focus on the billet history of one rank, LCDR, and its effect on the probability of promotion to CDR. It is also important to understand that the time Parish (1978) covers is during the Vietnam War. It is reasonable to assume that an even higher premium was placed on warfighting sea billets. Ray's 2012 study exclusively examined the promotion outcomes of the Nurse Corps. Her research primarily investigated the impact of deployment history on promotion outcomes. She did not link location with career path, but rather with the likelihood that nurses had served at a specific duty station.

Westerman and Lundberg (2023), Parish (1978), Finley (1993), and Ray (2012) each adopted distinct methodologies to define their studies and formulate their

conclusions. Parish (1978) primarily aimed to identify the billets that correlate with promotion, proposing the creation of additional similar billets or the reduction of tour length for billets that secure promotions. Westerman and Lundberg (2023) utilized surveys and focus groups to develop their tripartite solutions for the private sector. Ray's (2012) study did not concentrate on specific billet history related to promotion outcomes, instead, it generalized locations to overseas, the BIG3, or the number of states served in, rather than specifying locations like duty on a ship or on a fleet staff.

Finley (1993) focused exclusively on current Navy Medical Service Corps officers, excluding those who had separated from service. Although Finley (1993) recognized the selection bias in the data, the study's focus remained on the career guides, not on creating a promotion model or demonstrating the impact of duty tours on rank. However, an examination of the career paths of separated Medical Service Corps officers could mitigate selectivity bias and provide a more comprehensive view of successful and unsuccessful career paths. The selection bias in Finley's 1993 study could potentially skew a revised roadmap and bias the career focus of officers towards specific billets and trainings, neglecting billets not filled by current officers. A more inclusive analysis that incorporates both separated and remaining officers could reduce the effects of selection bias, providing a more robust context for a valid and effective roadmap.

The literature highlights three key points: (1) career guides significantly shape employee career decisions, (2) a strong relationship exists between billet history and promotion, and (3) duty location also significantly influences promotion. Whether the decision involves staying within the organization to seek promotion or leaving, specific career path guides prove beneficial for both servicemembers and the Navy. A generic roadmap falls short in providing sufficient information to individuals making pivotal decisions about their future in an organization that aims to retain them. These career guides need to provide realistic and pertinent information, empowering servicemembers to make the best decisions for themselves. This thesis builds upon this work by investigating the effects of an individual's career history and promotion history on their promotion outcomes.

## IV. DATA AND METHODOLOGY

This chapter describes the data, construction of the variables used in the analysis, and the methodology.

### A. DATA SOURCE

The Defense Manpower Data Center (DMDC) provided two data sets. The first set includes quarterly snapshots of the sociodemographic and professional career history of Medical Service Corps officers from March 31, 2000, to November 30, 2023. The second set comprises separation transactions for Medical Service Corps Officers. I merged these two data sets to create the final data set for analysis.

To analyze promotion profiles across individual careers, I established promotion windows. These windows identify in-zone and above-zone quarters for promotion for each officer. Due to the lack of lineal numbers in the provided sample, I estimated the promotion window to identify in zone, and above zone. I created the promotion window by adding 6 to 8 years to the officers' rank effective date, aligning with the general beginning and end flow points for promotion to the next. I then calculated the difference between the file date and the flow point dates to measure an officer's career stage relative to their promotion window. This difference enabled me to estimate whether an officer was in-zone or above-zone and to calculate their promotion probability using the model. Ray (2012) employed a similar method to identify promotion-eligible Nurse Corps officers, using 72 months of service in the current rank as the time frame marker for promotion eligibility.

To assist with the creation of the final model variables, I divided duty-billet categories into the three most prominent categories on roadmaps—MTF, Staff, and Operational—instead of the simple shore duty and sea duty. While MTF and Staff duty could classify as shore duty, I maintained a distinction between MTF and the rest of the staff duty due to MTF's unique importance as a cornerstone within the Navy Medicine enterprise. I set MTF as an indicator variable equal to "1" if the Unit Identification Code (UIC) identified as an MTF. I used the list of current MTFs from the BUMED commands



website and the Fleet Training Management and Planning System (FLTMPS), which provided the UICs for all the commands (BUMED, 2024; FLTMPS, 2024). Appendix B displays the 91 commands I identified as MTFs. One limitation is the misclassification of an MTF that existed in the past but no longer has a unique UIC on FLTMPS.

Additionally, I constructed an Operational variable equal to “1” when an officer served in either a CONUS or OCONUS sea duty-billet. I also constructed an indicator for Staff equal to “1” that encompasses commands like BUMED Headquarters, research commands, numbered fleet medical support staff, or any other duty-billets not categorized as an MTF or an Operational unit within the sample.

After creating all the necessary variables and identifying the zones, I removed observations that I determined were not in-zone or above-zone for promotion to the next rank. This process left each officer with four or eight quarters of observations—four quarters or one year’s time for in-zone and eight quarters or another year’s time for above-zone. The initial analysis using quarterly data failed to generate promotion trends within the sample that mirrored real-world trends. For example, the promotion rate from Lieutenant to Lieutenant Commander was around 9%, significantly lower than the actual promotion rate of above 60%. Further analysis revealed that the data setup made it appear as if an officer who promoted above zone, had eight chances to promote, failing seven times and only succeeding once. In reality, the officer only had two actual opportunities—one per year. I suspect that the model interpreted seven quarters as seven promotion failures and one quarter as one successful promotion, which skewed the promotion statistics lower than real-world outcomes. To address this issue, I collapsed the data from quarterly snapshots to yearly snapshots. As a result, an officer promoted above zone would now show two observations in the data—one failure for the in-zone year and one success in the above zone year. Those officers that successfully promoted in-zone only had one observation.

## **B. MODEL**

I use a linear probability model to estimate an officer’s probability of promotion to the next rank as a function of career duty-billet distribution and sociodemographic

characteristics, as described above. The dependent variable in my model is an indicator for whether an officer gets promoted to the next rank. Regarding career history, the first set of career variables measures career duty-billet distribution, with “Share of Career MTF” as the excluded variable. I compared the “Share of Career Staff” and “Share of Career Operational” variables within the model against “Share of Career MTF” to understand how the distribution of billets across a career affects the probability of promotion. The second set of career variables within the model measures the effect of duty-billet choice while at a specific rank on the probability of promotion. The model measures the effect of having an Executive Medicine duty-billet while at the specific rank through the Executive Medicine variable. Past studies underscore the importance of demographics such as race, gender, and marital status on promotion. Since these could also correlate with career trajectories, I added the sociodemographic variables to measure their effects on the probability of promotion. I will discuss the shortcomings of the model, which may include omitted variable bias, at length after I present the results in the next chapter.

$$\begin{aligned} \text{Promoted}_{it} = & \beta_0 + \beta_1 \text{Share of Career\_Staff}_{it} + \beta_2 \text{Share of Career\_Operational}_{it} \\ & + \beta_3 \text{No MTF at Rank}_{it} + \beta_4 \text{No Operational at Rank}_{it} + \beta_5 \text{No Staff at Rank}_{it} + \beta_6 \text{Executive Medicine}_{it} \\ & + \beta_7 \text{Female}_{it} + \beta_8 \text{White}_{it} + \beta_9 \text{Marital Status}_{it} + \beta_{10} \text{Dependent Count}_{it} + \beta_{11} \text{Year Indicator}_{it} + \varepsilon_{it} \end{aligned}$$

### C. VARIABLE DEFINITION

The outcome of interest in my model is an indicator for “Promoted,” which I set to “1” for the last year an officer served in any rank before promoting to the next rank, and “0” for all other observations. The outcome “Promoted” within the model measures the probability of an officer’s promotion as a function of the independent variables in the model for each Medical Service Corps track for promotion to Lieutenant Commander, Commander, and Captain.

I included the following control variables in my model: age, gender, race (white), marital status, and number of dependents. Age is the age of the officer at the time consideration for promotion. I coded gender as “1” for female and “0” for male. I coded race as “1” for white and “0” for all other races represented in the dataset. Similar to Age,

Marital Status reflects the relationship status of the officer at the time when considered for promotion, with “1” indicating married and “0” indicating not married. The number of dependents represents the quantity of dependents a Medical Service Corps Officer is responsible for at the time of consideration of promotion.

