Balancing Quality of Life with Mission Requirements

An Analysis of Personnel Tempo on U.S. Coast Guard Major Cutters

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Preface

This report documents research and analysis conducted as part of a project titled *Analysis of Major Cutter Employment*. Its purpose was to analyze how U.S. Coast Guard service members respond to various levels of personnel tempo and the effects that working conditions and incentives have on these responses.

In this report, we summarize both qualitative and quantitative analyses of these issues. The findings should be of interest to decisionmakers across all of the military services who focus on manpower and personnel issues and to those focused on the extent to which personnel tempo affects service members' quality of life and satisfaction with service and influences retention decisions.

This research was sponsored by the U.S. Coast Guard Office of Requirements and Analysis and conducted within the Strategy, Policy, and Operations Program of the Homeland Security Operational Analysis Center (HSOAC) federally funded research and development center (FFRDC).

About the Homeland Security Operational Analysis Center

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The results presented in this report do not necessarily reflect official DHS opinion or policy.
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Summary

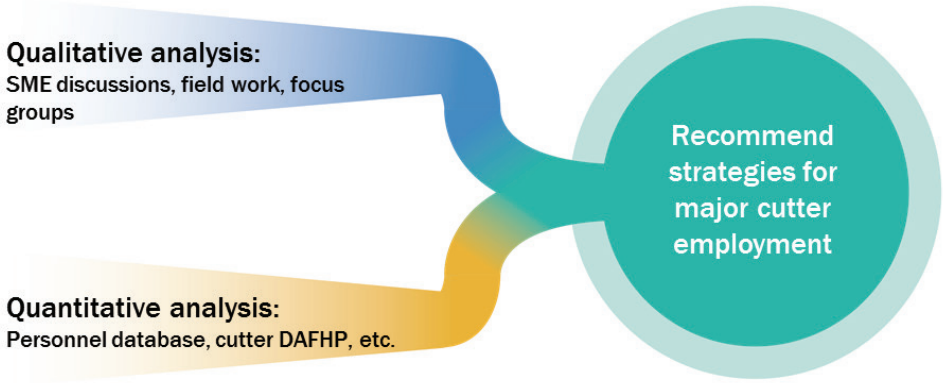
The U.S. Coast Guard (USCG) has a broad set of missions in the maritime domain, including 11 statutory missions across the categories of maritime safety, maritime security, and maritime stewardship. Among its assets for accomplishing these missions are major cutters—large, oceangoing vessels capable of spending substantial amounts of time away from their home ports. The USCG fleet includes over 200 cutters; more than 30 of these are classified as major cutters.

Historically, the operational tempo (OPTEMPO) of the USCG's major cutters has been measured in days away from home port (DAFHP) per year. The upper DAFHP limit for major cutters (calculated as a two-year average) generally has been about 185 days per year. Personnel tempo (PERSTEMPO) in the USCG is measured as an individual's DAFHP per year. The USCG calculates a two-year running average for service members; 185 days is the upper threshold for an individual.

The USCG faces a challenge in determining the optimal number of DAFHP for personnel on major cutters. Confronting this challenge requires an understanding of how PERSTEMPO relates to USCG service member behavior. However, the empirical relationship between the optimal pattern of DAFHP and service member behavior is unknown. To help address this knowledge gap, the USCG asked the Homeland Security Operational Analysis Center (HSOAC) to analyze how service members respond to various levels of PERSTEMPO, as well as the effects of working conditions and incentives on these responses. The USCG also requested that HSOAC examine alternative employment strategies for scheduling major cutters, given PERSTEMPO constraints and the costs and mission trade-offs for each employment strategy considered.

DAFHP could be associated with a wide variety of outcomes. Too many DAFHP could cause service members to leave the USCG and pursue other employment. Retention is valued in the USCG; it is viewed as a positive outcome that reduces training costs. Another possible outcome due to excessive DAFHP is that personnel could choose to remain in the USCG but try to avoid serving in the major cutter community. If DAFHP are viewed as excessive, personnel could remain in the community but become increasingly dissatisfied with quality of life. Each of these could be viewed as a negative outcome, but measuring these different outcomes requires different approaches. For this project, we formulated a research plan that combined both qualitative and quantitative information and analytic techniques. These include a review of the existing literature; an inventory of relevant data; facilitation of a series of focus groups with USCG service members to better understand how they view PERSTEMPO and living conditions on cutters; and the development of a series of quantitative models to determine the relationships between OPTEMPO, PERSTEMPO, and service member outcomes. Figure S.1 describes our research plan and how the information we collected feeds into our recommendations.

Figure S.1. Research Plan Includes Qualitative and Quantitative Paths



NOTE: SME = subject-matter expert.

Major Findings

Current DAFHP practices appear to support reenlistment. This is fundamentally good news: First-term reenlistment rates are robust near the most common levels of operational intensity, which suggests that the USCG likely does not need to make substantive adjustments to manning of major cutters to support reenlistment.

For enlisted personnel, serving on major cutters is associated with positive outcomes. Enlisted personnel on major cutters had higher rates of continuation, completion of an initial term of service, promotion to E-5, and first-term reenlistment than those in other billets. Although we found differences across different classes of major cutters, as a whole, enlisted personnel who spend part of their service at sea are more likely to reenlist in the USCG than those who serve wholly ashore (this also holds true for enlisted personnel who reenlist for a second time). While serving on major cutters appears in some cases to be associated with slightly lower levels of reenlistment than serving in other afloat billets, serving afloat in general is associated with higher levels of reenlistment than serving ashore.

Service members have limited tolerance for higher-than-usual OPTEMPO. Qualitative results suggest that personnel are sensitive to time away from home port, but they are willing to spend time away from home to accomplish the USCG mission. Periods away from home of 90 or more days have no discernible effects on retention; some service members prefer relatively long periods away (coupled with relatively long periods at home). Our results as a whole suggest that the USCG has some room to adjust DAFHP around the current limit before experiencing sizable decreases in retention.

However, our models indicate that reenlistment rates do eventually begin to decline when operational *intensity* moves well beyond typical levels (operational intensity includes both days away from home port and days spent on inport operations). First-term reenlistment rates are

highest at the most common levels of operational intensity, and when inport operational intensity exceeds the levels typically expected by service members, reenlistment rates are lower. Although some of these results are not statistically significant, they do suggest that caution is warranted. Results from our focus groups revealed a negative opinion of very high operational intensity.

Working conditions matter. Service members emphasized three factors that detract from quality of life at sea: (1) unpredictable schedules (including watch schedules), (2) long work hours, and (3) extra duties. They also expressed dissatisfaction with limitations on their ability to communicate with family and friends while at sea. Access to reliable internet for email and being able to video chat with family and friends were cited in several focus groups. While the data currently do not exist for us to quantitatively assess the extent to which these conditions affect retention in the major cutter community and the USCG overall, respondents consistently raised these issues.

Extended periods of time away may need continued monitoring. Our quantitative analyses show no evidence of a negative association between 90 or more consecutive DAFHP and reenlistment. However, focus groups with participants who served on some cutters highlighted these extended periods of time away as a source of service member dissatisfaction. Therefore, monitoring outcomes for personnel who serve on these extended deployments may yield valuable information, especially if expected levels of DAFHP are adjusted.

Other Options

We identified several ways in which the USCG could improve working conditions and quality of life for personnel serving on major cutters. Given the qualitative nature of our data, we offer these as options, not recommendations, and we discuss the possible costs and disadvantages of these options. However, we do note that these options are especially likely to be useful should the USCG require additional DAFHP from personnel on some of its major cutters.

Improve Connectivity

Time away from family and friends is a key reason that personnel report choosing to leave the major cutter community. Participants pointed out limited internet access and restrictions on communication applications as contributors to this problem. Investing in more-reliable internet services or other communication infrastructure has a cost, and operational security needs to be considered. However, given our focus group participants' universally strong feelings about being able to reliably reach family and friends while underway, exploring options for improving personal communication on major cutters is prudent. This option does not involve any changes to manpower or personnel policies, allowing the USCG to potentially achieve improved personnel outcomes without adjusting employment strategies.

Improve Command Communication and Work Schedule Predictability

Focus group participants, especially enlisted personnel, cited command issues as an important factor in crew endurance. Clear and frequent communication by major cutter leadership is a relatively low-cost effort. This applies throughout the chain of command, including senior officers, junior officers, and senior noncommissioned officers. Training leaders on principles of effective communication could improve morale and retention.

The USCG could also explore incentivizing commanders to embrace the crew endurance program, especially when it comes to setting watch schedules. Although there is a USCG commandant instruction about crew endurance management, some officers indicated that a focus on crew endurance is more "guidance" than "requirement" for commands. Providing a forum for personnel to suggest improvements would have a low cost and provide a potentially large benefit. These alternatives have modest costs and would not involve major changes to manpower or personnel policies.

Other Options Could Have Value but Could Be Expensive

Other actions that could mitigate the extent to which personnel leave the major cutter community include increased sea pay and sea points, bonuses for cutter assignments, higher assignment priority upon leaving a cutter assignment, more geographic stability, and increased opportunities to use educational benefits. These factors are not aimed at improving quality of life but rather at compensating service members for the lower quality of life associated with serving on major cutters. The challenge of these options is that they ultimately involve payment to everyone in the cutter community, including those who would have continued without them. Nonetheless, existing literature suggests that carefully crafted policies can, at times, be quite effective. If the USCG has interest in exploring these options, we would recommend a pilot program or simulation modeling to identify the potential costs and benefits of these tools.

Standardize Crew Qualification Process and Address Workload Requirements

The number and mix of personnel with qualifications to work on major cutters affect crew PERSTEMPO. Several focus group participants suggested an increase in the number of qualified personnel. Participants also stated that qualifications should be acquired *before* personnel are assigned to major cutters and that the qualification process should be streamlined. The preassignment qualification process might take the form of a basic training program.

However, increased qualified manning, surge manning, and a new qualification program would require significant resources. Because we did not conduct a formal cost-benefit analysis of implementing these options, we instead recommend that USCG leadership identify ways in which it could increase standardization of the qualification process. This might include, for example, reducing qualification requirements that do not significantly increase the risk that crews would be unable to execute the missions on major cutters.

In addition, some focus group participants noted that, if manning cannot be increased to relieve the burden on crews, the USCG should explore undertaking a rigorous analysis of workload requirements on major cutters to determine whether workloads can be reduced for existing crews.

Implications for Employment Strategies

The USCG's major cutters deploy frequently, and some deployments are quite lengthy, stretching beyond the 90-day mark. Mission planning must focus on OPTEMPO, but one outcome of this is that PERSTEMPO varies substantially—as one example of this, our analysis indicates that personnel who are assigned to major cutters early in their careers and face initial reenlistment decisions may have a great deal of major cutter and deployment experience, or they may have very little. While deployment is associated with many positive career outcomes (such as retention and promotion), those who have spent the majority of their time in the cutter community or deployed are more likely than others to move out of the cutter community (although not out of the USCG). Rotations to shore surely explain part of this, but, when coupled with the optimal manning used on 418-foot *Legend*-class national security cutters, this may result in fewer midcareer personnel with major cutter experience and the willingness to serve in the cutter community.

Fortunately, there are options available that have the potential to increase reenlistment, willingness to remain in the major cutter community, and crew endurance. These include changes to working conditions (as discussed above) as well as targeted pays. Especially if the USCG requires personnel assigned to major cutters to spend more time away from home port, improving working conditions offers a way to mitigate any negative effects associated with increased operational intensity. Finally, tracking and analyzing personnel deployment experience at the individual level will provide the USCG with valuable information on the major cutter community. Understanding how deployment experience is changing over time will assist in managing the force and maintaining mission capacity.

Acknowledgments

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Several USCG personnel helped coordinate and facilitate site visits and focus groups. We owe a debt of gratitude to LCDR Andrew Jantzen. Not only did he identify dates when we could conduct focus groups with Atlantic Area major cutters, he also provided local points of contact. Likewise, we thank LT Paul Garcia for his excellent support in helping us identify dates and points of contact for focus groups in Alameda, California. Several local points of contact were also critical to scheduling and coordination for focus groups. We especially thank the following individuals, who provided assistance in a variety of ways: ENS Morgan Bal, LCDR Philip Baxa, LCDR Jeremy Bell, LT Patricia Green, CDR Wesley Hout, LCDR Andrew Jantzen, LT Timothy Kroll, LTJG Robert McKenna, Jackson McClam, CDR Anne O'Connell, LCDR Christopher Parrish, CDR Andrew Pate, Candice Ringinger, LT Erin Sheridan, and LCDR Andrew Weiss.

Our deepest thanks go out to the crew members and senior leadership of USCG major cutters who spent time sharing their thoughts and experiences with us in focus groups. We cannot name them all here, but we could not have completed this work without them. They and their fellow crew members provide the lifeblood of the USCG major cutter community.

We also conducted a limited number of interviews with USCG subject-matter experts in headquarters-level organizations. To maintain their anonymity, we do not name them here, but they offered valuable insights into USCG policies, programs, and practices, which provided context for our findings and recommendations. We sincerely thank them for sharing their expertise with us.

Several RAND colleagues provided invaluable assistance throughout the life cycle of this project. Lara Schmidt, director of the Strategy, Policy, and Operations Program within the Homeland Security Operational Analysis Center (HSOAC), provided guidance throughout this project. Erica Robles, research operations administrator in HSOAC, provided outstanding support in ensuring timely completion of our work. Sarah Heintz, Teddy Ulin, and Nathan Vest, as well as Pardee RAND Graduate School student Felix Knutson, assisted in note-taking during focus groups. Nathan Vest and Pardee RAND Graduate School student Bill Gelfeld helped code our qualitative data. Leslie Payne also helped facilitate some of our focus groups; Theresa Kelly and Aaron Davenport contributed to the research in several ways. Linda Cottrell and David Schulker were instrumental in working with the USCG to obtain the quantitative data we used in our study and in developing the analytic files and measures we used in our analysis. We

benefited greatly from the guidance of CAPT Eric Cooper, HSOAC's USCG Fellow for 2017–2018. Finally, this work was strengthened by comments, critiques, and suggestions from our two peer reviewers, Beth Asch and Scott Savitz.

Abbreviations

AFQT	Armed Forces Qualification Test
AIP	assignment incentive pay
BAS	Basic Allowance for Subsistence
CG-45	U.S. Coast Guard Office of Naval Engineering
CG-111	U.S. Coast Guard Office of Worklife Programs
CG-751	U.S. Coast Guard Office of Cutter Forces
CSRB	critical skills retention bonus
DAFHP	days away from home port
DHS	U.S. Department of Homeland Security
DoD	U.S. Department of Defense
FFRDC	Federally Funded Research and Development Center
FSA	family separation allowance
FY	fiscal year
HFP	hostile fire pay
HSOAC	Homeland Security Operational Analysis Center
OPTEMPO	operational tempo
PERSTEMPO	personnel tempo
S&I	special and incentive
SME	subject-matter expert
SRB	selective reenlistment bonus
TA	tuition assistance
TEMPSEP	Temporary Separation Program (a U.S. Coast Guard program)
USCG	U.S. Coast Guard
WHEC	high-endurance cutter (378-foot cutter)
WMEC	medium-endurance cutter (210- or 270-foot cutter)
WMSL	maritime security cutter, large

1. Introduction

Background

As part of the U.S. Department of Homeland Security (DHS), the U.S. Coast Guard (USCG) has a broad mission in the maritime domain, including in the areas of law enforcement, incident response, and disaster management. The USCG has specialized assets to accomplish the multidimensional aspects of the tasks associated with this mission. These assets include several types of commissioned vessels with crew accommodations on board (*cutters*).[1] Among these, the large white-hull cutter fleet includes many of the USCG's oceangoing vessels; given their capabilities, these cutters spend substantial amounts of time away from their home ports. The USCG currently is in the process of recapitalizing its fleet; the addition of the 418-foot *Legend*-class national security cutter (also referred to as the WMSL) is a key aspect of fleet recapitalization. The WMSLs are significantly more capable in virtually all aspects than their Vietnam-era predecessors. Major capability improvements include speed, endurance, ballasting, sanitation, berthing, aviation, and small-boat operations. Many of the improvements reflect changes to international shipbuilding and crewing standards, advances in technology, and environmental standards and regulations. These cutters have the capacity to carry out missions that require remaining away from their home ports for sustained periods. The USCG fleet will eventually include 11 WMSLs. Six have been commissioned to date, beginning in 2008, and a seventh and eighth are expected to be commissioned in 2019.

The USCG fleet also includes three high-endurance 378-foot cutters (which are referred to as WHECs and are being replaced by the WMSLs), as well as 13 *Famous*-class medium-endurance 270-foot cutters and 14 *Reliance*-class medium-endurance 210-foot cutters. Both these medium-endurance cutters are referred to as WMECs. In this study, we focus on the WMSLs, the WHECs, and the WMECs; together, these make up the large white-hull cutter fleet. For simplicity, we refer to these as the *major cutters*.[2] Major cutters have their home ports in a variety of locations on the East and West Coasts. Home ports with the largest numbers of cutters include Alameda, California; Portsmouth, Virginia; Boston, Massachusetts; Kittery, Maine; and Charleston, South Carolina.

[1] The USCG defines *cutter* as any vessel at least 65 feet in length and with accommodations for crew to live onboard. See USCG, *The Cutters, Boats, and Aircraft of the U.S. Coast Guard, 2015–2016 Edition*, undated-b.

[2] Note that our study does not include all the largest vessels in the USCG. The USCG classifies the three polar icebreakers (*Polar Sea*, *Polar Star*, and *Healy*), as well as the 282-foot medium-endurance cutter *Alex Haley*, as major cutters. However, we exclude these cutters, as well as buoy tenders, from our analyses because their mission sets differ substantially from that of the other major cutters.

The USCG faces trade-offs when making decisions about setting levels of operational tempo (OPTEMPO) for its major cutters. At the simplest level, the longer a major cutter is away from home port, the more available it is to perform specific missions. However, a cutter's mechanical equipment needs regular operational- and depot-level maintenance, much of which needs to be done in port, where machinery can be taken offline.

The USCG has traditionally measured OPTEMPO as the number of days away from home port (DAFHP) per year. Major cutters historically averaged 185 DAFHP per year; with upgrades occurring in the fleet, in 2015, the USCG set a new OPTEMPO target of 230 DAFHP per year for its WMSLs.[3] However, in January 2018, the Commandant of the Coast Guard issued a decision memo lowering the DAFHP target to 185 DAFHP.[4]

Of course, the calculus behind OPTEMPO is not just about maintenance and mission accomplishment. Crews are needed to operate the vessels, and additional, more complicated trade-offs are associated with personnel. All USCG personnel volunteer for service, and, while the motivations behind this choice vary from one individual to the next, the USCG mission likely plays at least some role in this decision. Therefore, spending time away from home port could be a positive aspect of service for many personnel. However, not all USCG personnel volunteered to serve on major cutters; being assigned to these vessels is not every individual's choice. Furthermore, work schedules can vary when a vessel is in or away from home port, as does work-life balance and the ability to interact with family and friends; service members' tolerance for long times at sea can also erode over time, limiting the amount of time away from home port that they are willing to accept.

Measures of personnel tempo (PERSTEMPO) in the USCG are similar to those for OPTEMPO (measured as an individual's DAFHP per year). The USCG calculates a two-year running average for service members, and, by instruction, 185 days is considered the upper threshold for an individual.[5] However, while *OPTEMPO* and *PERSTEMPO* are often used interchangeably, they are conceptually different: The amount of time a *vessel* spends away from home port need not equal the amount of time that an *individual* spends away, especially when the time is considered over months or years. This is because personnel rotate on and off these vessels both while they are underway and between deployments, and some personnel move directly from one cutter to another. Therefore, variation in PERSTEMPO could be considerably greater than variation in OPTEMPO.

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[3] An interim goal of 210 DAFHP per year was established in fiscal year (FY) 2013. This policy change also included additional support for crews who would experience this higher level of OPTEMPO (U.S. Government Accountability Office, *Coast Guard: Timely Actions Needed to Address Risks in Using Rotational Crews*, Washington, D.C., GAO-15-195, March 2015).

[4] Commandant of the Coast Guard Memorandum, *Decision Memo—Vacate Crew Rotation Concept (CRC) Resources and Return Alameda WMSLs to 185 DAFHP*, Washington, D.C., January 4, 2018.

[5] Commandant Instruction 3100.5B, *Cutter Employment Standards*, Washington, D.C.: USCG, June 29, 2007.

More fundamental, however, is that the empirical relationship between PERSTEMPO and USCG service member behavior is unknown. We can surmise that service members assigned to cutters likely prefer to spend at least *some* time away from home port performing mission-related tasks, and living conditions on the cutters, perhaps especially the ability to communicate with family and friends, could influence personnel tolerance for time away. At the other extreme, it is also likely that excessive time away could lead to adverse outcomes, including individuals' decisions to opt out of the sea-duty community and pursue other opportunities in the USCG or even to separate from the USCG altogether. It can also affect their family and other personal relationships in ways that undermine their performance. The term *crew endurance* is used within the USCG community to refer to the crew's capacity to operate safely despite job-related challenges; spending significant time away from home is one of several job-related challenges, and the USCG works actively to improve and manage crew endurance.[6]

Project Purpose and Tasks

The USCG Office of Requirements and Analysis requested that the Homeland Security Operational Analysis Center (HSOAC) analyze how service members respond to various levels of PERSTEMPO, as well as the effects that working conditions and incentives have on these responses. It also requested that HSOAC examine alternative employment strategies for the scheduling of major cutters, given these PERSTEMPO constraints and the associated costs and mission trade-offs for each employment strategy considered.

We structured this research and analysis by undertaking several tasks:

- a review of the existing literature on the relationships between PERSTEMPO and retention in organizations with working conditions similar to those in the USCG
- an inventory of existing, relevant data
- facilitation of a series of focus groups with USCG service members to gain a detailed understanding of how personnel view PERSTEMPO, living conditions on cutters, and compensation and benefits, and how those all relate to retention and outcomes, such as workload stress and family challenges
- quantitative analyses of the relationship between PERSTEMPO, OPTEMPO, and service member outcomes, such as retention.

Organization of This Report

We have organized the remainder of this report around these tasks. Chapter 2 provides some descriptive statistics on USCG personnel and on cutter movements and describes the compensation available to personnel serving on cutters. Chapter 3 contains a summary of the research literature, with an emphasis on how personnel respond to time away from home and on

[6] See, for example, the resources available at USCG, "Crew Endurance Management," webpage, undated-a.

the role that working conditions play in individuals' decisions. Chapter 4 provides details on our analytic methodology. Chapter 5 contains the results of our quantitative analyses, while Chapter 6 summarizes the findings from our focus groups. Chapter 7 offers our conclusions and recommendations.

2. Descriptive Statistics of USCG Personnel and of Cutter Movements and a Discussion of Special and Incentive Pays

To provide context for our analyses, we present descriptive statistics from individual-level data drawn from the USCG's personnel databases, followed by data on cutter movements. We conclude with a description of the different special and incentive (S&I) pays available to USCG personnel serving on cutters.

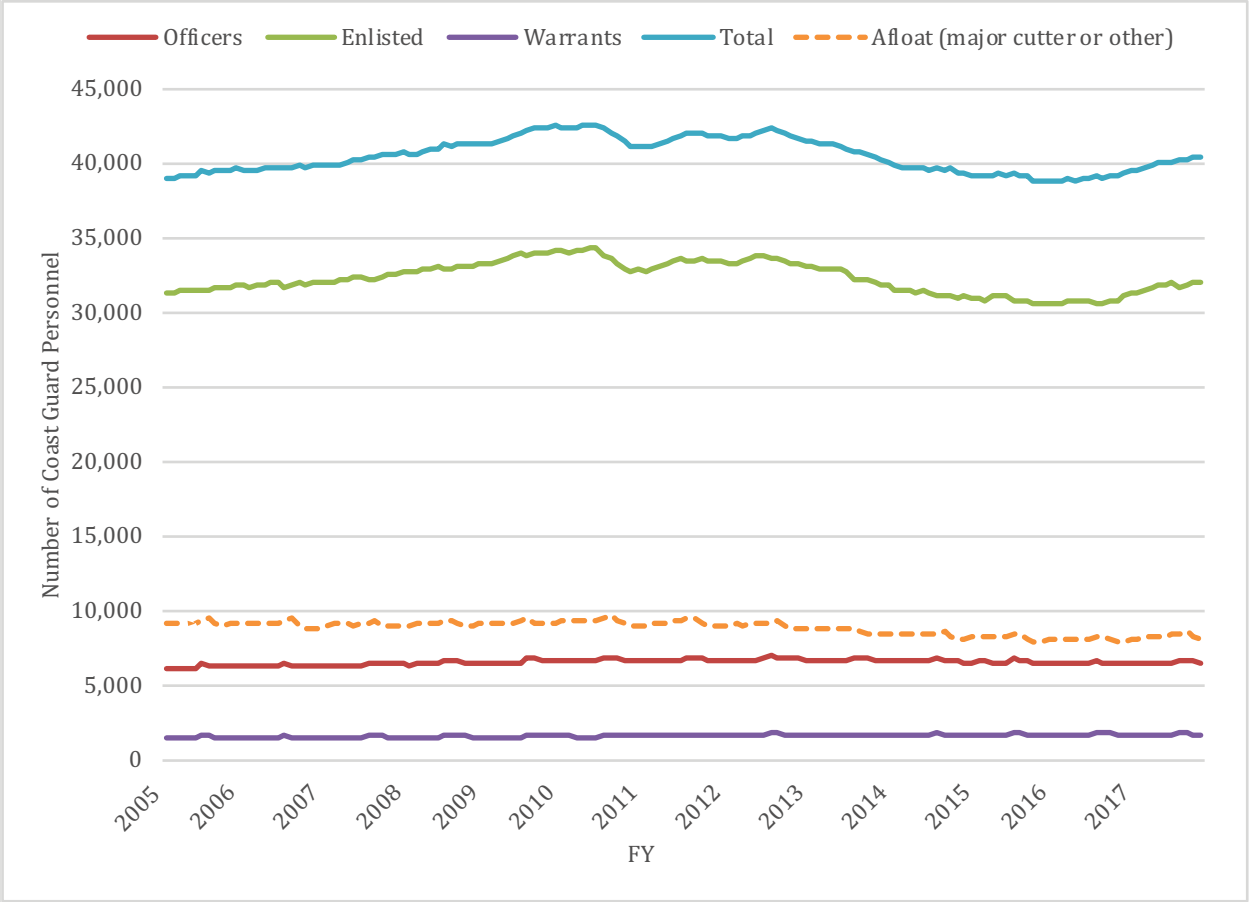
A Description of USCG Personnel

Our quantitative data include monthly observations of every USCG service member.[1] The time period includes January 2005 through September 2017; consistent data on cutter movements were not available for prior to January 2005. We generally present statistics by FY, but 2005 is incomplete.

In our analyses, we include all service members on active duty; in most months, the total size of the USCG force was roughly 40,000 (see Figure 2.1). The majority of personnel (roughly 81 percent) in any given month are enlisted; commissioned officers make up about 15 percent of the total force, and warrant officers make up about 4 percent. In any given month, about 20 percent of USCG personnel are afloat (on a major cutter, tug, patrol boat, buoy tender, or icebreaker).

[1] Over the period included in our analyses, three months' worth of data (May 2008, July 2009, and January 2015) were missing from the USCG files. We adjust for these missing months by using the information from the surrounding months; see Appendix A for details.

Figure 2.1. Active-Duty USCG Personnel



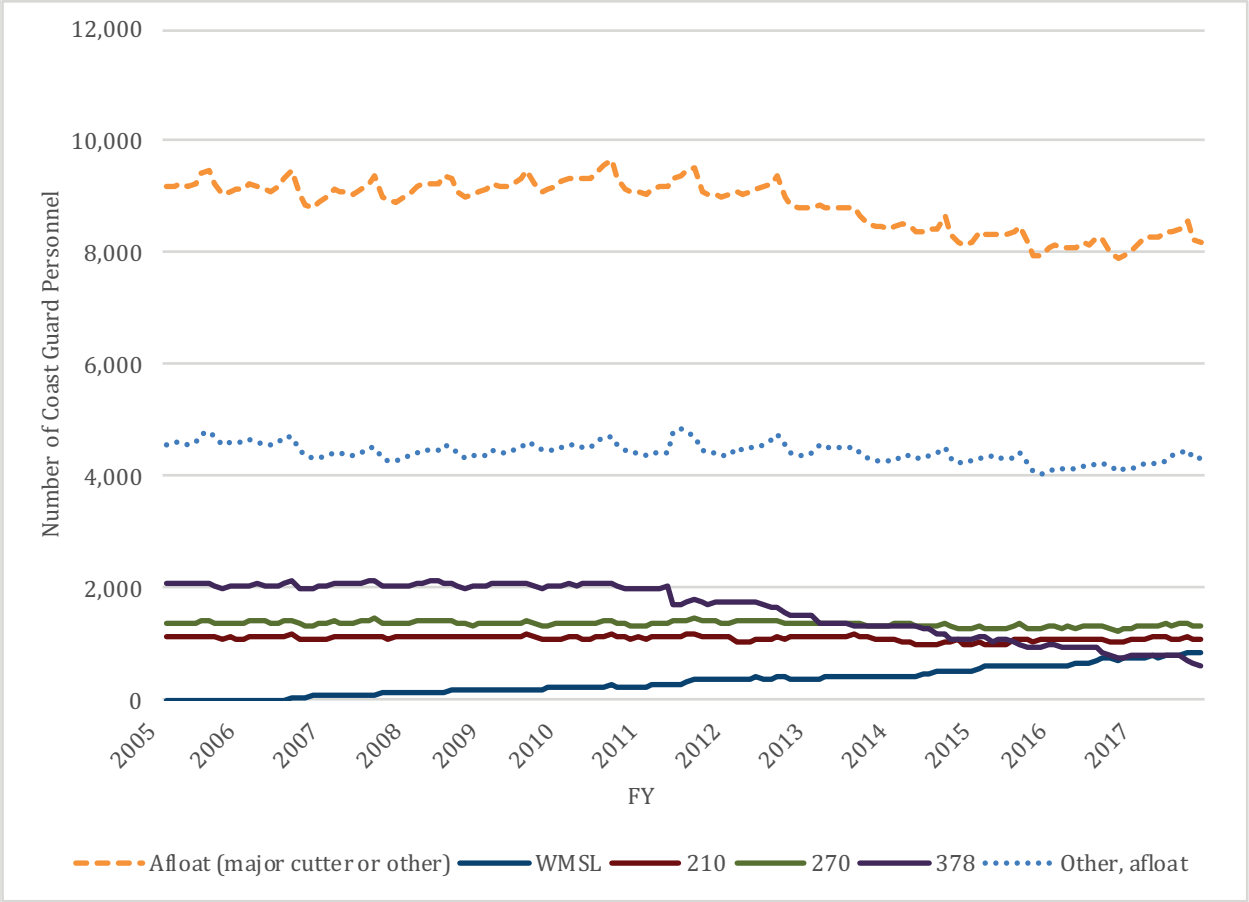
SOURCE: Data provided by the USCG.

While major cutter operations are fundamental to the USCG's ability to achieve its mission, in any given month, most USCG personnel were *not* assigned to major cutters. In an average month, about 11 percent of USCG personnel (either afloat or ashore) served on major cutters; roughly half of USCG personnel afloat were assigned to major cutters.

Figure 2.2 graphs the number of personnel assigned to major cutters over the period included in our data and indicates that the number *and* proportion fell over time (as the overall size of the USCG stayed roughly constant). The substitution of WMSLs for older cutters is a likely explanation for this trend; WMSLs are manned with fewer personnel than older cutters are.[2]

[2] WMSLs are not considered operational for the first months after they are initially launched; this, too, could have added to the trend. See Appendix A for more details.

Figure 2.2. USCG Personnel Afloat, by Platform Type



SOURCE: Data provided by the USCG.
NOTE: *210*, *270*, and *378* refer to the lengths, in feet, of major cutters. *Other, afloat* refers to personnel who are serving afloat but not aboard a major cutter.

Figure 2.2 focuses on the number of USCG personnel assigned to specific platform types over time, with attention to each common type of major cutter. Although the scales on Figures 2.1 and 2.2 are different, the two orange lines are identical; they represent all personnel serving afloat. Due to its smaller overall scale, Figure 2.2 reveals the increase in WMSL personnel over time and the corresponding decrease in personnel assigned to WHECs. Over this time, the number of personnel assigned to WMECs remained roughly constant.[3] Figure 2.2 also reveals a pattern of yearly peaks that is less obvious in Figure 2.1.