I grouped the subspecialties into three tracks in the Medical Service Corps: Healthcare Administrator, Healthcare Clinician, and Healthcare Scientists. The Healthcare Administrator variable is an indicator set to “1” for Medical Service Corps officers with the specialties: General Health Care Administration, Education and Training Management, Financial Management, Health Information Technology, Health Facility Planning and Projects, Manpower & Personnel, Medical Logistics Administration, Operations Research & Analysis, Patient Administration, Plans, Operations, and Medical Intelligence. Although Education and Training is no longer a Medical Service Corps subspecialty, it was a sub-specialty for officers within the sample set. The Healthcare Clinician variable is an indicator set to “1” for Medical Service Corps Officers with the specialties: Audiology, Clinical Psychology, Clinical Social Worker, Dietetics, Occupational Therapy, Optometry, Pharmacy, Physician Assistant, Physical Therapy, Podiatry. The Healthcare Scientist variable is an indicator set to “1” for Medical Service Corps Officers with the specialties: Aerospace and Operational Physiology, Aerospace Experimental Psychology, Biochemistry, Entomology, Environmental Health, Industrial Hygiene, Medical Laboratory Science, Microbiology, Physiology, Radiation Health, Research Psychology. No officer was coded for multiple tracks. The Healthcare Administrator, Healthcare Clinician, and Healthcare Administrator variables are derived from the Navy Secondary Service Code and DOD Secondary Service Code in the dataset, which show the sub-specialty code for each officer (United States Navy [USN], 2024).

In constructing the model, I developed two sets of variables to estimate the impact of the three duty-billet categories (MTF, Staff, and Operational) on promotion probability. The first set of variables represents the share of time an officer spent in each billet category throughout their career. The total equals one when all shares are added together. The “Share of Career in MTF Duty-Billet” variable identifies the fraction of time an officer spent at an MTF over their career, appearing as a share between 0 and 1.

The “Share of Career in Operational Duty-Billet” and “Share of Career in Staff Duty-Billet” variables identify the fraction of time an officer spent in an Operational duty-billet and a Staff duty-billet over their career, respectively, appearing as decimals between 0 and 1. For instance, if a Lieutenant has four duty-billets in the Navy, with two being MTF, one Operational, and one Staff, these variables will read 0.5 for MTF, 0.25 for Operational, and 0.25 for Staff. In the model, Share of Career in MTF is the excluded variable. This first set of variables allows the model to measure the effect of duty-billets across a career.

The second set of variables indicates whether an officer lacks a duty-billet category at a specific rank. I set the “No MTF Duty-Billet at Rank” variable to “1” if an officer is missing an MTF duty-billet while in a specific grade. Similarly, I set the “No Operational Duty-Billet at Rank” and “No Staff Duty-Billet at Rank” variables to “1” if an officer is missing an Operational or Staff duty-billet, respectively, while in a specific grade. These variables are coded “0” if the officer has the corresponding duty-billets.

The Executive Medicine variable is an indicator set to “1” if the duty-billet is designated as an Executive Medicine billet. I used the Navy Officer Occupational Classification System (NOOCS) to identify the Billet Sequence Code for Executive Medicine Billets within the sample set (USN, 2024) (see Table 3).

Table 3. Executive Medicine Designated Billets. Adapted from (USN, 2024)

Billet Sequence Code	Title
0005	Director, Health Service or Program
0026	Health Services Branch Clinic Director
9420	Officer In Charge, Naval Shore Activity
9421	Commander/Commanding Officer, Shore Activity
9436	Executive Officer, Shore Activity
9222	Commanding Officer, Afloat
9228	Executive Officer, Afloat

Finally, to account for any potential time trends in the data that could influence the results, I created indicator variables for the years 2000 to 2023. These years coincide

with the time span of the dataset provided by DMDC and the years during which officers within the dataset could be promoted.

## V. DATA ANALYSIS

This chapter describes the descriptive statistics and regression results. I estimate three models for O4 to O6 candidates for the three specialty groups within the Medical Service Corps: Healthcare Administrator, Healthcare Clinician, and Healthcare Scientist for officer eligible.

### A. DESCRIPTIVE STATISTICS

#### 1. Healthcare Administrator Summary Statistics

Table 4 presents the summary statistics for the Healthcare Administrator sample. As seen in column (1), 61.2% of Lieutenants get promoted to Lieutenant Commander. A significant portion of the Lieutenants in the sample have spent most of their careers in Staff duty-billets, with a smaller fraction of their career at an MTF, and even less time in Operational duty-billets. This trend is underscored by the observation that over half of the Lieutenants have not completed an Operational duty-billet. In column (2), the promotion rate from Lieutenant Commander to Commander is 48.6%. The distribution of time spent across the three duty-billet categories aligns with the pattern observed in the Lieutenant column. In column (3), the promotion rate to Captain is 37.2%. The distribution of time spent across the three duty-billet categories continues to mirror the patterns observed in both the Lieutenant and Lieutenant Commander samples.

Table 4. Healthcare Administrator Sample Descriptive Statistics

	(1)	(2)	(3)	(4)
	Lieutenant	Lieutenant Commander	Commander	Total
Probability of Promotion	0.611 (0.488)	0.486 (0.500)	0.372 (0.484)	0.527 (0.499)
Share of Career in MTF Duty-Billet	0.286 (0.250)	0.250 (0.239)	0.210 (0.238)	0.260 (0.246)
Share of Career in Staff Duty-Billet	0.562 (0.289)	0.632 (0.255)	0.702 (0.242)	0.610 (0.276)
Share of Career in Operational Duty-Billet	0.152 (0.190)	0.117 (0.154)	0.088 (0.139)	0.129 (0.172)

	(1)	(2)	(3)	(4)
	Lieutenant	Lieutenant Commander	Commander	Total
No MTF Duty-Billet at Rank	0.393 (0.489)	0.539 (0.499)	0.642 (0.480)	0.485 (0.500)
No Operational Duty-Billet at Rank	0.579 (0.494)	0.798 (0.402)	0.804 (0.397)	0.690 (0.463)
No Staff Duty-Billet at Rank	0.149 (0.356)	0.130 (0.336)	0.090 (0.287)	0.132 (0.339)
Executive Medicine (Senior Leadership)	0.006 (0.079)	0.103 (0.304)	0.182 (0.386)	0.069 (0.254)
Age	40.342 (4.375)	44.759 (4.207)	49.977 (4.461)	43.514 (5.658)
Female	0.315 (0.465)	0.264 (0.441)	0.193 (0.395)	0.276 (0.447)
Married	0.790 (0.407)	0.819 (0.385)	0.812 (0.391)	0.803 (0.397)
White	0.602 (0.490)	0.688 (0.463)	0.718 (0.450)	0.651 (0.477)
N	1,894	1,202	698	3,794

Statistics are averages by rank. Standard deviations in parenthesis.

## 2. Healthcare Clinician Summary Statistics

Table 5 presents the summary statistics for the Healthcare Clinician sample. In column (1), 56% of Lieutenants get promoted to Lieutenant Commander. A significant portion of the Lieutenants in the sample have spent most of their careers in MTF billets, with a smaller fraction of their career at a Staff duty-billet, and even less time in Operational duty-billets. This trend is similar to the Healthcare Administrators as over half of the Lieutenants in the Healthcare Clinician sample have not completed an Operational duty-billet. In column (2), the promotion rate from Lieutenant Commander to Commander is 38.9%. The distribution of time spent across the three duty-billet categories aligns with the pattern observed in the Lieutenant column. In column (3), the promotion rate to Captain is 20.9%. The distribution of time spent across the three duty-billet categories shifts to an almost even split between Staff and MTF duty-billets over a career with the share of career in Operational duty-billet remaining low.