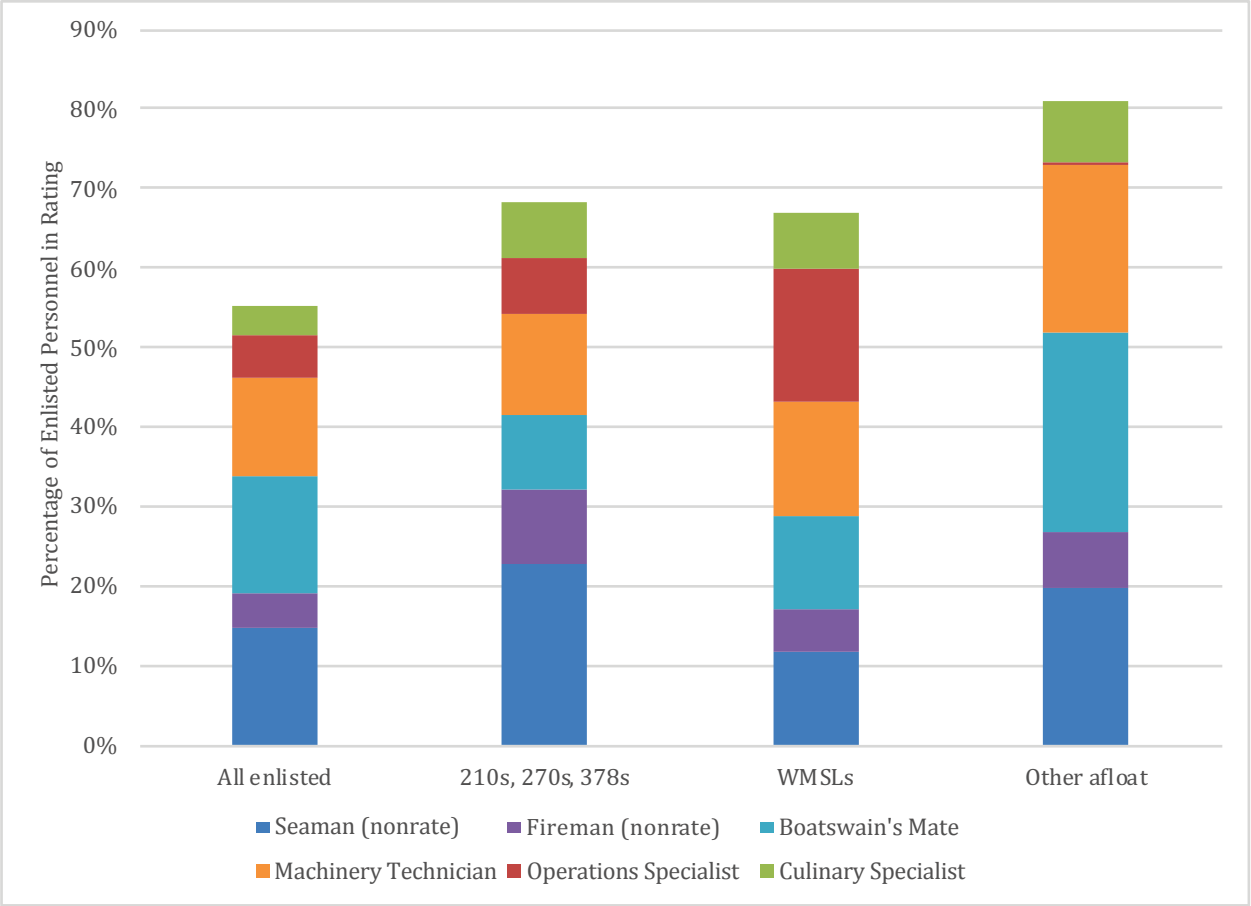
[3] WMSLs came online during the period covered by our data. This involved a period during which personnel were assigned to the cutter but the cutter was not fully functional. In order to include only the information that is most comparable to the conditions on these cutters moving forward, we did not include information from the first few (nonoperational) months after each cutter was launched. This likely biases the number of personnel assigned to a cutter downward slightly.

While only a small fraction of USCG personnel are assigned to major cutters at any point in time, a much larger fraction of the force serves on major cutters during their careers. We do not have complete career information on all personnel (in particular, we were able to observe only the early careers of recent enlistees); therefore, we could be understating the overall probability that a USCG service member serves on a cutter. But among personnel in our data, roughly one-third are assigned to major cutters for part of their careers, and 27 percent serve on major cutters during their first term (with another 19 percent serving elsewhere in the afloat community during their first term). We compute these figures by following individuals longitudinally as far as our data allow but, in some cases, we do not observe full careers; some of the personnel in our data set who have not yet served on a major cutter may do so during later portions of their careers.

Figure 2.3 lists the most common ratings among enlisted personnel in the USCG and among those assigned to various platforms. While there are roughly 25 ratings commonly held by enlisted personnel, the majority of personnel work in one of the six ratings included in Figure 2.3.[4]

[4] Unlike the figures above, Figures 2.3 and 2.4 include snapshot data from the end of FY 2017 only. The distribution of ratings differs somewhat across time, but the distribution of ratings on specific cutters and other platforms varies far less. Here, we use FY 2017 as the number of WMSLs afloat (and the number of personnel serving on WMSLs) grows throughout the period covered by our data; this late snapshot provides the largest number of USCG personnel on WMSLs. The ratings shown in Figure 2.3 are the most common among first-term enlisted and are among the most common throughout the enlisted ranks.

Figure 2.3. Rating Distribution, by Assignment



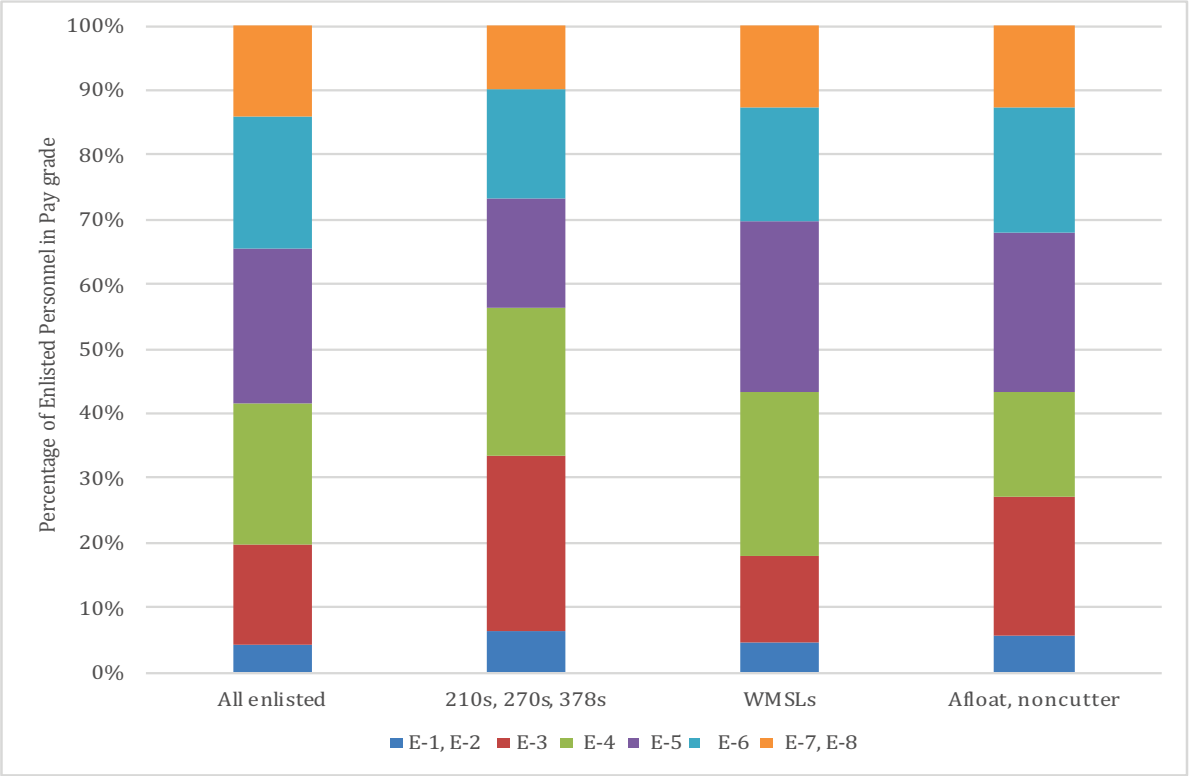
SOURCE: Data provided by the USCG.
NOTE: Distribution as of end of FY 2017.

Figure 2.3 indicates that the distribution of ratings varies somewhat across platforms. Many enlisted USCG personnel are in initial ratings (*nonrated*) while they await additional training; the seaman and fireman ratings include most nonrated personnel.[5] Nonrated personnel are concentrated on WMECs and WHECs. Enlisted personnel on WMSLs are less likely to be nonrated than other personnel; this reflects the optimal manning model of staffing the WMSLs. In contrast, a relatively large proportion of the enlisted personnel on WMSLs are operations specialists; this reflects the WMSL's missions. Operations specialists generally do not serve afloat on tugs, patrol boats, or buoy tenders, but those platforms have many boatswain's mates; again, this reflects the different missions of these platforms. Finally, culinary specialists are over-represented among the afloat community; most vessels will have at least one culinary specialist.

[5] The proportion of nonrated personnel on cutters tends to vary somewhat over the course of the FY, generally decreasing throughout the year as personnel gain training.

Figure 2.4 presents the distribution of enlisted pay grades, by platform. This figure is consistent with the differences in experience suggested by Figure 2.3—the distribution of pay grades in the WMSL community generally resembles the distribution across the USCG, while the most-junior enlisted personnel make up a disproportionately large share of personnel on the smaller, older cutters. This suggests that, as the WMSLs replace older cutters, junior personnel in the USCG may be less likely to serve on a cutter during their initial years in service. This change could influence retention, as well as willingness to serve on a cutter beyond the first enlisted term—and thus could alter the total number of experienced personnel available to serve on major cutters.

Figure 2.4. Enlisted Pay Grade Distribution, by Assignment



SOURCE: Data provided by the USCG.
NOTE: Distribution as of the end of FY 2017.

The figures above indicate that a small proportion of USCG personnel are assigned to a cutter (or even to the afloat community) at any point in time, but many more spend time afloat. The rating and pay grade distributions differ somewhat between the USCG as a whole and afloat communities; in some respects, the distributions differ on the WMSLs from what is found in the rest of the major cutter community. These findings suggest that rating and perhaps pay grade are likely to be correlated with assignment to a cutter or afloat. Our data also indicate that, across the board, women in the USCG are less likely than their male counterparts to be assigned to major

cutters; personnel who are married at accession also are less likely than others to be assigned to major cutters. (For context, roughly 20 percent of the personnel in our sample are women.) Such differences indicate the importance of using caution when comparing various groups in the USCG. For example, if continuation or reenlistment rates differ between men and women, simply comparing overall continuation or reenlistment rates between the major cutter community and the rest of the USCG could be misleading.

A Description of USCG Major Cutter Movements

Each USCG cutter's movements are tracked; we use these data to characterize each cutter's primary operational state on each day.[6] The data indicate the general activities of the cutter; for example, at any given time, a USCG cutter is either in the home port or deployed away from the home port. DAFHP are one of our primary measures of cutter operations because they represent a potential measure of strain on personnel and their families. This is consistent with the findings from the literature (see Chapter 3), as well as concerns discussed during the focus groups (see Chapter 6).

When the cutter is away from home port, it is generally underway, but the cutter could also be in a different port or could be in maintenance (maintenance can occur at the home port or away). The data also allow us to distinguish these states, and, along with coding DAFHP, we code the number of days that each cutter spends in maintenance. We consider maintenance days as an outcome measure because these days are nonoperational in nature.[7] Finally, cutters spend time in port but in operational status. During focus groups and the time we spent on major cutters, service members expressed concerns about the pace of work when the cutters are in port (such periods often require that the crew be fully employed on maintenance- or training-related tasks; at the same time, regular watch schedules require some crew members to stay aboard the cutters overnight). Measuring inport operational days allows us to capture this work to some extent (see Chapter 5).[8] To summarize, comparing time away from home port, in maintenance status, and in port but in operational status can give us a sense of the work patterns that cutter personnel experience, both while in port and while away.

Figure 2.5 describes the overall pattern of DAFHP, maintenance days, and inport operational days (per month) among the major cutters during the period covered by our data. Figure 2.5

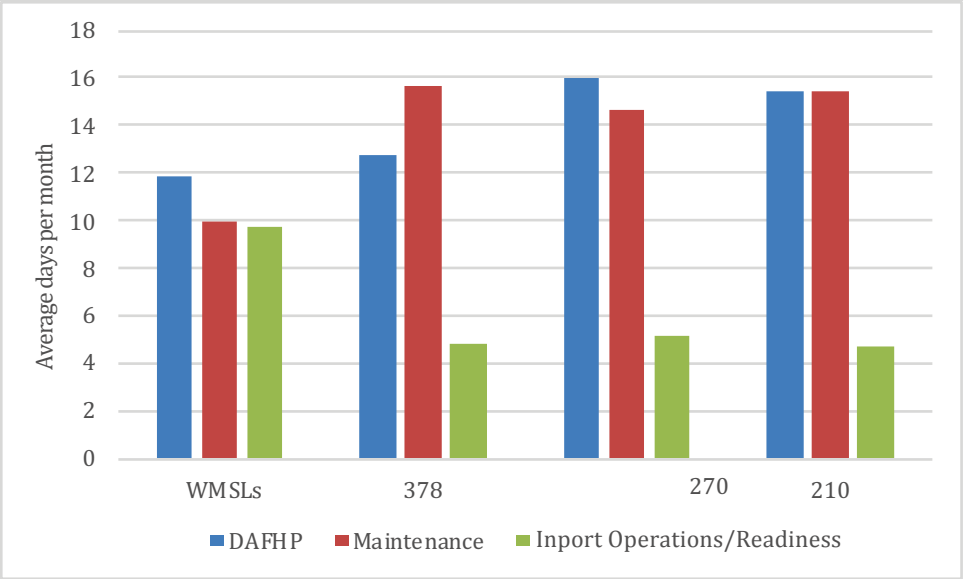
[6] Each cutter has a unique identifier. Cutter movements and operations are tracked hourly, but we characterize each day based on the activities that take up the majority of the day. On the majority of days, the cutter carries out a single activity. We are especially grateful to LCDR Ryan Lamb for his work providing these data and his assistance in interpretation. See Appendix A for more details.

[7] Note that there will likely be some overlap between DAFHP and maintenance; therefore, these two measures could sum to more than the total number of days in the month. The states listed here (maintenance, away from home port, and inport operations) describe the possible states of operational cutters; nonoperational cutters are not included in our data. Cutters that are away from home port can be underway or in a different port.

[8] Inport operations include all days classified as operational but not underway.

indicates that there is considerable variation in the patterns across platform type. The 270-foot cutters experience the highest number of DAFHP on average; the 210-foot cutters have slightly lower average DAFHP, and DAFHP for WHECs and WMSLs is substantially lower. Note that DAFHP patterns for WMSLs may not predict future performance; the period covered by our data represents the earliest operational experiences of these cutters, which are characterized by intense training.

Figure 2.5. Operational Status of Major Cutters, by Platform

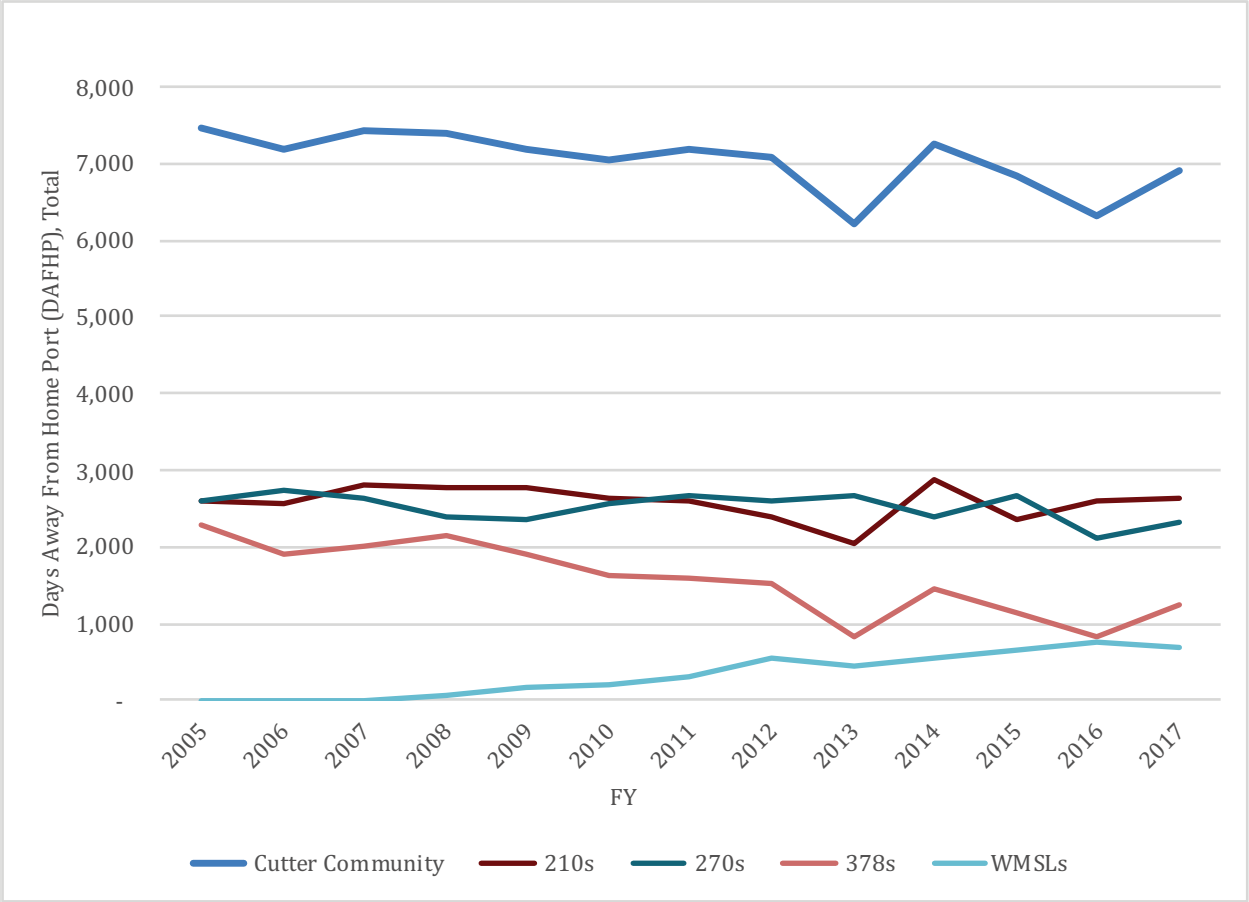


SOURCE: Data provided by the USCG.
NOTE: Chart includes average number of days per month in each status. Total days per month may sum to more than the number of days in that month because there is some overlap between maintenance and DAFHP. During the period covered by our data, WMSLs became operational, while some older major cutters became nonoperational. We include observations on major cutters during all months that they were operational. See Appendix A for more information.

Given the importance of DAFHP as a measure of operational capacity, we examine this measure in more detail. While major cutters spend substantial amounts of time away from home port, the total DAFHP across all major cutters decreased slightly over the last few years included in our data (see Figure 2.6). This trend, including the drop in 2013, is driven partly by the addition of the new WMSLs; in the early months, these cutters had far fewer DAFHP than other major cutters. WHECs also experienced a decrease in DAFHP over the period, as some were retired. In addition, some major cutters spent substantial amounts of time in maintenance during 2013.[9]

[9] The pattern in Figure 2.6 could have been driven by some combination of these factors, but other factors, such as changes in asset availability or changes related to the sequestration, might be relevant. Our data lack the granularity and detail that would be necessary to distinguish these factors.

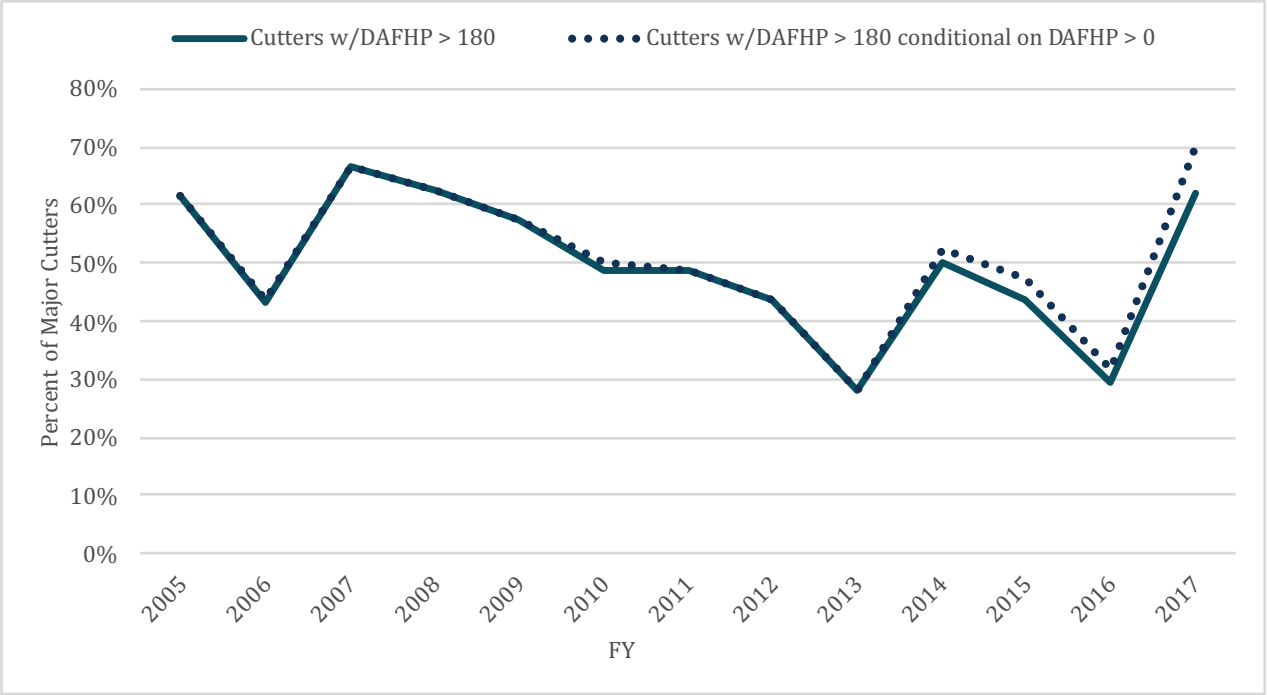
Figure 2.6. DAFHP of Major Cutters



SOURCE: Authors' analyses based on data provided by the USCG.

Next, we examine another measure of DAFHP: being away from home port for roughly half of a given year. As shown in Figure 2.7, many of the major cutters were away from home port for 180 or more days. In the last few years of our data, there are differences in likelihood of exceeding 180 DAFHP between all major cutters and major cutters that spent at least some time away.

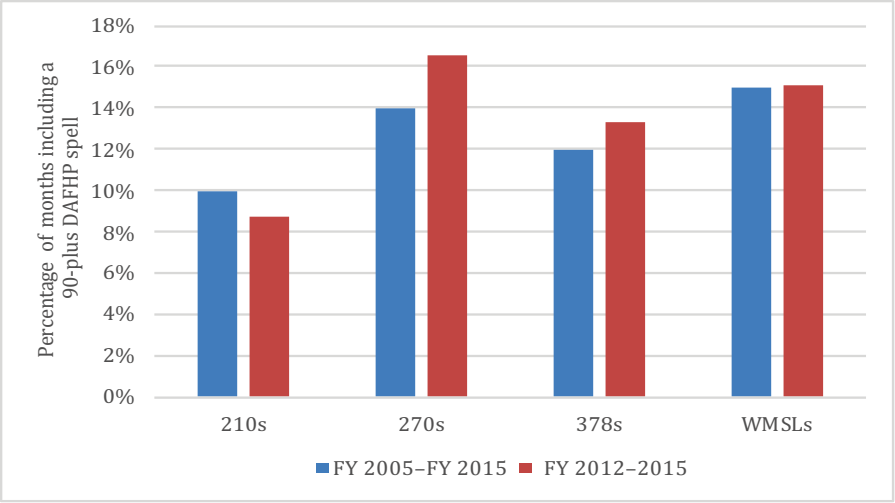
Figure 2.7. Percentage of Major Cutters with More Than 180 DAFHP



SOURCE: Data provided by the USCG.

Our sponsor expressed an interest in understanding how personnel respond to being away for more than 90 days in a row. This interest was based both on discussions with USCG personnel and on an understanding that longer deployments have become more common in recent years. We discussed lengthy deployments in our focus groups and created a measure to indicate that a major cutter spent at least 90 DAHFP in a row; this length of service may be linked to service member outcomes in a different manner than total time away. Figure 2.8 indicates the proportion of months that were part of a 90-plus-day time afloat away from home port. Because observations on WMSLs are concentrated beginning around FY 2012 and because operational patterns may have changed in recent years, we also calculated the metric for FY 2012 through December 2018.

Figure 2.8. Percentage of Major Cutters with Continuous 90-Plus DAFHP, by Platform



SOURCE: Data provided by the USCG.

Figure 2.8 indicates that the proportion of 270-foot WMECs and WHECs spending 90-plus days away from home port has increased over time, while the proportion of 210-foot cutters doing so has fallen slightly. While the proportion of WMSLs that are away for 90-plus days is higher than the proportions of the other platforms over the entire period, in recent years, 270-foot cutters have been especially likely to spend at least 90 days away from home port at a time. But this captures only one metric: the proportion of months in which each cutter was experiencing a 90-plus-day period away from home port. This does not measure the *average* spell. Even as the proportion of such months increased across 270-foot cutters, the total number of DAFHP among all 270-foot cutters appears to have remained roughly constant or even to have fallen somewhat (Figure 2.6); thus, personnel may have experienced fewer longer spells—or they may have experienced more spells of slightly shorter length.

Finally, during part of the period covered by our data, the WMSLs based on the West Coast had higher levels of OPTEMPO; these major cutters operated at 200 DAFHP (two-year average).[10] In early 2018, the OPTEMPO limit for West Coast WMSLs was set to be equal to that for East Coast WMSLs, at 185 DAFHP (two-year average). This policy appears to have had little effect on PERSTEMPO, perhaps because of the short operational history of WMSLs and the patterns of crew rotation between platforms.[11]

[10] WMSL personnel on the West Coast had a shore-based maintenance team to augment inport operations.

[11] Indeed, fewer than 100 personnel per year have made reenlistment decisions after spending at least a year assigned to a WMSL, and no more than a dozen personnel who were making a decision had been deployed for over 185 days on any WMSL platform. Given such small numbers, it is not surprising that there is no clear difference between WMSLs based on the East and West Coasts. However, if OPTEMPO policies vary in the future, relating outcomes to policy will be key.

In summary, Figures 2.5 through 2.8 imply substantial variation in OPTEMPO, both between types of major cutters and over time. This, coupled with crew rotations, likely means that major cutter personnel experience variations in DAFHP and other measures of cutter operations; some of this variation may be linked to the type of major cutter.

S&I Pays

The USCG offers several different S&I pays to service members. This type of pay is known as a *compensating differential* because it is intended to offset (or compensate for) unpleasant aspects of employment.[12] In this section, we describe each of the S&I pays that service members can receive when assigned to a ship or away from home port.

Sea Pay

Special pay for career sea duty, commonly referred to as *sea pay*, was first established in 1835 and is intended "to provide a special payment to personnel serving on sea duty in recognition of the greater-than-normal rigors of service attending such duty."[13] A service member is considered on sea duty if assigned to a job aboard a ship, irrespective of whether they are away from home port. In the late 1970s, DoD listed several "unique conditions" associated with sea duty:

> (1) cramped living and working conditions aboard ship, (2) the unpredictability of operating schedules of . . . ships, (3) limited recreational facilities at sea, (4) inport duties assigned to shipboard personnel to maintain readiness, (5) long working hours at sea, (6) long and repetitive deployments, and (7) family separations.[14]

Note that sea pay is intended to compensate for multiple and conceptually distinct working conditions, both in port and at sea. Currently, USCG sea pay is calculated based on a service member's rank, the cumulative number of months they have served at sea, and the type of vessel to which he or she is assigned; in addition, service members receive a sea pay "premium" if they have served for three or more years of consecutive sea duty.[15]

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[12] For a seminal paper on the subject, see Sherwin Rosen, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," *Journal of Political Economy*, Vol. 82, No. 1, January–February 1974, pp. 34-55. Also see Robert S. Smith, "Compensating Wage Differentials and Public Policy: A Review," *Industrial and Labor Relations Review*, Vol. 32, No. 3, April 1979, pp. 339–352.

[13] U.S. Department of Defense (DoD), *Military Compensation Background Papers: Compensation Elements and Related Manpower Cost Items*, 7th ed., 2011.

[14] DoD, 2011.

[15] Commandant Instructional Manual M7220.29C, *Coast Guard Pay Manual*, Washington, D.C.: USCG, February 2018. *Sea-duty points* are also awarded to those serving on sea duty; along with other factors, sea-duty points can

It is worth noting that offering this pay to service members indicates that sea duty is considered "undesirable" relative to shore duty. For U.S. Navy and USCG service members, however, it is likely that one of the factors that influenced their decision to join these services *was* sea duty. Put another way, those who choose to serve in the Navy and the USCG, compared with those who choose the Air Force, Army, or Marine Corps, have a relative preference to be at sea. Another interpretation is that, while these service members do enjoy sea duty, the arduous nature of these jobs deserves some recognition; indeed, the word "recognition" is explicitly used in describing the purpose of the pay.[16]

Family Separation Allowance

The family separation allowance (FSA) was first authorized in 1963 and is intended to "partially reimburse, on average, members of the uniformed services involuntarily separated from their dependents for the reasonable amount of extra expenses that result from such separation."[17] It is worth noting that FSA is *not* intended to offset any potential impact on family relationships associated with this separation; that is one of the purposes of sea pay. Rather, FSA is meant to offset the financial impact of the separation.

FSA is paid to a service member with dependents when the service member "is permanently assigned to a ship, and the ship is away from its home port continuously for more than 30 days."[18] Currently, all eligible service members receive the same monthly amount, irrespective of rank or type of vessel to which they are assigned. Furthermore, the amount of FSA has gone unchanged since 2002. Because of inflation, this means that the value of FSA to the service member has eroded over time.

Hostile Fire Pay and Imminent Danger Pay

Hostile fire pay (HFP) and imminent danger pay were introduced in 1952. They have several, interrelated purposes, including providing compensation

> to personnel subject to hostile fire or to explosion of hostile mines; to personnel on duty in an area in which they were in imminent danger of being exposed to hostile fire or explosion of a hostile mine . . . and to personnel on duty in foreign areas in which they are subject to the threat of physical harm or imminent danger because of civil insurrection, civil war, terrorism, or wartime conditions.[19]

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increase the probability of advancement. See Commandant Instructional Manual M1000.2B, *Enlistments, Evaluations, and Advancements*, Washington, D.C.: USCG, February 2018.

[16] DoD, 2011.

[17] DoD, 2011.

[18] Commandant Instructional Manual M7220.29C, 2018.

[19] DoD, 2011.

Currently, HFP and imminent danger pay are available to personnel serving in specific water areas of the Mediterranean Sea and the Somalia Basin; historically, they have been available in water areas adjacent to the Arabian Peninsula and in the Persian Gulf.[20] When eligible, all service members receive the same monthly amount irrespective of rank or type of vessel to which they are assigned.

Selective Reenlistment Bonus and Critical Skill Retention Bonus

Both the selective reenlistment bonus (SRB), in use by the military services since 1795, and the critical skills retention bonus (CSRB), established in 2001, are designed to ensure that sufficient numbers of personnel remain in service. As their name implies, SRBs are paid to eligible enlisted personnel who choose to reenlist; the services have the discretion to identify the ratings eligible, whether they are "in critical skill specialties with high training costs or demonstrated retention shortfalls." Similarly, the CSRB provides "an incentive for qualified enlisted and officer personnel with skills designated as critical to remain on active duty, extending the availability of those skills for application in key positions."[21] The services also have the ability to vary the level of these bonuses (subject to maximum amounts) depending on a service member's rank, rating, and the additional service obligation to which they are willing to commit.

These S&I pays are conceptually different from the other compensating differentials discussed in this section, in that they are not explicitly tied to being assigned to a ship and/or away from home port. However, they remain tools that the USCG can use to offset any deleterious effects of these assignments, by disproportionately targeting them to sea-intensive ratings or to ratings with manning shortfalls on specific platforms.