Table 5. Healthcare Clinician Sample Descriptive Statistics

	(1)	(2)	(3)	(4)
	Lieutenant	Lieutenant Commander	Commander	Total
Probability of Promotion	0.560 (0.497)	0.389 (0.488)	0.209 (0.407)	0.423 (0.494)
Share of Career in MTF Duty-Billet	0.549 (0.299)	0.564 (0.305)	0.497 (0.309)	0.543 (0.304)
Share of Career in Staff Duty-Billet	0.297 (0.267)	0.356 (0.291)	0.433 (0.294)	0.347 (0.286)
Share of Career in Operational Duty-Billet	0.154 (0.215)	0.080 (0.150)	0.069 (0.138)	0.110 (0.183)
No MTF Duty-Billet at Rank	0.131 (0.337)	0.193 (0.394)	0.240 (0.427)	0.176 (0.381)
No Operational Duty-Billet at Rank	0.608 (0.488)	0.834 (0.372)	0.832 (0.374)	0.736 (0.441)
No Staff Duty-Billet at Rank	0.403 (0.491)	0.363 (0.481)	0.306 (0.461)	0.368 (0.482)
Executive Medicine (Senior Leadership)	0.001 (0.024)	0.012 (0.107)	0.041 (0.197)	0.013 (0.114)
Age	38.954 (5.508)	45.945 (36.814)	50.362 (5.062)	43.896 (22.627)
Female	0.332 (0.471)	0.341 (0.474)	0.299 (0.458)	0.328 (0.470)
Married	0.773 (0.419)	0.816 (0.387)	0.830 (0.376)	0.800 (0.400)
White	0.795 (0.404)	0.796 (0.403)	0.824 (0.381)	0.802 (0.399)
N	1,699	1,371	864	3,934

Statistics are averages by rank. Standard deviations in parenthesis.

### 3. Healthcare Scientist Summary Statistics

Table 6 presents the summary statistics for the Healthcare Scientist sample. Column (1) shows that 69.3% of Lieutenants get promoted to Lieutenant Commander, the highest among the three specialty groups. Like Healthcare Administrators, the Lieutenants in this specialty group have spent most of their careers in Staff duty-billets, with a smaller fraction of their career at an MTF, and less time in Operational duty-billets. In column (2), the promotion rate from Lieutenant Commander to Commander is 34.5%. The distribution of time spent across the three duty-billet categories shows trends



like Lieutenants but with a more noticeable drop in the time spent in MTF duty-billets compared to other specialty groups. In column (3), the promotion rate to Captain is 24%. The distribution of time spent across the three duty-billet categories continues to mirror the patterns observed in Lieutenant Commander samples with the Staff duty-billet share increasing and MTF duty-billet experience decreasing again.

Table 6. Healthcare Scientist Sample Descriptive Statistics

	(1)	(2)	(3)	(4)
	Lieutenant	Lieutenant Commander	Commander	Total
Probability of Promotion	0.693 (0.462)	0.345 (0.476)	0.240 (0.427)	0.444 (0.497)
Share of Career in MTF Duty-Billet	0.225 (0.262)	0.165 (0.238)	0.112 (0.186)	0.173 (0.239)
Share of Career in Staff Duty-Billet	0.631 (0.304)	0.732 (0.276)	0.840 (0.215)	0.723 (0.285)
Share of Career in Operational Duty-Billet	0.145 (0.191)	0.103 (0.157)	0.049 (0.107)	0.104 (0.164)
No MTF Duty-Billet at Rank	0.519 (0.500)	0.652 (0.477)	0.768 (0.422)	0.634 (0.482)
No Operational Duty-Billet at Rank	0.604 (0.489)	0.748 (0.434)	0.928 (0.259)	0.743 (0.437)
No Staff Duty-Billet at Rank	0.136 (0.343)	0.068 (0.252)	0.045 (0.208)	0.087 (0.282)
Executive Medicine (Senior Leadership)	0.000 (0.000)	0.020 (0.139)	0.104 (0.305)	0.034 (0.182)
Age	39.104 (10.277)	44.973 (4.281)	50.692 (4.235)	44.327 (8.414)
Female	0.254 (0.435)	0.248 (0.432)	0.219 (0.414)	0.243 (0.429)
Married	0.829 (0.377)	0.855 (0.352)	0.854 (0.353)	0.845 (0.362)
White	0.734 (0.442)	0.764 (0.425)	0.844 (0.363)	0.774 (0.418)
N	1,197	1,223	858	3,278

Statistics are averages by rank. Standard deviations in parenthesis.

## **B. REGRESSION RESULTS**

I divide the results according to the three specialty groups. For each specialty, Column (1) displays regression results for promotion from Lieutenant to Lieutenant Commander, Column (2) shows regression results for promotion from Lieutenant Commander to Commander, and Column (3) presents regression results for promotion from Commander to Captain. Appendix C presents additional regression results.

### **1. Healthcare Administrator**

Table 7 presents the findings for Healthcare Administrators. When focusing on the six career variables, the MTF and Staff career variables significantly impact the promotion probabilities for Healthcare Administrators. A statistically significant effect exists at every rank for an officer who spends a larger portion of their career in Staff duty-billets compared to MTF duty-billets. The most significant point in a career to have Staff duty-billet experience is when officers are eligible for promotion to Lieutenant Commander. Conversely, no statistically significant effect exists for spending a larger proportion of their career in Operational duty-billets compared to MTF duty-billets for Healthcare Administrators at any rank. In terms of an officer's experience within a specific rank, like overall career experience, there is no statistically significant association between an officer lacking Operational experience and promotion. However, lacking MTF experience when eligible for Lieutenant Commander or Commander significantly reduces the probability of promotion to the next rank by 8 and 9.2 percentage points, respectively.

Executive Medicine duty-billets are also statistically significant across all ranks. Officers eligible for promotion to Lieutenant Commander see the most substantial increase in promotion probability at 28.6 percentage points. This trend aligns with most Healthcare Administrator tracks, where the Lieutenant rank is the first rank at which an officer can assume a significant command leadership role, which could influence the promotion board. The most significant finding for Executive Medicine is evident for officers eligible for promotion to Captain. The increase in significance at the Commander rank aligns with roadmaps as Executive Medicine is specifically recommended the most

at this rank. Also, many of the Executive Medicine billets at the ranks of Commander and Captain involve a separate selection board process. This separate selection process may act as a signal or pre-screening mechanism for the promotion board, indicating an officer's readiness for advancement. Transitioning to the control variables, the demographics, age, and marital status stand out as the most influential variables. As an officer ages, their chances of promotion diminish across all ranks. In contrast, marriage seems to boost the probability of promotion, particularly to the ranks of Lieutenant Commander and Captain. Other factors such as gender, dependent count, and race only have a significant impact on specific ranks, varying as a positive or negative influence on promotion outcomes.

While much of the career guidance available advocates for duty-billet diversification, this model suggests that Healthcare Administrators do not necessarily need experience in all three billets to advance to Lieutenant Commander, Commander, or Captain. Instead, focusing on Staff and MTF duty-billets could be most beneficial for promotion. The model indicates that an officer could maximize their probability of promotion to Lieutenant Commander by gaining Staff duty-billet experience at some point in their career and serving in a MTF duty-billet while at the rank of Lieutenant. Furthermore, the probability of promotion to Commander can be increased if an officer completes a MTF duty-billet while a Lieutenant Commander. Lastly, completing an Executive Medicine duty-billet as a Commander can increase the probability of promotion to Captain.

Table 7. Healthcare Administrator Promotion Outcomes

	(1) Promotion to LCDR	(2) Promotion to CDR	(3) Promotion to CAPT
Probability of Promotion	0.634	0.509	0.382
Share of Career in Staff Duty-Billet	0.243 <sup>***</sup> (0.063)	0.196 <sup>**</sup> (0.071)	0.181 <sup>*</sup> (0.074)
Share of Career in Operational Duty-Billet	0.046 (0.088)	0.002 (0.113)	-0.143 (0.133)
No Operational Duty- Billet at Rank	0.013 (0.029)	-0.012 (0.038)	-0.023 (0.040)
No MTF Duty-Billet at Rank	-0.080 <sup>**</sup> (0.029)	-0.095 <sup>**</sup> (0.031)	-0.059 (0.034)
No Staff Duty-Billet at Rank	0.082 <sup>*</sup> (0.032)	-0.062 (0.037)	-0.020 (0.044)
Executive Medicine (Senior Leadership)	0.286 <sup>*</sup> (0.111)	0.076 <sup>*</sup> (0.037)	0.135 <sup>***</sup> (0.033)
Age	-0.023 <sup>***</sup> (0.002)	-0.024 <sup>***</sup> (0.003)	-0.015 <sup>***</sup> (0.003)
Female	-0.049 <sup>*</sup> (0.021)	-0.024 (0.027)	0.021 (0.031)
Married	0.090 <sup>***</sup> (0.026)	0.018 (0.033)	0.162 <sup>***</sup> (0.035)
Dependent Count	-0.011 (0.006)	-0.020 <sup>*</sup> (0.008)	-0.012 (0.009)
White	0.014 (0.018)	-0.004 (0.024)	0.069 <sup>**</sup> (0.026)
Year Indicators	Yes	Yes	Yes
Constant	1.193 <sup>***</sup> (0.098)	1.328 <sup>***</sup> (0.140)	0.686 <sup>***</sup> (0.159)
R-squared	0.388	0.483	0.659
Observations	1824	1148	681

Standard errors in parentheses, \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Executive Medicine are command leadership positions i.e. CO, XO, Officer in Charge or equivalent. Share or Career in MTF Duty Billet excluded variable.

## 2. Healthcare Clinicians

Table 8 presents the findings for Healthcare Clinicians. When examining the career variables, spending a larger proportion of their career in a Staff duty-billet is most significant for Healthcare Clinicians when promoting to Commander. In terms of an officer's experience at a specific rank, the most significant effects can be seen when missing an Operational duty-billet when eligible for Lieutenant Commander, decreasing the promotion probability by 8.4 percentage points. On the other hand, when eligible for promotion to Captain, not serving in an Operational duty-billet has a statistically significant positive effect, increasing the probability of promotion by 11.2 percentage points. Furthermore, lacking an MTF duty-billet is also statistically significant and reduces the probability of promotion to Commander.

As expected, the most significant effect of Executive Medicine duty-billets is seen when eligible for promotion to Commander and Captain. Lieutenant Commanders promoting to Commander experience the most substantial increase in promotion probability at 23.6 percentage points. The significance of Executive Medicine is most pronounced for officers eligible for promotion to Captain, which again matches the point in a career when roadmaps specifically recommend pursuing an Executive Medicine duty-billet. As mentioned previously for Healthcare Administrators in Executive Medicine, assignment to Executive Medicine billets at higher ranks is determined by a separate selection board process, which can serve as a pre-screener signaling to the promotion board an officer's readiness for promotion.

Transitioning to demographics, the most significant control sociodemographic variable for Healthcare Clinicians across various ranks is age. As officers age, their chances of promotion decrease across all ranks. Gender and race only have significant findings when eligible for Commander.

Compared to the Administrator model, the Clinician model suggests that there are better promotion outcomes with duty-billet diversification across all duty-billet categories. When eligible for Lieutenant Commander, a clinician may find that lacking an Operational duty-billet is detrimental to promotion probability but more beneficial when eligible for

promotion to Captain. When eligible for Commander, lacking an MTF duty-billet is detrimental for promotion, but those same officers need to have some Staff duty-billet experience in their career up to that point. Lastly, when eligible for Captain, having Executive Medicine experience significantly improves promotion probability.

Table 8. Healthcare Clinician Promotion Outcomes

	(1)	(2)	(3)
	Promotion to LCDR	Promotion to CDR	Promotion to CAPT
Probability of Promotion	0.587	0.399	0.213
Share of Career in Staff Duty-Billet	0.080 (0.060)	0.320*** (0.051)	0.015 (0.039)
Share of Career in Operational Duty-Billet	-0.140 (0.083)	0.083 (0.097)	0.119 (0.093)
No Operational Duty-Billet at Rank	-0.083* (0.033)	0.009 (0.037)	0.112*** (0.033)
No MTF Duty-Billet at Rank	-0.009 (0.037)	-0.100** (0.031)	-0.032 (0.023)
No Staff Duty-Billet at Rank	0.047 (0.027)	0.009 (0.026)	-0.051* (0.023)
Executive Medicine (Senior Leadership)	0.566 (0.367)	0.235** (0.090)	0.212*** (0.046)
Age	-0.015*** (0.002)	-0.016*** (0.002)	-0.010*** (0.002)
Female	0.006 (0.022)	0.071** (0.022)	-0.008 (0.020)
Married	0.012 (0.026)	0.040 (0.029)	-0.039 (0.025)
Dependent Count	-0.001 (0.007)	-0.004 (0.008)	-0.002 (0.007)
White	0.006 (0.023)	0.081*** (0.025)	0.012 (0.023)
Year Indicator	Yes	Yes	Yes
Constant	0.952*** (0.083)	0.732*** (0.103)	0.529*** (0.110)
R-squared	0.460	0.512	0.674
Observations	1618	1334	850

Standard errors in parentheses, \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Executive Medicine are command leadership positions i.e. CO, XO, Officer in Charge or equivalent. Share or Career in MTF Duty Billet excluded variable.

### 3. Healthcare Scientist

Table 9 presents the findings for Healthcare Scientists. When examining career variables, there are no statistically significant effects at any rank for Healthcare Scientists spending a larger proportion of their career in either Staff or Operational duty-billets compared to MTF duty-billets. In terms of experience at a specific rank, lacking an Operational duty-billet when eligible for promotion to Lieutenant Commander has a statistically significant effect, decreasing the probability of promotion to Lieutenant Commander, while increasing the probability of promotion to Commander. When eligible for promotion to Commander, not serving in an MTF duty-billet has a statistically significant effect, increasing the promotion probability by 10 percentage points. Finally, there is a statistically significant association between an officer lacking Staff experience and promotion. Healthcare Scientists eligible for Commander and Captain who do not have Staff duty-billet experience decrease their probability for promotion by 10 and 11.5 percentage points, respectively. Like the Healthcare Clinician model, Executive Medicine duty-billets are statistically significant for promotion to Commander and Captain. Officers eligible for Commander experience the most statistically significant and substantial increase in promotion probability at 24.1 percentage points. This increase aligns with the Healthcare Clinicians and Administrators results, where Executive Medicine duty-billets recommended on roadmaps most at this point in a career and may influence the promotion board.

Consistent with the previous two models, age is statistically significant demographic variable across all ranks. As officers age, their chances of promotion decrease across all ranks. Gender, marital status, and dependent count significantly influence specific ranks only.

For Scientists, the model suggests a similar result to Healthcare Administrators, indicating that diversification across all three categories is not necessary for promotion. While the Healthcare Administrator model suggested better outcomes focusing on Staff and MTF duty-billets, the Scientist model suggests a focus on Operational and Staff duty-billets will be beneficial for promotion. It is important to have an Operational duty-billet for promotion to Lieutenant Commander, but after that promotion there is no need for an

Operational or MTF duty-billet. After promoting to Lieutenant Commander, the only significant finding is that a Scientist’s probability of promotion to Commander and Captain suffers when lacking a Staff duty-billet.

Table 9. Healthcare Scientist Promotion Outcomes

	(1) Promotion to LCDR	(2) Promotion to CDR	(3) Promotion to CAPT
Probability of Promotion	0.714	0.354	0.247
Share of Career in Staff Duty-Billet	0.153 (0.081)	-0.126 (0.068)	-0.021 (0.078)
Share of Career in Operational Duty-Billet	-0.207 (0.117)	-0.054 (0.106)	-0.060 (0.137)
No Operational Duty- Billet at Rank	-0.124* (0.040)	0.072* (0.031)	-0.058 (0.044)
No MTF Duty-Billet at Rank	0.059 (0.038)	0.099** (0.032)	0.003 (0.033)
No Staff Duty-Billet at Rank	-0.002 (0.042)	-0.100* (0.044)	-0.115* (0.049)
Executive Medicine (Senior Leadership)		0.241*** (0.073)	0.088** (0.032)
Age	-0.005*** (0.001)	-0.020*** (0.002)	-0.016*** (0.002)
Female	0.058* (0.029)	-0.067* (0.027)	-0.021 (0.027)
Married	0.095** (0.035)	0.053 (0.034)	-0.000 (0.033)
Dependent Count	-0.034*** (0.009)	-0.029*** (0.008)	0.002 (0.008)
White	0.036 (0.026)	0.027 (0.024)	0.019 (0.027)
Year Indicators	Yes	Yes	Yes
Constant	0.692*** (0.082)	1.079*** (0.132)	0.991*** (0.153)
R-squared	0.305	0.529	0.631
Observations	1158	1192	834

Standard errors in parentheses, \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Executive Medicine are command leadership positions i.e. CO, XO, Officer in Charge or equivalent. Share or Career in MTF Duty Billet excluded variable.