Assignment Incentive Pay

Finally, assignment incentive pay (AIP) is a relatively new S&I pay, established in 2002 "to provide an additional monetary incentive in the assignment process to encourage members to volunteer for difficult-to-fill or less desirable assignments, assignment locations, or certain assignment periods."[22] Like the SRB and CSRB, the services have flexibility to establish (subject to maximum amounts) the level of AIP, the assignments eligible to receive it, and the assignment length to which a service member must commit. To our knowledge, the USCG has not used AIP. We list it here because it is an available compensating differential that the USCG *could* use.

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[20] See Under Secretary of Defense, Comptroller, *Financial Management Regulation*, Vol. 7a: *Military Pay Policy—Active Duty and Reserve Pay*, DoD 7000.14-R, April 2017.

[21] DoD, 2011.

[22] DoD, 2011.

3. PERSTEMPO, Working Conditions, and Retention: A Brief Review of the Literature

In this chapter, we discuss the existing research that is most relevant to our central question of how personnel respond to time away from home. There is not a well-developed literature on how USCG personnel respond to time away from home, but there are at least two streams of literature that provide considerable relevant information. First, there is a well-developed literature on sea duty and the way in which different aspects of sea duty affect retention. Second, there is more-recent literature on how service members respond to deployments. While USCG cutter policy might appear to more closely overlap with the sea-duty literature, the detailed findings from the recent deployment literature also are relevant.

Sea Duty

The relationship between sea duty and retention likely depends on the extent to which service members perceive the benefits of sea duty, including any relative preference for this type of duty and receipt of any of the S&I pays described in Chapter 2, to offset the broadly defined "costs" of sea duty to the individual and family. If the benefits exceed the costs, we would expect to observe a positive association between sea duty and retention; if the costs exceed the benefits, we would see the opposite relationship.

In the empirical literature focusing on Navy retention, researchers have generally found a negative relationship between sea duty and retention. For example, Warner and Goldberg identify whether Navy enlisted sailors are assigned to a sea-duty or shore-duty billet.[1] For context, at the time of the study, the Navy was having "severe difficulty manning ships with experienced personnel, with a consequent decline in the operational capability of the fleet." The authors' empirical analysis demonstrates that sea duty negatively affects reenlistment. From a policy perspective, they note that using compensation to offset the negative impact of sea duty is a feasible solution to the challenge. In contrast, reducing the amount of time that sailors spend at sea would improve reenlistment but would exacerbate the challenge of keeping ships manned.

Shiells and McMahon also find a negative (but small) relationship between expected sea-duty intensity in the second term and first-term reenlistment. They offer two potential explanations for the small, observed relationship: that "people who mind sea duty the least (or enjoy sea duty) are sorted into the most sea-intensive jobs" or that "sea pay is adequately compensating people for

[1] John T. Warner and Matthew S. Goldberg, "The Influence of Non-Pecuniary Factors on Labor Supply: The Case of Navy Enlisted Personnel," *Review of Economics and Statistics*, Vol. 66, No. 1, February 1984, pp. 26–35.

the rigors of sea duty."[2] The authors also estimate a positive relationship between pay and retention, implying that modest increases in compensation could offset the observed negative effect of expected sea duty.

More recently, in their empirical analysis of Navy reenlistment, Hansen and Wenger include data on sailor expectations of future sea duty and on the extent to which they have spent more time than expected in their current assignment.[3] They conclude that sailors who expect to rotate to sea duty have lower first-term reenlistment rates than those who expect to rotate to shore duty.[4] Sailors currently on longer-than-expected tours also had lower reenlistment rates; interestingly, this was true for both sea *and* shore duty.

Note that these studies do not use a direct measure of PERSTEMPO; sea duty is a very rough proxy for the amount of time that service members spend away from home. However, these studies are informative for two reasons. First, they demonstrate an empirical relationship between serving on ships and reenlistment and, perhaps, a relative preference for shore duty. Second, they emphasize the role that *expectations* can play in service member retention decisions. Hansen and Wenger demonstrate that previous experiences, relative to expectations, can affect future decisions, while Shiells and McMahon highlight the role that expectations about the future environment also play in these decisions.

Exploring the Different Aspects of Sea Duty

A second, interrelated literature takes a closer look at the different aspects of sea duty, decomposing these tours into different experiences. Broadly speaking, the sea-duty tour can be characterized as a sequence of events: predeployment activities in home port; nondeployed time away from home port; deployed time; and time spent in foreign ports during deployments. The underlying hypothesis motivating this literature is well stated in Cooke, Marcus, and Quester: "Other things being equal, if a higher tempo of operations is associated with a lower quality of life, absent a compensating wage premium (or other positive job attribute), increased operating intensity makes it more difficult to retain enlisted personnel."[5]

Cooke, Marcus, and Quester conducted a statistical analysis of the relationship between different aspects of Navy sea duty and retention. They conclude that, for enlisted sailors with an initial four-year service obligation, longer deployments are associated with lower first-term retention. For married sailors and those in sea-intensive ratings, the estimated effects are even

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[2] Martha E. Shiells and Joyce S. McMahon, *Effects of Sea Duty on Advancement and First-Term Retention*, Alexandria, Va.: CNA, Research Memorandum 92-205, 1993.

[3] Michael L. Hansen and Jennie W. Wenger, "Is the Pay Responsiveness of Enlisted Personnel Decreasing?" *Defence and Peace Economics*, Vol. 16, No. 1, February 2005, pp. 29–43.

[4] See Table III of Hansen and Wenger, 2005.

[5] Timothy W. Cooke, Alan J. Marcus, and Aline O. Quester, *Personnel Tempo of Operations and Navy Enlisted Retention*, Alexandria, Va.: CNA, Research Memorandum 91-150, 1992.

larger. These subsamples are interesting, in that both arguably have reasons to view higher PERSTEMPO more negatively than other sailors, whether because of family separations (in the case of the former) or to an already high level of PERSTEMPO (in the case of the latter). Similarly, the authors estimate a negative relationship between nondeployed time away from home port and retention, with larger effects for the two subsamples. Somewhat surprisingly, they also find a *negative* relationship between the length of time between deployments and retention.

Golding et al. analyze fleet attrition in the Navy, focusing on the first term.[6] Using both qualitative and quantitative methods, the authors reach several conclusions about the causes of fleet attrition. First, there appear to be slight differences in attrition by type of ship (e.g., aircraft carriers, surface combatants); however, the variation *within* ship class is much greater than *between* ship class. Second, while the authors do find that sailors who have deployed are more likely to leave the Navy than those who have not deployed, they do *not* find any statistical relationship between the length of deployment and attrition. Third, they find some indirect evidence that unit leadership affects attrition; the authors compare specific ships' attrition rates from one commanding officer to another and conclude that the difference in attrition rates cannot be explained by other observable factors.

Fourth, the authors are able to identify specific aspects of sea duty, which they term "quality of service," that are correlated with attrition. In focus groups, sailors indicated that nondeployed time underway was unexpected (at the time of enlistment) and that the work was "arduous," with long, irregular, and unpredictable work hours. Furthermore, nondeployed time did not provide these sailors with the same sense of mission accomplishment that is associated with the actual deployment. Consistent with these observations, the authors find a positive statistical relationship between the amount of nondeployed time and attrition. Focus group participants also expressed that foreign ports were widely different; while some were highly desirable places in which to spend time, others were highly undesirable. The authors' statistical analysis confirms this: Time spent in desirable foreign ports reduced attrition, while time spent in the least desirable ports increased attrition.

Golding and Griffis examine Navy reenlistment in the context of the Navy's mid-1980s PERSTEMPO policy, which limited deployments to six months, established minimum turnaround time between deployments, and limited the amount of time away from home port.[7] The authors found that sailors with short deployments (four months or less) had higher reenlistment rates than those with deployments lasting four to eight months; however, when the authors adjusted for other factors, sailors with long deployments (eight months or more) did not have lower reenlistment rates than those with deployments lasting four to eight months. This

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[6] Heidi L. W. Golding, James L. Gasch, David Gregory, Anita U. Hattiangadi, Thomas A. Husted, Carol S. Moore, Robert W. Shuford, and Daniel A. Seiver, *Fleet Attrition: What Causes It and What to Do About It*, Alexandria, Va.: CNA, Research Memorandum D0004216, 2001.

[7] Heidi L. W. Golding and Henry S. Griffis, *How Has PERSTEMPO's Effect on Reenlistment Changed Since the 1986 Navy Policy?* Alexandria, Va.: CNA, Annotated Briefing D0008863, 2004.

contrasts with the earlier work of Cooke, Marcus, and Quester. Golding and Griffis also find that quick turnaround times between deployments are associated with lower reenlistment rates, and the same is true of nondeployed time away from home port.

Hostile and Nonhostile Deployments

A separate research stream focuses on the relationship between deployment and retention but examined the extent to which these deployments were to "hostile" or "nonhostile" areas. For example, Hosek and Totten measure whether a deployment occurred during a month when an individual received HFP. They use data on enlisted personnel in the Air Force, Army, Navy, and Marine Corps, analyzing each service separately; their results lead to general conclusions across the services. They conclude that service members with low amounts of hostile deployment had higher first-term reenlistment than those without any such deployment. However, as the number of months of hostile deployment increased, the positive effect was reduced. The authors speculate that, eventually, hostile deployments "may cause stress and disrupt personal life, thereby lowering morale and potentially reducing reenlistment."[8] With respect to nonhostile deployments, the authors estimate that reenlistment rates were generally higher as the number of nonhostile deployments increased.

Hosek and Totten further explore the relationship between deployments and reenlistments.[9] Using data from the late 1990s, they find little change in first-term reenlistment as hostile deployments increased, but they estimate a positive association between nonhostile deployments and first-term reenlistment. For second-term reenlistment, they also find a positive association with nonhostile deployments. Fricker conducted a similar analysis of officers in these four services and generally concludes that, for both hostile and nonhostile deployments, officers who deployed had higher retention than officers who did not deploy.[10]

Deployments in the Post-9/11 Environment

The Global War on Terrorism led to a shift in the focus of the literature, commensurate with the nature of operations in Afghanistan and Iraq and the resulting questions about the extent to which the nature of these deployments was causing service members to separate. While all of the military services have participated in these operations, the literature disproportionately focused

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[8] James Hosek and Mark E. Totten, *Does Perstempo Hurt Reenlistment? The Effect of Long or Hostile Perstempo on Reenlistment*, Santa Monica, Calif.: RAND Corporation, MR-990-OSD, 1998.

[9] James Hosek and Mark E. Totten, *Serving Away from Home: How Deployments Influence Reenlistment*, Santa Monica, Calif.: RAND Corporation, MR-1594-OSD, 2002.

[10] Ronald D. Fricker, *The Effects of Perstempo on Officer Retention in the U.S. Military*, Santa Monica, Calif.: RAND Corporation, MR-1156-OSD, 2002.

on the Army and Marine Corps, given the heavy role that ground forces played in Afghanistan and Iraq.

Policy changes with respect to OPTEMPO and PERSTEMPO were also implemented in response to the heavy deployment schedule and stresses on service members. On January 19, 2007, the Secretary of Defense issued a memorandum that made several changes to DoD policy with respect to how service members were to be used to support operational needs.[11] One of these was a specific delineation of planning objectives for the involuntary mobilization of Reserve Component units and for the deployment of Active Component units. Specifically, he identified the planning objective for the Active Component as a ratio: "one year deployed to two years at home station" (1:2).[12] The focus was on the amount of time spent deployed relative to the amount of time spent at home (the ratio), not that deployments be a specific length (e.g., "one year").[13]

Note that, as written, this was an OPTEMPO planning objective, although, in the context of a memorandum about "how we utilize members," it was also interpreted as PERSTEMPO guidance. Furthermore, this was intended to be a goal, not a limitation; the Secretary of Defense recognized that operational needs could require higher OPTEMPO or PERSTEMPO, specifically noting that "most active units are deploying for one year, returning home for one year, then redeploying" (1:1). Therefore, a second change to DoD policy outlined in this memorandum was that service members be compensated or "incentivized" when they are required to "deploy early or often, or to extend beyond the established rotation policy goals." Again, the use of a compensating differential was determined to be necessary given the arduous nature of what service members were being asked to do.

Focus groups conducted in early 2004 and summarized in Hosek, Kavanagh, and Miller capture the qualitative perceptions of service members across the Air Force, Army, Navy, and Marine Corps shortly after 9/11.[14] Participants identified several sources of stress associated with deployments: predeployment training and individual/family preparation, long hours, the nature of the work, family separations during deployments, and reintegration with family and society upon return from deployment. Service members who did not deploy also experienced stress, including an increase in workload when others deployed. At the same time, participants cited positive

[11] Robert Gates, "Utilization of the Total Force," memorandum for secretaries of the military departments, Chairman of the Joint Chiefs of Staff, and Under Secretaries of Defense, Washington, D.C., January 19, 2007.

[12] For Reserve Component units, the mobilized to demobilized ratio was 1:5.

[13] Indeed, the services made different decisions about the length of individual deployments; the median length of a deployment ranged from six months in the Navy to 12 months in the Army. See Caolionn O'Connell, Jennie W. Wenger, and Michael L. Hansen, *Measuring and Retaining the U.S. Army's Deployment Experience*, Santa Monica, Calif.: RAND Corporation, RR-570-A, 2014.

[14] James Hosek, Jennifer Kavanagh, and Laura L. Miller, *How Deployments Affect Service Members*, Santa Monica, Calif.: RAND Corporation, MG-432-RC, 2006.

aspects of deployment, including the financial compensation, sense of mission accomplishment, and unit cohesion that developed during the deployment.

Quester, Hattiangadi, and Shuford analyze the relationship between PERSTEMPO and retention in the Marine Corps shortly after the beginning of operations in Afghanistan and Iraq, focusing on both enlisted personnel and officers.[15] For first-term enlisted marines, the authors found a negative relationship between the number of days deployed and reenlistment. However, for enlisted marines in their second and third terms, they did not find a relationship and—for officers—they found a *positive* relationship between PERSTEMPO and retention.

Most recently, Hosek and Martorell examined the relationship between deployment and reenlistment of Air Force, Army, Navy, and Marine Corps members.[16] The authors presented a theoretical framework, which has several features and insights.[17] First, individuals have *expectations* about deployments when considering whether to serve, and individuals have *preferences* about the nature and length of deployments. Second, individuals make *choices* about the specific military service and occupation that are most in line with these preferences. Third, reenlistment will be lower if *actual* deployment experiences deviate from expectations. Presuming that service members prefer some nonzero level of deployment, this implies a nonlinear relationship between the amount of deployment and reenlistment, with higher reenlistment rates for service members with some deployment than for those who do not deploy, but lower reenlistment rates for service members who deploy more than expected. Finally, other factors (the authors focus on financial compensation) valued by service members can, in principle, be used to offset any deleterious effects of deployment on reenlistment.

Hosek and Martorell also use multiple measures of PERSTEMPO in their empirical analyses.[18] For example, they present data showing service members with deployments in the 12 months prior to making a reenlistment decision and with deployments in the three years prior to making a reenlistment decision, as well as the number of months within those windows that the service member was deployed. The authors also distinguish between hostile and nonhostile deployments. These measures reflect multiple dimensions: whether an individual deployed, the recency of these deployments, and the intensity of these deployments, both in terms of the amount of time spent away from home and the nature of the mission.

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[15] Aline O. Quester, Anita U. Hattiangadi, and Robert W. Shuford, *Marine Corps Retention in the Post-9/11 Era: The Effects of Deployment Tempo on Marines With and Without Dependents*, Alexandria, Va.: CNA, Research Memorandum D0013462, 2006.

[16] James Hosek and Francisco Martorell, *How Have Deployments During the War on Terrorism Affected Reenlistment?* Santa Monica, Calif.: RAND Corporation, MG-873-OSD, 2009.

[17] Hosek and Martorell, 2009, is by no means the first study to present a theoretical framework; for earlier examples, see Hosek and Totten, 1998. We highlight their framework here because it serves to motivate our empirical analyses.

[18] Similar measures have been used in earlier research.

Hosek and Martorell's empirical results suggest some notable differences by type of deployment and by service. The authors consistently find a *positive* relationship between nonhostile deployments and reenlistment. For hostile deployments, the evidence was mixed. The authors conclude that hostile deployments did not have much of an effect on reenlistments of first-term service members in the Air Force, Navy, and Marine Corps but found a positive relationship on second-term reenlistments.