## C. LIMITATIONS

This study has several limitations. The analysis was conducted without any knowledge of the officers' actual performance in any duty-billet. Since Fitness Report data was inaccessible, the model only considers promotion outcomes based on career path, without taking performance into account. Performance is a critical factor in the promotion board's evaluation when considering officers for promotion.

An additional limitation is a selection problem. While officers submit preferences for which duty-billets they want to serve in, ultimately officers do not have full control over which billets they are assigned to. Officers who are poor performers or poorly qualified may be placed into non-preferred billets. The decrease in promotion probability from this research is at least partially reflecting this.

Another limitation is the potential difference between the duty-billet an officer is assigned on paper and the duties they perform at the command. This thesis assumes that an officer assigned to a duty-billet in this sample corresponds only to the duty-billet completed. However, this may not always be the case for various reasons. With the data from DMDC, it was impossible to determine if an officer is completing the duties of several billets due to limited personnel or completing leadership duties that are not inherently reflected in their billet sequence code. For instance, in an MTF, there are other director positions equivalent to the Director for Administration that are not specifically coded as Executive Medicine. This level of detail would only be available on the officer's fitness report, which was not available for this research.

Lastly, the absence of lineal numbers made it challenging to determine the exact promotion zones officers fall into, thereby complicating the construction of a model reflecting the historical promotion outcomes based on promotion zones in the Medical Service Corps community. This study did not account for the specific below-zone, in-zone, and above-zone determinations but only considered whether an officer was promoted or not. Future research would benefit from knowing the promotion zones for officers, to provide better fidelity for promotion probability outcomes from one rank to the next.

## VI. CONCLUSION

This study examined how previous duty-billets influenced the probability of promotion to Lieutenant Commander, Commander, and Captain across the three major tracks of the Medical Service Corps. The model divided the duty-billets into three basic categories: Staff, Operational, and MTF. It demonstrated that assignment or non-assignment to any of these categories could influence an officer's probability of promotion to the next rank. The goal was to determine if past duty-billets influenced promotions and if published roadmaps provided optimal guidance to officers.

The model's output revealed some similarities and noticeable differences in the effect of duty-billets on the three tracks and specific ranks. Common to all three tracks is the significance of executive medicine duty-billets, especially when eligible for promotion to Captain. All three tracks showed that holding an executive medicine labeled billet as a Commander significantly increased the probability of promotion to Captain. Another commonality was the importance of staff duty for the probability of promotion. All tracks showed that having staff experience over a career or in a specific rank increased the probability of promotion.

However, the study also highlighted noteworthy differences. For Healthcare Administrators, operational duty-billets did not show any significant positive or negative effects on the probability of promotion at any rank. For Healthcare Clinicians and Healthcare Scientists, operational duty-billets showed opposite effects at various ranks. For instance, as a Healthcare Clinician, lacking an operational duty-billet as a Lieutenant was detrimental for promotion to Lieutenant Commander, but as a Commander, lacking an operational duty-billet was beneficial for promotion to Captain. As a Healthcare Scientist, the switching effect occurred much sooner. Not having an operational billet as a Lieutenant was detrimental for promotion to Lieutenant Commander, but as a Lieutenant Commander, skipping an operational billet was beneficial for promotion to Commander.

A common theme in much of the Medical Service Corps literature, including roadmaps, is the importance of diversity in duty-billets. While this study does not take a

firm stance on confirming or refuting that claim, the models seem to show that diversity across all three duty-billet categories was not necessary over the past several years in the Medical Service Corps. Diversification of experience is important for officer development and could be the new direction the community is moving towards. The Medical Service Corps and Navy Medicine at large desire officers with a diverse background to gain knowledge and experience to provide the best medical care and medical support to fighting forces.

Further research is recommended into Medical Service Corps roadmaps and the effects of different duty-billets on the promotion outcomes of Medical Service Corps officers. As the Navy's mission changes, healthcare and its delivery to sailors remain critical. The limitations in this study prevent a definitive answer on what the optimal path is duty-billet by duty-billet for any track or any specific specialty.

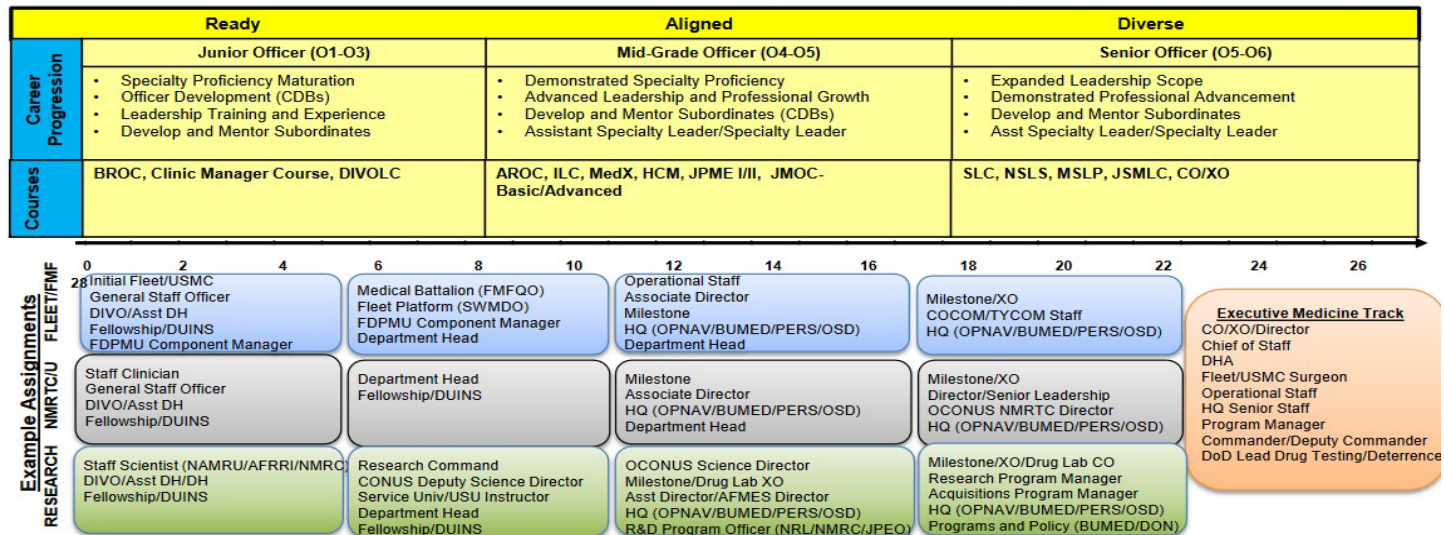
Another recommendation is to research the promotion outcomes of specific sub-specialties and the career paths recommended on specific sub-specialty roadmaps. This study uses the three tracks to generalize the influence of duty-billets on the probability of promotion. While the three tracks within the Medical Service Corps are a good start, many of the sub-specialties within the tracks differ from each other in ways that make it hard to create an optimal path that fits all three. What is significant for a Physician's Assistant's career may not be important for a Microbiologist's career or be possible for Plans, Operations, and Medical Intelligence officer to accomplish.

## APPENDIX A. ROADMAP EXAMPLES



### Medical Service Corps Career Progression

Three distinct specialty areas within the Corps: Health Care Administration (HCA); Health Care Scientists (HCS); and Health Care Clinicians (HCC).