In the Army, however, they estimated a positive relationship between hostile deployments and both first- and second-term reenlistments from 1996, through the beginning of the Global War on Terrorism, until 2004. In 2005, the magnitude of this relationship dropped dramatically, and, by 2006, the authors estimated a *negative* relationship between hostile deployments and reenlistment. The authors attributed this to the cumulative amount of time spent deployed prior to the reenlistment decision: Having less than 12 months of deployment had a positive effect on reenlistment, while having more than 12 months had a negative effect. Since, by 2006, the majority of soldiers making reenlistment decisions had more than 12 months of cumulative time deployed, the overall estimated effect was negative.

Summary

Based on this brief overview of the literature, the following, generalized findings are relevant to the current analysis:

- Researchers have generally found a negative relationship between sea duty and retention. The implication is that service members perceive the benefits of sea duty, including any relative preference of this type of duty and receipt of duty, to be less than the "costs" to the individual and family.
- Expectations matter. Previous experiences, relative to initial expectations, can affect future service member decisions. Expectations about future experiences also influence service member decisions.
- Researchers have found a nonlinear relationship between deployment and retention. Service members prefer some deployment experience over never deploying, with higher retention among the former than among the latter. At some point, however, multiple deployments and higher cumulative amounts of time spent deployed lead to lower retention.
- Working conditions matter. Negative aspects of the work environment, such as long, irregular, and unpredictable work hours, adversely affect retention. In contrast, positive aspects, such as a sense of mission accomplishment and time spent in highly desirable foreign ports, are positively correlated with retention. Deployments also can be thought of as a working condition, a condition that can be viewed either negatively or positively depending on the individual and the total amount of time deployed.
- Negative aspects of service can be offset with compensation tools. These "compensating differentials" have been used by the services for specific purposes, with adjustments to eligibility and level of remuneration over time as they have identified evolving needs.

4. Project Methodology: Quantitative and Qualitative

In this chapter, we present our conceptual framework for the study. The framework includes the major sources of data and explained how the sources of data relate to and influence each other, as well as the final goal of this research project. We also discuss each source of data and explain our general analytic approach.

Research Plan Used Two Approaches

The literature suggests that service members may view some amount of time away in a positive light but that excessive time away from home will have negative consequences. The existing literature is primarily quantitative in nature and often focuses on the relationship between time deployed and retention. Of course, there are differences between the deployments experienced by DoD personnel and those experienced by USCG personnel; in particular, service members generally anticipate the overall level of DAFHP in the USCG community (although individual service members may not anticipate how they or their families will respond to deployments). The literature on DoD personnel experiences with deployments therefore does not provide sufficient context for USCG personnel experiences.

In short, providing a complete view of how DAFHP influence personnel requires combining data from a wide variety of sources. Some of the data, such as DAFHP or reenlistment rates, can be described as quantitative and can easily be expressed using numbers. Other information, however, is much more qualitative in nature; while it may be possible in some cases to summarize qualitative information in numerical form, other information, such as the relative importance of various living conditions, loses some detail when expressed as a number. An important aspect of our framework is that the quantitative and qualitative data are considered jointly, rather than completely independently. Thus, conclusions flow from consideration of both types of data. To develop this idea further, in the next section, we describe how we collected and used each type of data.

Quantitative Approach

Our quantitative data set is based on individual-level information from the USCG's personnel databases, combined with data on cutter operations; descriptive statistics are provided in Chapter 2.[1] The quantitative data describing the careers of USCG personnel are highly detailed in the sense that the observations occur monthly over a relatively long time. We have information on

[1] While we could identify specific cutters, the USCG personnel data were deidentified (i.e., the files included no names or other identifying information).

all active-duty USCG personnel from January 2001 through September 2017; however, we focus on the period from January 2005 to September 2017 because our information on cutter movements is incomplete prior to January 2005. Therefore, we have over 7 million person-month observations (roughly 6 million from January 2005 forward).[2] Given the time frame covered, it is possible to track the arc of USCG careers, through promotions, retention decisions, and subsequent assignments. Because we completed our field work and held focus groups as we were putting together the quantitative data set, we were able to test empirically ideas that emerged from the subject-matter expert (SME) discussions and the focus groups.

Chapter 5 includes additional detail on the quantitative data and models; in general, we focus on retention and promotion as the outcomes of interest. We analyze enlisted and officer data separately, since our focus group results suggested some substantial differences between these groups. A primary focus is the point at which USCG personnel decide between remaining in the USCG (reenlistment for enlisted personnel; retention for officers) and leaving the USCG for other opportunities. We ground these decisions in a model of individual utility; this model assumes that the USCG service member will weigh the pros and cons of remaining on active duty against the pros and cons of reentering the civilian world and will select the outcome that provides the highest level of utility.[3] Therefore, a service member will remain in the USCG if the (expected) utility in the USCG is higher than the (expected) utility at the best civilian option, based on information available at the time of the decision.

Several factors could affect this decision. While we lack many of the measures that would be optimal (such as highest wage available in the civilian sector), we include demographic measures and test scores; these are likely correlated with preferences and civilian opportunities. Time away from home is another factor and could play a key role in the decisions of USCG personnel.

Along with time deployed, service members who took part in our focus groups indicated that other factors also influence their quality of life in the USCG and have the potential to influence their reenlistment decisions. We discuss these other factors in Chapter 6 and, in Chapter 5, explain exactly how we include these factors in our quantitative model. At this point, it is sufficient to note that our model is flexible enough to include many factors that could influence retention—and that gathering information in the focus groups and then including relevant variables in the quantitative analyses is one example of our joint approach to these analyses. Along with analyzing retention, we included analyses of key promotions and of the likelihood that service members continue to serve in the major cutter community after their initial service obligation. Because first terms vary in length and not all personnel complete an initial term of

[2] We describe our quantitative sample in more detail in Chapter 5; also see Appendix A.

[3] To be more specific, the model assumes that the service member weighs USCG active-duty service against all aspects of the best (expected) job in the civilian world. This could include leaving active duty and joining the USCG Reserve, although our analysis does not explicitly examine whether individuals choose to join the Reserve upon leaving active duty.

service, we also model early-career attrition; serving on major cutters could have positive or negative effects on the likelihood of completing an initial term of service.

Qualitative Approach

Our qualitative approach involved three main activities: (1) field work aboard cutters, (2) focus groups with USCG cutter crew members, and (3) discussions with USCG SMEs. We describe our approach to data collection and analyses for each below.

Field Work

To better understand the cutter environment, members of the project team sailed with two cutters during the course of the project. In November 2017, two members of the team sailed with a WMSL from Long Beach, California, to Alameda, California, over a seven-day period. During that time, the team members spoke with several members of the cutter crew, including those in leadership positions, and observed activities (e.g., training). As the goal was to observe and not formally interview crew members, the project team did not develop an interview protocol or take notes about specific individuals. However, the team created a list of features (based on a scan of the research literature) to observe in the cutter environment. These features fall into three broad categories: work environment (e.g., lighting, temperature, noise, work hours, team work, shift, schedule predictability), personal environment (e.g., privacy, personal space, connectivity with family), and common features/amenities (e.g., quality of food, medical care, laundry). The team members took notes of their observations, as well as a limited number of photographs. These observations informed the team's development of questions for focus groups and SME discussions.

In February 2018, two other members of the project team sailed on a WMEC from Portsmouth, Virginia, to Mayport, Florida. In addition to observing the cutter environment and talking to crew members, the team conducted two focus groups with members of the crew. These initial focus groups allowed the team to refine questions for later focus groups.

The combined inputs from the two cutter trips gave the team valuable insight into the cutter work environment, including differences between WMSLs and WMECs. Specifically, our field work suggested that service members may respond to DAFHP in a variety of different ways; DAFHP could influence service members' attitudes toward and satisfaction with USCG, their motivation to remain in the major cutter community, and their desire to continue a career in USCG (the final point is consistent with the DoD literature). However, neither the existing literature nor our qualitative analysis indicated exactly how we should *measure* DAFHP and its influence on personnel—time deployed could influence personnel in a cumulative fashion, longer periods of deployment could have a different influence than shorter periods, or the ratio of time deployed to time at home could be the driver (we test several of these measures). But our field work suggested that personnel are also sensitive to the pace of inport operations and that

quality of life while away from home plays some role in service members' responses to DAFHP. As previously stated, insights from the field work were used to help develop focus group and SME discussion questions and provided context for the study findings.

Focus Groups

To complement our quantitative analyses, we conducted focus groups with WMSL and WMEC cutter crew members between February and May 2018 to better understand how cutter personnel view PERSTEMPO, living conditions on cutters (i.e., quality of life), and compensation and benefits and how those all relate to retention and outcomes, such as workload stress and family challenges. The WMECs were chosen as a comparison for the WMSLs because WMECs have key similarities to WMSLs (large crews, law enforcement missions, long patrols) but are older and smaller cutters. We selected locations to represent the two WMSL home ports of Alameda and Charleston and three other locations that have sizeable numbers of WMECs. Because the majority of WMECs are in the USCG's Atlantic Area, the WMEC focus group locations were on the Atlantic coast: Boston, Kittery, and Portsmouth.[4]

To schedule focus groups, we coordinated with a USCG cutter scheduler and local points of contact to identify dates when cutters would be in port and crews available to participate. Table 4.1 provides background information on focus groups, by location, including cutter type (WMSL versus WMEC), weeks when focus groups were conducted, number of groups, and number of participants.

Table 4.1. Focus Group Background Information, by Location

Port	Cutter Type	Week	Number of Groups	Number of Participants
Charleston, South Carolina	WMSL	April 2	6	35
Alameda, California	WMSL	April 16	11	32
Boston, Massachusetts; Kittery, Maine	WMEC	April 23	20	106
Portsmouth, Virginia	WMEC	February 23, May 7	10	49
Total			47	222

NOTE: Portsmouth, Virginia, includes the two focus groups conducted aboard the WMEC in February, as well as the eight groups conducted on shore with cutter crew members in May.

[4] According to information provided by a Coast Guard officer during the course of the project, 24 WMECs have home ports in the Atlantic Area and three have home ports in the Pacific Area. Of the Atlantic Area ports with WMECs, the three locations we selected have two or more WMECs. This is consistent with the information provided in USCG, undated-b.

In total, we conducted 47 focus groups with 222 USCG cutter crew members. Thirty percent of the participants were from WMSL crews and seventy percent from WMEC crews. Given that only one location (Alameda) was in the USCG's Pacific Area, most participants (86 percent) were from crews in the USCG's Atlantic Area.

Types of Focus Groups

Focus groups were organized by pay grade categories to ensure participants felt comfortable discussing cutter issues in a focus group format. Table 4.2 provides information on the numbers of groups and participants by the six pay grade categories, broken out for WMSLs and WMECs. For enlisted groups, pay grades for the early to midlevel enlisted groups overlapped with pay grades for the senior enlisted groups because of the logistical constraints of having E-6 personnel in their own groups at each location. Similarly, warrant officers participated in either senior enlisted groups or junior officer groups, depending on scheduling availability.

Table 4.2. Types of Focus Groups

	WMSL		WMEC	
Pay Grade Category	**Number of Groups**	**Number of Participants**	**Number of Groups**	**Number of Participants**
Enlisted				
Junior (E-1–E-3)	1	8	5	33
Early to midlevel (E-4–E-6)	5	24	8	50
Senior (E-6–E-9, warrant)	4	12	9	39
Officer				
Junior (O-1–O-2, warrant)	3	15	4	20
Senior (O-3–O-6)	4	8	4	13
Total	17	67	30	155

Participant Characteristics

The focus group sample represents a range of pay grades, occupations, and demographics. In a series of tables, we provide details on characteristics of focus group participants, which we compare with the population of USCG cutter personnel. We begin with Table 4.3, which provides representation by pay grade and occupational categories.

Table 4.3. Focus Group Participant Pay Grade and Occupational Categories

Category	Number of Participants	Percentage of Participants	Percentage of USCG Cutter Personnel
Pay grade			
E1–E3	40	18	26
E4–E6	89	40	51
E7–E9	33	15	9
Warrant	6	3	2
O1–O2	30	14	8
O3–O6	23	10	4
Did not provide	1	<1	—
Occupational category			
Operations	76	34	19
Engineering	69	31	33
Service/support	25	11	16
Nonrate (enlisted)	40	18	28
Did not provide	12	5	4

NOTE: Percentages for focus group sample are based on the total number of participants (222). Occupational categories were created using the same logic used to categorize occupations for the quantitative analyses. To match our sample, the USCG cutter crew percentages are based on personnel in pay grades E1 through O6 who were assigned to WMSLs or WMECs during the spring of FY 2017 in our personnel data files (our files did not include information from the spring of FY 2018, the period of time when we collected focus group information). The rating distribution in our personnel files includes only enlisted personnel.

Table 4.4 shows participant educational status, broken out for enlisted and officer participants because of the higher educational requirements to join the officer corps than to join the enlisted corps. We do not include parallel information for cutter personnel because the administrative files used to form our quantitative data set did not include an education credential.

Table 4.4. Focus Group Participant Educational Status, Separately for Enlisted and Officers

Educational Status	Number of Participants	Percentage of Participants
Enlisted		
GED or no high school diploma	2	1
High school diploma	48	29
Some college	84	52
College graduate	28	17
Graduate school	1	1
Officer (including warrant)		
GED or no high school diploma	0	0

Educational Status	Number of Participants	Percentage of Participants
High school diploma	1	2
Some college	2	3
College graduate	41	69
Graduate school	15	25

NOTE: Percentages for focus group sample are based on the total number of enlisted participants (163) for the enlisted percentages and the total number of officer participants (59) for the officer percentages.

Table 4.5 provides gender and marital status for focus group participants.

Table 4.5. Focus Group Participant Gender and Marital Status

Demographic	Number of Participants	Percentage of Participants	Percentage of USCG Cutter Crew
Gender			
Male	187	84	89
Female	33	15	11
Missing/unclear	2	<1	
Marital status			
Single (never married)	89	40	53
Married, of which spouses are	124	56	47
Civilian (nonmilitary)	97	44	
USCG[a]	21	9	
Military (not USCG)[a]	6	3	
Divorced or separated	7	3	
Widowed	0	0	

NOTE: Percentages for focus group sample are based on the total number of participants (222). To match our sample, the USCG cutter crew percentages are based on personnel in pay grades E1 through O6 who were assigned to WMSLs or WMECs during the spring of FY 2017 in our personnel data files (our files did not include information from the spring of FY 2018, the period of time when we collected focus group information). The personnel data include less detail on marital status than the questionnaires collected from focus group participants.
[a] Participants indicated whether their military (USCG or otherwise) spouses were on active duty or separated/retired/reserve. Because of the small numbers of participants in each category for military spouse type, we collapsed the military spouse categories.

Since prior research shows differences in marital status for male and female military members,[5] we also show the breakdown of marital status by gender in Table 4.6. The percentage of female participants in this study's focus groups who are married to other USCG members (33

[5] Molly Clever and David R. Segal, "The Demographics of Military Children and Families," *Future of Children*, Vol. 23, No. 2, 2013, pp. 13–39; David R. Segal and Mady Wechsler Segal, *America's Military Population*, Vol. 59, No. 4, Washington, D.C.: Population Reference Bureau, 2004.

percent) is larger than the percentage of male participants who are married to other USCG members (5 percent); these numbers are similar to previous research.

Table 4.6. Focus Group Participant Marital Status, Separately by Gender

Marital Status by Gender	Number of Participants	Percentage of Participants	Percentage of USCG Cutter Crew
Male			
Single (never married)	76	41	50
Married, with spouses who are	105	56	50
Civilian (nonmilitary)	93	50	
USCG[a]	10	5	
Military (not USCG)[a]	2	1	
Divorced or separated	6	3	
Widowed	0	0	
Female			
Single (never married)	13	39	71
Married	19	58	29
Civilian (nonmilitary)	4	12	
USCG[a]	11	33	
Military (not USCG)[a]	4	12	
Divorced or separated	1	3	
Widowed	0	0	

NOTE: Percentages for focus group sample are based on the total number of male participants (187) for the male percentages and total number of female participants (33) for the female percentages.
To match our sample, the USCG cutter crew percentages are based on personnel in pay grades E1 through O6 who were assigned to WMSLs or WMECs during the spring of FY 2017 in our personnel data files (our files did not include information from the spring of FY 2018, the period of time when we collected focus group information). The personnel data include less detail on marital status than the questionnaires collected from focus group participants.
[a] Participants indicated whether their military (USCG or otherwise) spouses were on active duty or separated/retired/reserve. Because of the small numbers of participants in each category for military spouse type, we collapsed the military spouse categories.

Participants also indicated whether they were cuttermen (denotes five years of cutter service), the last time they were away from home port on a cutter, and the next scheduled time away from home port on a cutter. A majority of participants (70 percent) indicated they were not cuttermen and all but one participant had been away from home port on a cutter, although a majority (57 percent) reported having been in home port for at least four weeks. A majority of participants (74 percent) also reported that they were not scheduled to go away from home port for at least four weeks. In sum, many participants were in home port for a lengthy period (two to three months) because their assigned cutters were undergoing maintenance.

Focus group participants were somewhat more senior than USCG cutter crews, and officers appear to have participated at higher levels than enlisted personnel (Table 4.3). These differences are a likely explanation for the other differences observed between focus group participants and personnel assigned to major cutters. To some extent, the higher participation rate by officers could have been caused by the size limits placed on focus groups. Although we offered multiple focus groups to enlisted personnel, we limited each group so that participants could all contribute to the discussion; at the same time, we worked to obtain enough officers in each focus group to have a meaningful discussion. Table 4.5 indicates that focus group participants were more likely to be married than USCG cutter personnel (but also note that the personnel data include less detail on marital status than the focus group questionnaires). Women are slightly over-represented among focus group participants.

Procedure

Each focus group was led by an experienced facilitator and a note-taker. The facilitator introduced the purpose of the focus groups to participants. Participants were provided printed copies of informed consent statements and asked to complete a short background questionnaire. Appendix B provides text from the questionnaire and consent form. Another member of the research team took transcript-style notes on a RAND-encrypted laptop and used a numerical system to track the conversation without identifying individual participants. The notes (transcripts) provided the "raw" data used in qualitative coding and analysis.

The facilitator followed a protocol to ask participants about factors related to cutter work environment, quality of life, and retention, as well as ways to improve work environment, quality of life, and retention. The questions were designed to address topics from the relevant literature on PERSTEMPO and themes from our field work. See Appendix B for the focus group protocol.

Qualitative Coding and Analysis

To conduct our qualitative coding and analysis, we used Dedoose, an online software program. Our coding approach was both deductive and inductive; we used the protocol questions to guide the initial coding categories (deductive method) and reviewed text within each broader code to develop subcodes as needed (inductive method). A senior researcher on the project team developed the structure of the initial coding categories (i.e., the initial coding tree) with inputs from another experienced qualitative coder.

We conducted coding in two phases. For the first phase, two junior research team members used the initial coding tree to assign codes to relevant excerpts in the transcripts. To ensure coding consistency between the two junior coders, they each coded an independent set of transcripts. Using the Training feature in Dedoose, a senior researcher created a test for each junior coder by using the transcripts that one coder used to "test" the other coder. Dedoose

calculates Cohen's kappa coefficient, a measure of inter-rater agreement.[6] Initial coding agreement fell within the fair-to-good level, so the two junior coders met with a senior researcher to discuss and resolve discrepancies before continuing to code. To ensure that the junior coders had acceptable levels of coding consistency, they coded another set of transcripts and met with two senior researchers to settle any remaining issues with the coding.

In the second phase of coding, two senior researchers read through text that the junior coders had coded and identified emergent themes. The senior coders also analyzed themes across focus group type, primarily focusing on WMSL and WMEC group differences. Where feasible, coders also noted whether themes were more prominent for enlisted or officer groups. The senior coders coded, analyzed, and met to discuss themes, as needed. The final coding guide is in Appendix C.

SME Discussions

To provide context for the project's findings and recommendations, we held SME discussions in July 2018. We developed a semistructured protocol of policy-related questions (see Appendix D) and worked with our project point of contact to identify USCG offices with SMEs. We identified the following headquarters offices and briefly describe the topics we asked their SMEs to address:

- **Office of Cutter Forces (CG-751):** planning and managing of major cutters
- **Office of Naval Engineering (CG-45):** maintenance of cutter fleet, manning related to maintenance contractors and USCG maintenance personnel
- **Office of Worklife Programs (CG-111):** policies, programs, and resources for cutter crew work-life issues (e.g., separation from family)
- **USCG Personnel Service Center, (CGPC-EM-2 [enlisted personnel] and CGPC-OPM-2 [officers]):** assignment policies, especially as they relate to cutter personnel.

We coordinated with our project point of contact to schedule discussions in person at USCG Headquarters in Washington, D.C., or by phone (if the SMEs were not local or available to meet in person). We held discussions with SMEs from the following offices: CG-751 ($n = 2$), Personnel Service Center ($n = 2$), and CG-111 ($n = 2$). We did not meet separately with the Office of Cutter Forces SMEs because two of them attended the team's project update briefing on July 31, 2018. During that briefing, the Office of Cutter Forces SMEs provided feedback on the project findings and future analytic plans. The project team noted the feedback and integrated it into future project activities (notably, the quantitative analyses).

During discussions, one member of the project team facilitated the discussion while another member took notes on a RAND encrypted laptop. The notes were later reviewed by members of

[6] Cohen's kappa values less than 0.40 indicate poor agreement, values from 0.40 to 0.75 indicate fair to good agreement, and values above 0.75 indicate excellent agreement; Jacob Cohen, "A Coefficient of Agreement for Nominal Scales," *Educational and Psychological Measurement*, Vol. 20, No. 1, 1960, pp. 37–46.

the team to identify relevant information that could inform the project's analysis, findings, and recommendations.

Summary

We combined two approaches to address the key questions for the project. Quantitative methods used USCG personnel records to model the decision to remain in the USCG, as well as key promotions and remaining in the cutter community. Qualitative methods included field work (i.e., team member trips aboard two major cutters, a WMSL and a WMEC, to observe life aboard a cutter); focus groups with 222 cutter crew members; and discussions with a select number of USCG policy SMEs. The qualitative data provided information about working conditions, quality of life, and how time deployed is perceived by service members. Our recommendations are formed based on both the quantitative and the qualitative information, allowing us to include a broader range of outcomes and recommendations than would be possible based on either quantitative or qualitative data alone. In the next two chapters, we describe the key quantitative findings from the study.

5. Quantitative Models Explaining Retention and Promotion Within the Cutter Community

In this chapter, we describe our quantitative data and present a series of descriptive measures based on the data on USCG personnel and the movements of USCG cutters. We also present the results of our regression models examining how experiences onboard major cutters are associated with continuing in the USCG. We focus on models of reenlistment of enlisted personnel, but we also present information for commissioned officers and warrant officers.[1] Finally, we present models of enlisted personnel based on other outcomes: the probability of achieving key promotions and the probability of remaining in the major cutter community.

We focus our analyses on the large white-hull cutter fleet—WMECs, WHECs, and WMSLs. These major cutters are away from home port for substantial periods of time and are key assets for accomplishing the USCG's maritime mission. The major cutter personnel thus experience substantially longer periods of time away from home than personnel assigned elsewhere in the afloat community. As is common among USCG personnel, we refer to these cutters by length, with the exception of the WMSL *Legend*-class cutters, to which we refer as *WMSLs*. The USCG also utilizes buoy tenders, patrol boats, tugs, icebreakers, and a few additional cutters of nonstandard sizes; we include some information on them and on the personnel who serve on them, but our primary interest is the large white-hull cutter community.[2] For simplicity, we refer to this community as the major cutter community.

In Chapter 2, we presented a series of statistics describing the number of personnel in the USCG and the subset assigned to major cutters, as well as statistics describing cutter movements. These statistics indicate that there is variation in terms of operational patterns, both over time and (especially) across major cutter platforms. We developed a series of metrics to describe the experiences of personnel on major cutters, based on these statistics and some information available from field work and initial focus groups. We focus on PERSTEMPO and attempt to determine how PERSTEMPO on major cutters is related to the decisions USCG personnel make—such as deciding to reenlist and spend additional time in the USCG or deciding to continue serving in the major cutter community. We test the hypothesis that experience on major cutters influences speed of promotion.

In this chapter, we focus on retention and promotion—outcomes that can be modeled with quantitative data on personnel and major cutter movements. However, we recognize the importance of other outcomes, such as changes in attitudes and intentions. In the next chapter,

[1] The number of warrant officers is too small, with too little variation, to model their retention decisions.

[2] Aside from the most common cutters, the USCG utilizes a few large cutters of other sizes, such as the 295-foot cutter *Eagle* (a three-masted sailing ship) and the 282-foot cutter *Alex Haley*.

we discuss findings related to attitudes and intentions based on qualitative data collected from USCG personnel. In the final chapter, we formulate a series of findings and recommendations based on both quantitative and qualitative information.

As noted in Chapter 2, there are several differences between personnel who serve on major cutters and those who do not; also, there are differences in terms of rating and experience between platforms. These factors are likely related to retention. We sought to learn about the relationship between PERSTEMPO and retention (or promotion) while holding other factors (such as rating, pay grade, and gender) constant. Regression models are well suited for such analyses because regression models allow us to separate effects linked to individual characteristics, such as gender, ethnicity, age at accession, rating, and test scores, from effects that are correlated instead with work intensity on the major cutters (where work intensity can be measured by PERSTEMPO and inport operations).

Based on this information and the existing literature, we developed the following series of measures to capture various aspects of operational tempo:

- **assigned to a major cutter in a three-year window prior to making a reenlistment decision**
- **number of months assigned to a major cutter in the three-year window prior to making a reenlistment decision**
- **platform:** 210-foot WMEC, 270-foot WMEC, WHEC, or WMSL
- **intensity of operations:** ratio of DAFHP to total days assigned to the cutter; ratio of inport operations days to total days assigned to the cutter during a three-year window prior to a reenlistment decision, as well as an indicator for being away from home for 90-plus days in a row at least once during the three-year window
- **total number of DAFHP:** away from home port for more than 150, 180, or 210 days per year in the year prior to making the decision (the advantage of this measure is that it is related to USCG OPTEMPO policy).[3]

Given our focus on reenlistment, we define the measures during the period preceding reenlistment decisions. We alter some of the measures to be appropriate for officer careers; see the next section for more information on officers.

In the first model, we compare reenlistment rates for those who were assigned to major cutters with reenlistment rates in other parts of the USCG; we add no controls for operational intensity. In the other models, we control for platform; our fieldwork, conversations with SMEs, and focus groups all provided evidence that the type of platform (for example, a 210-foot WMEC versus a WMSL) is likely to have an influence on work conditions.

These measures described above are related, sometimes closely related, to each other, but they may capture slightly different aspects of service members' experience. While the literature

[3] We considered the number of days deployed in the three-year window prior to the decision, but because many first-term personnel are assigned to cutters during the three-year window, very few personnel averaged more than 185 or 200 days per year for the entire three-year window.

suggests that there is an optimal level of deployment and that retention rates are lower both above and below the optimal level, the existing research offers only limited practical advice on exactly how to best capture or measure deployments and other work conditions. Therefore, we form and test the measures above, and we allow for nonlinearity in the effects of deployment. Although USCG deployments differ in nature from deployments experienced by DoD personnel, the intensity-of-operations measure is probably the most closely related to the types of deployment measures used in earlier work on DoD personnel.

A key analytic decision involves how to measure PERSTEMPO or deployment experience in the period prior to a reenlistment decision. This would be somewhat more straightforward if all personnel reenlisted at the same point in time (or at the same number of months of service). But even initial reenlistment decisions occur at different times within careers. First, some (enlisted) personnel have four-year terms and others have six-year terms.[4] Second, personnel may make a decision within a few months of the actual end of their initial terms. Finally, some choose to extend their initial terms for a short period of time. According to discussions with SMEs, such extensions generally occur for the convenience of the personnel. When personnel extended, we moved their decision dates to the end of the extension.[5] This means that the window immediately prior to the decision is different for different people. To capture the influence of deployments and other work conditions prior to the decision, we calculate the time spent deployed (as well as the time spent working on inport operations) looking backward from the decision point.[6]

Figures 5.1 through 5.3 provide additional information about assignment and intensity of operations within the major cutter community. These figures describe the recent experiences of enlisted personnel facing an initial reenlistment decision. Figure 5.1 indicates that the percentage of enlisted personnel assigned to major cutters decreased somewhat during the time period covered by our data but that number of months on major cutters prior to the first reenlistment decision remained roughly constant (months are calculated only for those who were assigned to major cutters). The decrease in the percentage assigned to major cutters is similar to the trends shown in Chapter 2 and likely represents a shift away from junior enlisted personnel on the newer platforms. Figure 5.2 shows that, among enlisted personnel facing an initial reenlistment decision, the ratio of days deployed to total days assigned to major cutters remained roughly constant but the ratio days classified as inport operations increased over this time period. This

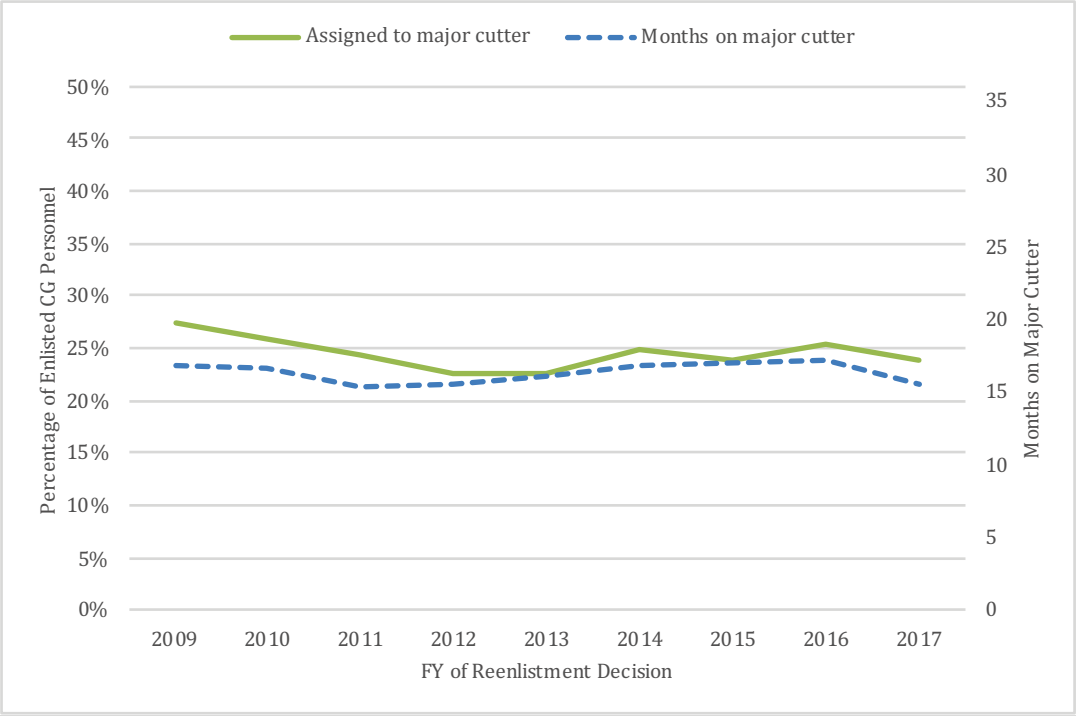
[4] In fact, a few enlisted personnel have eight-year terms. However, we exclude these personnel from our analyses; we generally cannot measure reenlistment for this group, as nearly all of them enlisted less than eight years from the end of the period covered by our data.

[5] The personnel files generally differentiate between extensions and reenlistments. Because of some inconsistencies within records, we follow a general rule of considering periods of time that last less than 24 months past the end of the initial contract to be extensions; periods of time lasting at least 24 months past the end of contract are considered reenlistments. Reenlistments generally are at least four years in length. See Appendix A for more information, and see the next section for a discussion of officer career patterns, which differ from enlisted career patterns.

[6] Our methodology follows that of Hosek and Martorell, 2009, for which the authors measured deployments among DoD personnel in a parallel fashion.