UNCLASSIFIED

12

Source: Navy Personnel Command (2024)





Figure 3. Fiscal Year 2025 Medical Service Corps Community Brief

Years	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	
Grade	ENS / LTJG		LT				LCDR				CDR				CAPT	
Mentorship	Seek a Mentor		Seek / Provide Mentorship				Provide Mentorship									
Naval Competency Leadership Competency	BMDOC				AMDOC											
	OOD				CDO				Senior Officer Leadership Course							
	JMESI				JPME Level 1											
	DIVO course		DH Course		MedXellence		Capstone									
	Intermediate Leadership Course		Executive Medicine AQR													
Preference Duty Stations	MTF / OPERATIONAL		Region Planner (NMFP, NMFL, NMFSC)		MILCON DET OIC / Region DH		Senior BUMED Staff / Large MILCON									
			DHA-FE (Falls Church, San Antonio)		DHA-FE Project Site (MILCON and/or SRM)		DHA-FE (Mega Project) / DHA HQ (Senior Staff)									
			Oframp (HCA / POMI / Joint Staff / Milestone)													
	DUINS / Masters / Fellowship				Naval War College											
			DAU FE / ACQ CERTIFICATION COURSES													
Specialty Competency					CREDENTIAL (FHFI, PMP, FACHE, ETC)											
					Assistant / Specialty Leader											

**HEALTH FACILITY PLANNING AND PROJECT OFFICER (1804)**

Source: Group: Navy Medical Service Corps |milBook Home (n.d.); email to author Plazio, Nicole, personal communication, November 29, 2023.

Figure 4. Administrator Roadmap: Health Facility Planning and Project Officer

Years of service	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	
Ranks and Roles																
	P/ AsstProf		Div Head/AsstDH		AsstDHDH, Program Officer, Joint Liaison				DH/Program Manager/Director/OIC/XO/CO							
Mentorship	Mentor Selection		Provide Mentorship			Community Mentorship (SL/ASL/COC)										
1835D Competency	AQDs - (RES, PROF, MED ETHICS, JPME, ACQSTM/PM EXEC MED)															
	Professional Presentations/Technical Reports/Publications					Meeting Session Chair/National Meeting Leadership										
	Professional Association Membership					Professional Association Committee Work										
Naval Training & Leadership	O D S	BROC/JMESI Matrix/ROC		Naval War College		EXEC MED Capstone			CO/XO TRNG							
		NLEC Division Officer LDRSP CRS (DIVOLC)		NLEC Intermediate LDRSP CRS(ILC)		NLEC Advanced LDRSP CRS(s)		NLEC Senior LDRSP CRS(SLC)								
Joint and MSC Community Involvement	Joint Program Committee Working Group Member					JPC WG Chair / Capability Area Manager										
	MSC Strategic Goals Group Member				MSC SGG Topic Lead/Chair											
	MSC Professional Review Board Member															
Education	PPME		Supplemental Degree (MBA/MGT)													
	Ph.D.	NWC/JPME Phase I (RES, SEM, or WEB Based)				JPME II										
	Operational Courses / Defense Acquisition University (DAU)							ICAF								
Preference Duty Station	NSMRL NMRC USUHS NMRU-SA OPNAV N17				BUMED N2 NMRC AMD DARPA											
	NEDU NHRC AFRR1 NMRU-D				PMS-408 ONR NHRC DHA (R&E)											
Alternate Duty (on/off ramps)	ON/OFF: Addl SSC RP, POMI, Staff Officer, MPT&E Joint Program Committee Deputy Director						OFF: DUINS, NWDC, DOD billets; EXEC MED (OIC/XO/CO) HQ/Joint Staff Officer									
Business Acumen	Grant Proposals		Financial MGT			Business Case Analyses Executive Decision Making										
	Project MGT / Program MGT / Portfolio MGT															
Acquisition Workforce	DAWIA "Back to Basics" PM (Practitioner and Advanced) and ETM (Foundational and Practitioner)															
	DoN Acquisition Corps Member															

Source: milSuite (n.d.a); email to author Plazio, Nicole, personal communication, November 29, 2023.

Figure 5. Scientist Roadmap: Physiology Road

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## APPENDIX B. LIST OF MILITARY TREATMENT FACILITIES

Table 10. MTF List (Alphabetical Order). Adapted from BUMED (2024); FLTMPs (2024)

BRHEALTHCLINIC ALBANY	NAV MEDTRACEN NETE DET SAN DIEGO
BRHEALTHCLINIC KEY WEST	NMRTC 29 PALMS DET BRIDGEPORT
BRHEALTHCLINIC KINGS BAY	NMRTC ANNAP DET USNA BANC HALL
BRHEALTHCLINIC MAYPORT	NMRTC ANNAPOLIS MD
BRHEALTHCLINIC NAVSUPACT CAPODICHINO	NMRTC BEAUFORT SC
BRMEDCLINIC MISAWA	NMRTC BETHESDA MD
NAVHOSP CAMP LEJEUNE BLOOD DONOR CENTER	NMRTC BREMERTON WA
NAVHOSP GREAT LAKES BLOOD DONOR CENTER	NMRTC CAMP LEJEUNE NC
NAVHOSP PORTSMOUTH TRNG COMP	NMRTC CAMP PENDLETON CA
NAVHOSP SAN DIEGO TRNG COMP	NMRTC CHARLESTON SC
NAV MEDADMINU MONTEREY CA	NMRTC CHERRY POINT NC
NAV MEDCEN PORTSMOUTH BLOOD DONOR CENTER	NMRTC CLEJEUNE DET SOI CGEIGE
NAV MEDCEN SAN DIEGO BLOOD DONOR CENTER	NMRTC CORPUS CHRISTI TX
NAV MEDREADTRACMD GUANTANAMO CU	NMRTC CORPUS DET SAN ANTONIO
NAV MEDREADTRACMD NAPLES IT	NMRTC CPEN DET EDSON TRN/CRU
NAV MEDREADTRACMD ROTA SP	NMRTC CPEN DET SOI C PENDLETON
NAV MEDREADTRNCMD GUAM	NMRTC FT BELVOIR VA
NAV MEDREADTRNUNIT ATSUGI JA	NMRTC GLAKES DET FISHER
NAV MEDREADTRNUNIT BANGOR WA	NMRTC GLAKES DET RED ROVER
NAV MEDREADTRNUNIT CHINA LAKE CA	NMRTC GLAKES DET TRANQUILITY



NAVMEDREADTRNUNIT DAHLGREN VA	NMRTC GREAT LAKES IL
NAVMEDREADTRNUNIT DIEGO GARCIA	NMRTC JACKSONVILLE FL
NAVMEDREADTRNUNIT EARLE NJ	NMRTC LEMOORE CA
NAVMEDREADTRNUNIT EVERETT WA	NMRTC NEW ENGLAND RI
NAVMEDREADTRNUNIT FORT WORTH TX	NMRTC NEWENG DET SARA SPRINGS
NAVMEDREADTRNUNIT GROTON CT	NMRTC OAK HARBOR WA
NAVMEDREADTRNUNIT IWAKUNI JA	NMRTC PATUXENT RIVER MD
NAVMEDREADTRNUNIT KINGSVILLE TX	NMRTC PAX DET INDIAN HEAD MD
NAVMEDREADTRNUNIT MCRD SAN DIEGO	NMRTC PAX DET M GROW ANDREWS
NAVMEDREADTRNUNIT NAS FALLON NV	NMRTC PEARL HARBOR HI
NAVMEDREADTRNUNIT NAVBASE SAN DIEGO	NMRTC PENSACOLA FL
NAVMEDREADTRNUNIT NAVSTA NORFOLK VA	NMRTC PORTS DET NSY NORFOLK V
NAVMEDREADTRNUNIT NORTH ISLAND CA	NMRTC PORTSMOUTH VA
NAVMEDREADTRNUNIT OCEANA VA	NMRTC QUANTICO DET WNY WASH
NAVMEDREADTRNUNIT PARRIS ISLAND SC	NMRTC QUANTICO DET OCS
NAVMEDREADTRNUNIT POINT LOMA CA	NMRTC QUANTICO DET TBS
NAVMEDREADTRNUNIT PORT HUENEME CA	NMRTC QUANTICO VA
NAVMEDREADTRNUNIT PORTSMOUTH NH	NMRTC SAN DIEGO CA
NAVMEDREADTRNUNIT SASEBO JA	NMRTC SAN DIEGO DET CORONADO
NAVMEDREADTRNUNIT WHITING FIELD FL	NMRTC SAN DIEGO DET EL CENTRO
NAVMEDREADTRNUNIT YUMA AZ	NMRTC SAN DIEGO DET MIRAMAR
NMRTC TWENTY-NINE PALMS CA	U.S. NMRTC OKINAWA JA
NMRTU BELLE CHASSE LA	U.S. NMRTC SIGONELLA IT
NMRTU GULFPORT MS	USNMRTC YOKOSUKA JA
NMRTU MEMPHIS TN	WHITE HOUSE MEDICAL UNIT
NMRTU MERIDIAN MS	

## APPENDIX C. REGRESSION TABLES

### A. HEALTHCARE ADMINISTRATORS

Table 11. HCA LCDR Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR
<b>Probability of Promotion</b>	0.611	0.611	0.611	0.634	0.634
<b>Share of Career in Staff Duty-Billet</b>	0.052 (0.045)	0.271*** (0.078)	0.272*** (0.078)	0.314*** (0.075)	0.243*** (0.063)
<b>Share of Career in Operational Duty-Billet</b>	0.034 (0.069)	0.171 (0.110)	0.171 (0.109)	0.190 (0.105)	0.046 (0.088)
<b>No Operational Duty-Billet at Rank</b>		0.017 (0.036)	0.017 (0.036)	0.009 (0.035)	0.013 (0.029)
<b>No MTF Duty-Billet at Rank</b>		-0.083* (0.035)	-0.079* (0.035)	-0.111** (0.034)	-0.080** (0.029)
<b>No Staff Duty-Billet at Rank</b>		0.138*** (0.040)	0.138*** (0.040)	0.119** (0.038)	0.082* (0.032)
<b>Executive Medicine (Senior Leadership)</b>			0.393** (0.141)	0.357** (0.133)	0.286* (0.111)
<b>Age</b>				-0.030*** (0.002)	-0.023*** (0.002)
<b>Female</b>				-0.038 (0.025)	-0.049* (0.021)
<b>Married</b>				0.150*** (0.031)	0.090*** (0.026)
<b>Dependent Count</b>				-0.008 (0.008)	-0.011 (0.006)
<b>White</b>					0.014 (0.018)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.577*** (0.034)	0.435*** (0.056)	0.430*** (0.056)	1.561*** (0.114)	1.193*** (0.098)
<b>R-squared</b>	0.001	0.009	0.013	0.100	0.388
<b>Observations</b>	1894	1894	1894	1824	1824

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

Table 12. HCA CDR Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to CDR	Promotion to CDR	Promotion to CDR	Promotion to CDR	Promotion to CDR
<b>Probability of Promotion</b>	0.486	0.486	0.486	0.509	0.509
<b>Share of Career in Staff Duty-Billet</b>	-0.051 (0.062)	0.182* (0.093)	0.210* (0.092)	0.241** (0.092)	0.196** (0.071)
<b>Share of Career in Operational Duty-Billet</b>	-0.096 (0.103)	0.140 (0.149)	0.139 (0.148)	0.142 (0.146)	0.002 (0.113)
<b>No Operational Duty-Billet at Rank</b>		-0.005 (0.050)	-0.008 (0.049)	-0.019 (0.049)	-0.012 (0.038)
<b>No MTF Duty-Billet at Rank</b>		-0.173*** (0.040)	-0.159*** (0.040)	-0.179*** (0.040)	-0.095** (0.031)
<b>No Staff Duty-Billet at Rank</b>		-0.019 (0.048)	-0.013 (0.048)	-0.055 (0.047)	-0.062 (0.037)
<b>Executive Medicine (Senior Leadership)</b>			0.194*** (0.048)	0.208** (0.047)	0.076* (0.037)
<b>Age</b>				-0.031*** (0.003)	-0.024*** (0.003)
<b>Female</b>				-0.014 (0.035)	-0.024 (0.027)
<b>Married</b>				0.061 (0.043)	0.018 (0.033)
<b>Dependent Count</b>				-0.013 (0.010)	-0.020* (0.008)
<b>White</b>					-0.004 (0.024)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.529*** (0.048)	0.455*** (0.079)	0.410*** (0.079)	1.794*** (0.175)	1.328*** (0.140)
<b>R-squared</b>	0.001	0.018	0.031	0.099	0.483
<b>Observations</b>	1202	1202	1202	1148	1148

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

Table 13. HCA CAPT Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT
<b>Probability of Promotion</b>	0.372	0.372	0.372	0.382	0.382
<b>Share of Career in Staff Duty-Billet</b>	-0.169* (0.079)	0.039 (0.116)	0.090 (0.111)	0.235* (0.108)	0.181* (0.074)
<b>Share of Career in Operational Duty-Billet</b>	-0.362** (0.138)	-0.015 (0.209)	-0.170 (0.201)	-0.041 (0.195)	-0.143 (0.133)
<b>No Operational Duty-Billet at Rank</b>		0.085 (0.063)	0.052 (0.060)	0.013 (0.059)	-0.023 (0.040)
<b>No MTF Duty-Billet at Rank</b>		-0.087 (0.052)	-0.029 (0.051)	-0.047 (0.049)	-0.059 (0.034)
<b>No Staff Duty-Billet at Rank</b>		0.143* (0.071)	0.119 (0.068)	0.052 (0.065)	-0.020 (0.044)
<b>Executive Medicine (Senior Leadership)</b>			0.380*** (0.047)	0.336*** (0.045)	0.135*** (0.033)
<b>Age</b>				-0.029*** (0.004)	-0.015*** (0.003)
<b>Female</b>				0.117** (0.045)	0.021 (0.031)
<b>Married</b>				0.311*** (0.051)	0.162*** (0.035)
<b>Dependent Count</b>				-0.012 (0.014)	-0.012 (0.009)
<b>White</b>					0.069** (0.026)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.523*** (0.063)	0.321** (0.104)	0.221* (0.100)	1.345*** (0.230)	0.686*** (0.159)
<b>R-squared</b>	0.012	0.024	0.108	0.214	0.659
<b>Observations</b>	698	698	698	681	681

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

## B. HEALTHCARE CLINICIANS

Table 14. HCC LCDR Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR
<b>Probability of Promotion</b>	0.560	0.560	0.560	0.587	0.587
<b>Share of Career in Staff Duty-Billet</b>	0.022 (0.047)	0.054 (0.079)	0.054 (0.079)	0.093 (0.077)	0.080 (0.060)
<b>Share of Career in Operational Duty-Billet</b>	-0.021 (0.058)	-0.241* (0.109)	-0.239* (0.109)	-0.081 (0.108)	-0.140 (0.083)
<b>No Operational Duty-Billet at Rank</b>		-0.089* (0.043)	-0.088* (0.043)	-0.082 (0.042)	-0.083* (0.033)
<b>No MTF Duty-Billet at Rank</b>		0.074 (0.048)	0.073 (0.048)	0.050 (0.047)	-0.009 (0.037)
<b>No Staff Duty-Billet at Rank</b>		0.070* (0.035)	0.070* (0.035)	0.060 (0.035)	0.047 (0.027)
<b>Executive Medicine (Senior Leadership)</b>			0.375 (0.497)	0.248 (0.477)	0.566 (0.367)
<b>Age</b>				-0.022*** (0.002)	-0.015*** (0.002)
<b>Female</b>				0.060* (0.028)	0.006 (0.022)
<b>Married</b>				0.048 (0.034)	0.012 (0.026)
<b>Dependent Count</b>				0.005 (0.009)	-0.001 (0.007)
<b>White</b>					0.006 (0.023)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.556*** (0.022)	0.597*** (0.057)	0.596*** (0.057)	1.392*** (0.104)	0.952*** (0.083)
<b>R-squared</b>	0.000	0.007	0.007	0.073	0.460
<b>Observations</b>	1699	1699	1699	1618	1618

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

Table 15. HCC CDR Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to CDR	Promotion to CDR	Promotion to CDR	Promotion to CDR	Promotion to CDR
<b>Probability of Promotion</b>	0.389	0.389	0.389	0.399	0.399
<b>Share of Career in Staff Duty-Billet</b>	0.294*** (0.045)	0.384*** (0.069)	0.388*** (0.069)	0.426*** (0.067)	0.320*** (0.051)
<b>Share of Career in Operational Duty-Billet</b>	0.124 (0.088)	0.250 (0.129)	0.231 (0.129)	0.374** (0.127)	0.083 (0.097)
<b>No Operational Duty-Billet at Rank</b>		0.041 (0.050)	0.038 (0.049)	0.041 (0.048)	0.009 (0.037)
<b>No MTF Duty-Billet at Rank</b>		-0.065 (0.042)	-0.074 (0.042)	-0.111** (0.040)	-0.100** (0.031)
<b>No Staff Duty-Billet at Rank</b>		0.041 (0.035)	0.041 (0.035)	0.034 (0.034)	0.009 (0.026)
<b>Executive Medicine (Senior Leadership)</b>			0.485*** (0.121)	0.424*** (0.115)	0.235** (0.090)
<b>Age</b>				-0.026*** (0.002)	-0.016*** (0.002)
<b>Female</b>				0.089** (0.029)	0.071** (0.022)
<b>Married</b>				0.067 (0.038)	0.040 (0.029)
<b>Dependent Count</b>				0.001 (0.010)	-0.004 (0.008)
<b>White</b>					0.081*** (0.025)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.274*** (0.023)	0.195** (0.062)	0.194** (0.061)	1.270*** (0.130)	0.732*** (0.103)
<b>R-squared</b>	0.030	0.033	0.044	0.141	0.512
<b>Observations</b>	1371	1371	1371	1334	1334

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

Table 16. HCC CAPT Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT
<b>Probability of Promotion</b>	0.209	0.209	0.209	0.213	0.213
<b>Share of Career in Staff Duty-Billet</b>	0.134** (0.047)	0.062 (0.063)	0.080 (0.061)	0.079 (0.059)	0.015 (0.039)
<b>Share of Career in Operational Duty-Billet</b>	-0.139 (0.101)	0.157 (0.150)	0.181 (0.145)	0.218 (0.141)	0.119 (0.093)
<b>No Operational Duty-Billet at Rank</b>		0.197*** (0.054)	0.214*** (0.052)	0.184*** (0.050)	0.112*** (0.033)
<b>No MTF Duty-Billet at Rank</b>		0.110** (0.037)	0.098** (0.036)	0.069* (0.034)	-0.032 (0.023)
<b>No Staff Duty-Billet at Rank</b>		-0.007 (0.037)	0.000 (0.036)	-0.041 (0.035)	-0.051* (0.023)
<b>Executive Medicine (Senior Leadership)</b>			0.506*** (0.067)	0.491*** (0.065)	0.212*** (0.046)
<b>Age</b>				-0.025*** (0.003)	-0.010*** (0.002)
<b>Female</b>				-0.038 (0.031)	-0.008 (0.020)
<b>Married</b>				-0.102** (0.038)	-0.039 (0.025)
<b>Dependent Count</b>				0.003 (0.010)	-0.002 (0.007)
<b>White</b>					0.012 (0.023)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.161*** (0.026)	-0.017 (0.062)	-0.059 (0.060)	1.350*** (0.164)	0.529*** (0.110)
<b>R-squared</b>	0.013	0.043	0.103	0.198	0.674
<b>Observations</b>	864	864	864	850	850

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

### C. HEALTHCARE SCIENTISTS

Table 17. HCS LCDR Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR	Promotion to LCDR
<b>Probability of Promotion</b>	0.693	0.693	0.693	0.714	0.714
<b>Share of Career in Staff Duty-Billet</b>	0.314*** (0.051)	0.102 (0.094)	0.102 (0.094)	0.155 (0.091)	0.153 (0.081)
<b>Share of Career in Operational Duty-Billet</b>	0.256** (0.081)	-0.147 (0.135)	-0.147 (0.135)	-0.058 (0.131)	-0.207 (0.117)
<b>No Operational Duty-Billet at Rank</b>		-0.107* (0.045)	-0.107* (0.045)	-0.082 (0.044)	-0.124** (0.040)
<b>No MTF Duty-Billet at Rank</b>		0.159*** (0.043)	0.159*** (0.043)	0.127** (0.042)	0.059 (0.038)
<b>No Staff Duty-Billet at Rank</b>		0.027 (0.048)	0.027 (0.048)	0.032 (0.048)	-0.002 (0.042)
<b>Executive Medicine (Senior Leadership)</b>			-	-	-
<b>Age</b>				-0.006*** (0.001)	-0.005*** (0.001)
<b>Female</b>				0.082* (0.032)	0.058* (0.029)
<b>Married</b>				0.076 (0.040)	0.095** (0.035)
<b>Dependent Count</b>				-0.028** (0.010)	-0.034*** (0.009)
<b>White</b>					0.036 (0.026)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.458*** (0.041)	0.628*** (0.071)	0.628*** (0.071)	0.824*** (0.090)	0.692*** (0.082)
<b>R-squared</b>	0.031	0.046	0.046	0.086	0.305
<b>Observations</b>	1197	1197	1197	1158	1158

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



Table 18. HCS CDR Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to CDR	Promotion to CDR	Promotion to CDR	Promotion to CDR	Promotion to CDR
<b>Probability of Promotion</b>	0.345	0.345	0.345	0.354	0.354
<b>Share of Career in Staff Duty-Billet</b>	0.225*** (0.057)	-0.129 (0.092)	-0.136 (0.091)	-0.175* (0.089)	-0.126 (0.068)
<b>Share of Career in Operational Duty-Billet</b>	0.256* (0.100)	0.202 (0.140)	0.230 (0.139)	-0.019 (0.138)	-0.054 (0.106)
<b>No Operational Duty-Billet at Rank</b>		0.149*** (0.042)	0.149*** (0.041)	0.111** (0.040)	0.072* (0.031)
<b>No MTF Duty-Billet at Rank</b>		0.222*** (0.043)	0.212*** (0.042)	0.207*** (0.042)	0.099** (0.032)
<b>No Staff Duty-Billet at Rank</b>		-0.032 (0.060)	-0.027 (0.060)	-0.120* (0.058)	-0.100* (0.044)
<b>Executive Medicine (Senior Leadership)</b>			0.543*** (0.095)	0.499*** (0.092)	0.241*** (0.073)
<b>Age</b>				-0.033*** (0.003)	-0.020*** (0.002)
<b>Female</b>				-0.070 (0.036)	-0.067* (0.027)
<b>Married</b>				0.085 (0.044)	0.053 (0.034)
<b>Dependent Count</b>				-0.035*** (0.011)	-0.029*** (0.008)
<b>White</b>					0.027 (0.024)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.154** (0.050)	0.165* (0.071)	0.162* (0.070)	1.761*** (0.167)	1.079*** (0.132)
<b>R-squared</b>	0.013	0.050	0.075	0.163	0.529
<b>Observations</b>	1223	1223	1223	1192	1192

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

Table 19. HCS CAPT Promotion Outcomes

	(1)	(2)	(3)	(4)	(5)
	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT	Promotion to CAPT
<b>Probability of Promotion</b>	0.240	0.240	0.240	0.247	0.247
<b>Share of Career in Staff Duty-Billet</b>	0.034 (0.078)	-0.164 (0.117)	-0.119 (0.113)	-0.074 (0.113)	-0.021 (0.078)
<b>Share of Career in Operational Duty-Billet</b>	0.392* (0.157)	0.151 (0.200)	0.085 (0.193)	0.061 (0.196)	-0.060 (0.137)
<b>No Operational Duty-Billet at Rank</b>		-0.043 (0.067)	-0.073 (0.065)	-0.123 (0.063)	-0.058 (0.044)
<b>No MTF Duty-Billet at Rank</b>		0.102* (0.051)	0.071 (0.049)	0.049 (0.048)	0.003 (0.033)
<b>No Staff Duty-Billet at Rank</b>		-0.146* (0.072)	-0.125 (0.070)	-0.162* (0.070)	-0.115* (0.049)
<b>Executive Medicine (Senior Leadership)</b>			0.360*** (0.046)	0.311*** (0.045)	0.088** (0.032)
<b>Age</b>				-0.031*** (0.003)	-0.016*** (0.002)
<b>Female</b>				0.016 (0.038)	-0.021 (0.027)
<b>Married</b>				0.018 (0.047)	-0.000 (0.033)
<b>Dependent Count</b>				0.016 (0.012)	0.002 (0.008)
<b>White</b>					0.019 (0.027)
<b>Year Indicators</b>	No	No	No	No	Yes
<b>Constant</b>	0.193** (0.072)	0.338** (0.103)	0.318** (0.100)	1.895*** (0.214)	0.991*** (0.153)
<b>R-squared</b>	0.008	0.018	0.083	0.185	0.631
<b>Observations</b>	858	858	858	834	834

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

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