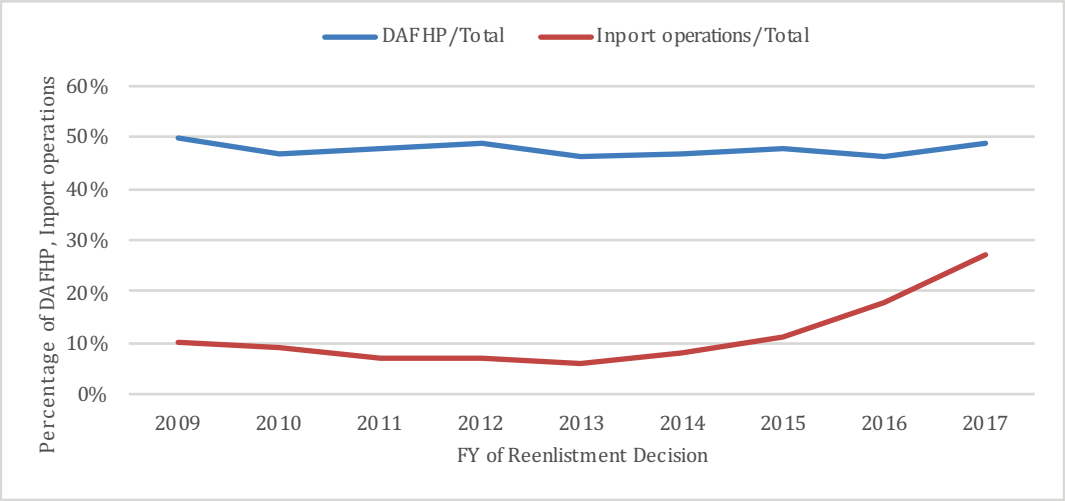
trend in inport operations days could reflect a change in how days are recorded, but the trend is consistent with information reported by those taking part in our focus groups. Figure 5.3 shows the distribution of DAFHP. In this case, we calculate DAFHP only for the year immediately prior to the reenlistment decision. We choose this time period because, as shown in Figure 5.1, most enlisted personnel facing an initial reenlistment decision have spent less than half of their time to date in the USCG assigned to major cutters. Figure 5.3 suggests that the distribution of days has changed little over time, although personnel making a reenlistment decision in the latter years are more likely to have spent at least 150 DAFHP in the year prior to the decision.

Figure 5.1. Assignment of Enlisted Personnel to Major Cutters



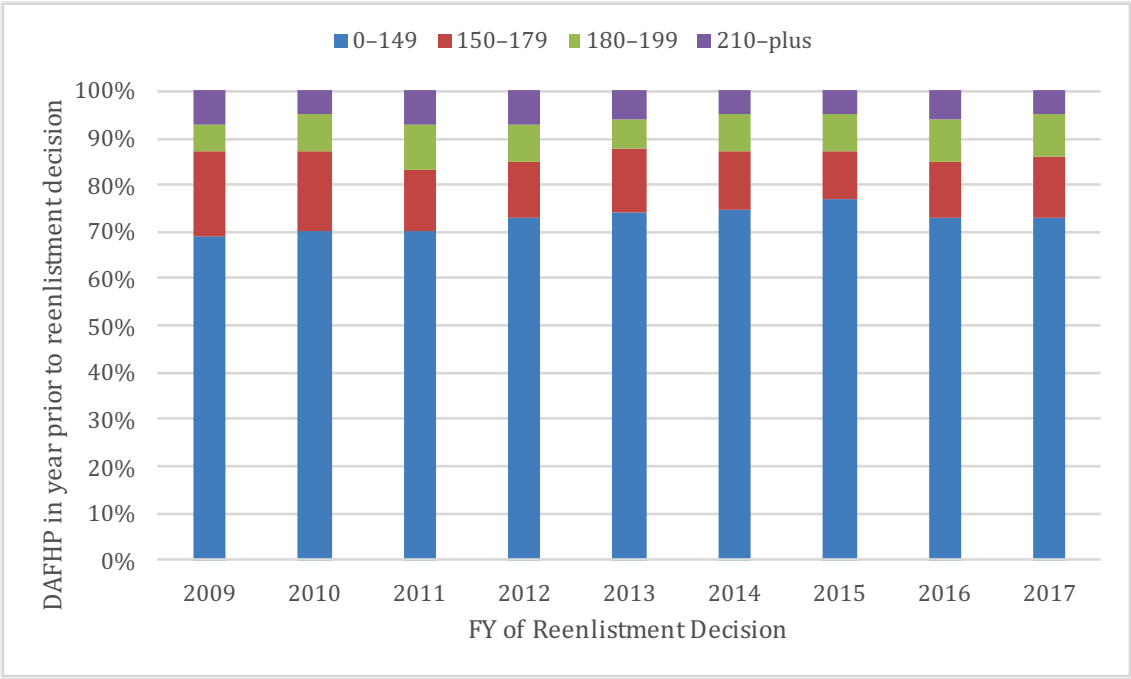
SOURCE: Data provided by the USCG.
NOTE: This figure includes enlisted personnel; statistics are tabulated based on the year of the initial reenlistment decision.

Figure 5.2. Ratios of DAFHP and Inport Operations to Total Days Assigned to Major Cutter



SOURCE: Data provided by the USCG.
NOTE: This figure includes enlisted personnel assigned to major cutters and facing an initial reenlistment decision.

Figure 5.3. Distribution of DAFHP



SOURCE: Data provided by the USCG.
NOTE: This figure includes enlisted personnel assigned to major cutters and facing an initial reenlistment decision.

In summary, Figures 5.1 through 5.3 suggest that the experiences of enlisted personnel who are contemplating a reenlistment decision have been relatively constant in terms of DAFHP, but

the increase in inport operations suggests that overall operational intensity was increasing over this time period.

Next, we use the measures above and the personnel data to model the relationships between serving on a cutter and personnel outcomes. Our data set includes observations on USCG personnel over the period January 2005 to the end of FY 2017.[7] To have complete measures of experience on the major cutters, we focus on the careers of personnel who joined the USCG in January 2005 or later. Thus, retention decisions occur beginning in 2009. This means that the earliest retention decisions in our data occur after the first WMSL became operational. In the later years of our data, more WMSLs are operational and more personnel serve on this subset of major cutters.

We examine two types of outcomes: *retention* and *promotion*. We develop several different measures of retention; we also develop measures of key promotions. We discuss each measure in turn in the next section.

Throughout this chapter, we model a number of dichotomous outcomes—personnel either continue in the USCG or do not; they are promoted within a given time period or they are not. Such outcomes are appropriately modeled using a logit (logistic) model. However, interpreting the coefficients from these models is not straightforward because the relationship between the estimated coefficient and the predicted change in the outcome is nonlinear. In other words, glancing at the estimates provides little sense of the relationships between the control variables (such as gender, rating, or platform) and the outcome of interest. Therefore, we calculate marginal effects for variables of interest (cutter assignment or operational intensity as defined above). Marginal effects measure the relationship between the variable of interest and the outcome at defined points. We present these marginal effects to provide a sense of how operational intensity correlates with the outcome of interest, most often reenlistment.

It is worth noting that a fraction of personnel never makes a reenlistment decision because they do not complete the first term (they *attrite*).[8] It is possible that serving on a cutter is related to attrition. To explore this issue, we estimate several early-career outcomes in the form of simple *continuation* or *completion* models; we estimate the probability of continuing in the USCG for a set number of months or of completing an initial enlistment term (in other words, the probability that the service member does not attrite).[9] Compared with personnel in DoD, USCG personnel have relatively high continuation rates. Continuation rates are lower among enlisted

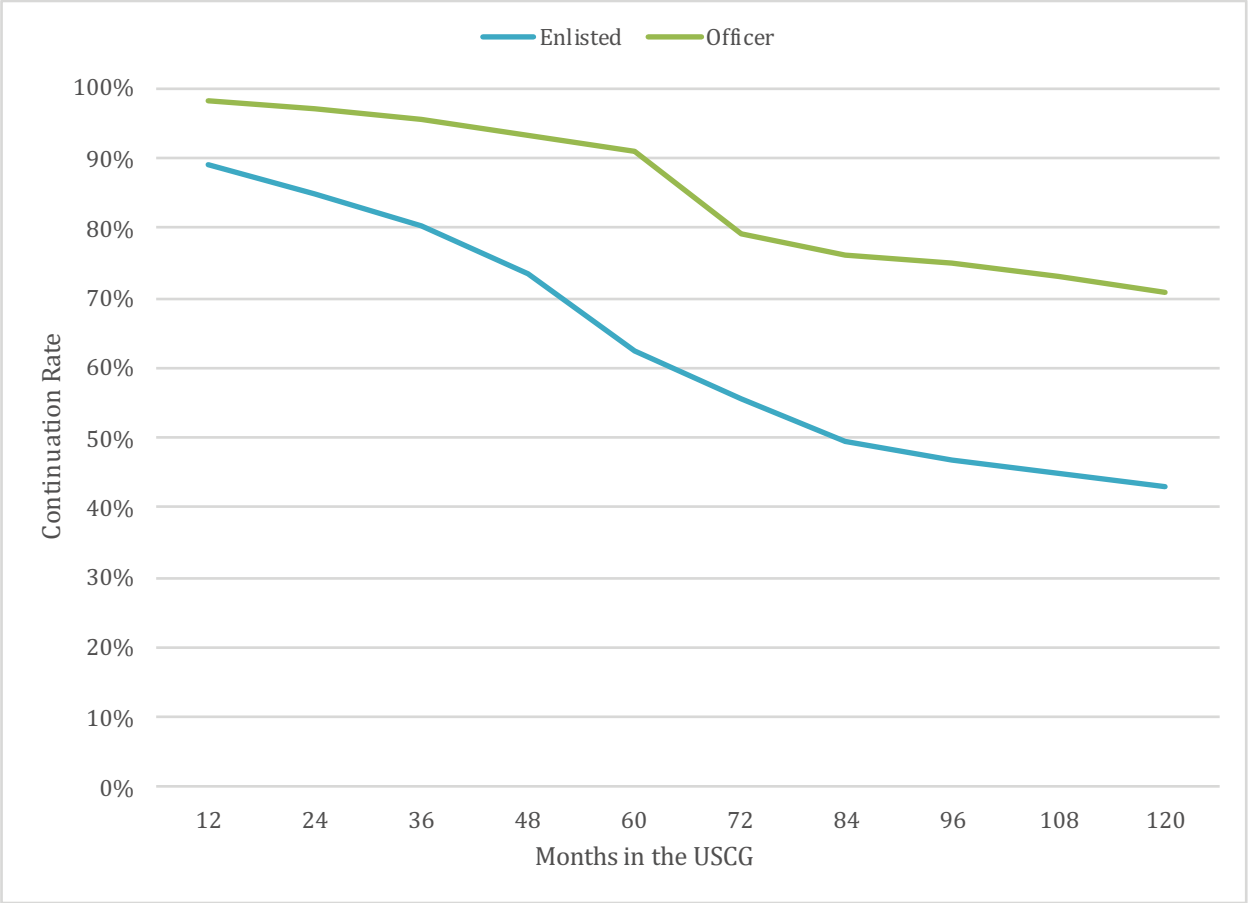
[7] Our data include all active-duty USCG personnel. We exclude most reservists but include those who are on long-term activation. The WMSLs became operational over the period covered by our data; therefore, we have more information on other platforms. See Appendix A for more details on the data; descriptive statistics appear in Table E.1 in Appendix E.

[8] Also, some first-term personnel are not eligible to reenlist (we do not have information on reenlistment eligibility).

[9] Some enlisted service members have four-year terms; others have six-year terms. A few service members' records indicate terms of other lengths; we exclude them from our main analyses, although including them does not change our results. See Appendix A for more information.

personnel than among officers, but about half of enlisted personnel and roughly three-quarters of officers remain in the USCG for at least seven years. Figure 5.4 shows overall continuation rates for enlisted personnel and officers in our sample (we exclude warrant officers as they were classified as enlisted personnel during the early years of their careers).

Figure 5.4. USCG Continuation Rates, Enlisted and Officers



SOURCE: Data provided by the USCG.

We model continuation and completion of the first term, examining the effect of being assigned to major cutters prior to the reenlistment decision while holding constant other factors (such as age at accession or gender). These results, shown in Table E.2, Appendix E, consistently indicate that *serving in the afloat community is associated with higher rates of continuation and completion*, and the differences are substantial.[10] Serving on major cutters consistently is

[10] The results included in Appendix E measure being assigned to a major cutter with a dichotomous variable, but other specifications (such as the number of months spent afloat during the first 48 months in the USCG) produced similar results. We recognize that those who spend longer in the USCG have more opportunities to serve in the

associated with higher continuation and completion than serving ashore. In some cases, personnel who serve on major cutters have marginally lower continuation or completion rates than personnel serving elsewhere in the afloat community, but continuation/completion rates are consistently higher for those on major cutters than for those serving ashore. The result is present in models that examine 24-month continuation, 48-month continuation, 48-month continuation conditional on completing 24 months, and completion of the initial contract.[11] These are the differences that remain after controlling for gender, ethnicity, family status, rating group, age at accession, AFQT score, and year-quarter of accession (see Table E.2, Appendix E).

Our data do not indicate exactly *why* those who serve afloat have higher continuation rates; to some extent, those who serve afloat and those who do not may differ in important but difficult-to-measure ways. For example, those who serve afloat may connect more strongly with the USCG's mission. Our first-term completion model indicates that completion rates are lower among those who serve on WHECs than among those who serve on other major cutters or elsewhere in the afloat community (although still higher than those serving ashore). In contrast, completion rates are *higher* among those serving on WMSLs than among those serving elsewhere in the USCG. Such differences could be associated with living or working conditions on these major cutters.[12] (These results appear in the fourth column of Table E.2). In our focus groups, service members indicated that living conditions differed across platforms (see Chapter 6). In the case of the WMSLs, the cutters are new and the personnel often are new to them; these differences may or may not sustain in the future. To summarize, enlisted personnel who serve in the major cutter community have higher continuation and first-term completion rates than other enlisted personnel; in some cases, there are differences by platform.

We also modeled the second reenlistment decision (among personnel who reenlisted after their initial terms). These models are exactly parallel to the models of the first reenlistment decision, but, when appropriate, we included measures from the point of the second decisions. For example, we included an indicator that the service member had children at the second reenlistment point, and we calculated time on major cutters, operational intensity, etc., within the

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afloat community; for this reason, we consider the model of 48-month continuation conditional on 24-month continuation with an indication of assignment to a major cutter to be our preferred specification. But again, the results are similar across models.

[11] Eighty-six percent of enlisted personnel who serve on major cutters complete at least 48 months in the USCG; among personnel who do not serve on major cutters, the 48-month completion rate is about 70 percent. The completion rate among those serving elsewhere afloat is 87 percent. This indicates that attrition is dramatically lower among those serving afloat. Early-term losses related to training likely explain some of the difference, but, even conditional on completing 24 months, 48-month continuation rates are about 4 to 5 percentage points higher among those serving afloat. Consistent with prior research, predicted continuation rates are higher for men, for those who have children at accession, those who access "late" (at ages 23–25), and those with higher Armed Forces Qualification Test (AFQT) scores.

[12] In this document, as is common in the literature, we report only those differences that are *statistically significant*; we use a 5-percentage-point cutoff to determine significance and therefore report only results that would be expected to occur by chance no more than one time out of 20. Most of the reported results well exceed this cutoff.

three-year window preceding the second reenlistment decision. The results of these models appear in Appendix E, Table E.4. This sample is much smaller—both because some personnel do not reenlist at the end of the first term and because capturing the second decision requires following personnel for longer periods; only those who enlisted in the USCG before FY 2010 can be followed through a second decision and in cases with long first terms or initial extensions the sample includes only personnel from earlier years.

Next, we examine retention (reenlistment) outcomes.

Reenlistment

In an all-volunteer force, retention is a key aspect of personnel management. For enlisted personnel, the first reenlistment decision is an important retention point. Past research indicates that personnel making this decision are sensitive to variation in working conditions (including deployments).[13] For these reasons, we focus on the first reenlistment decision, although we also explore other outcomes related to retention.[14] We model reenlistment as a function of individual characteristics (including rating), indicators of the FY and quarter in which the reenlistment decision is made, and the cutter-specific measures outlined above. Individual characteristics include gender, race/ethnicity, age at enlistment, AFQT score at enlistment, and family status (marital status, presence of children).[15] We also include a measure of the national unemployment rate in the reenlistment models.[16] Past research indicates that many of these characteristics are correlated with reenlistment. (Later in this chapter, we model promotion and remaining in the cutter community in parallel fashion.)

[13] See, among others, Hosek and Totten, 1998, 2002; Hosek and Martorell, 2009; Fricker, 2002; Warner and Goldberg, 1984; Shiells and McMahon, 1993; and Hansen and Wenger, 2005.

[14] Officers do not reenlist for the same types of contracts. Therefore, we model continuation among officers, focusing on the time after their initial obligations are complete; we discuss this in more detail in the next section.

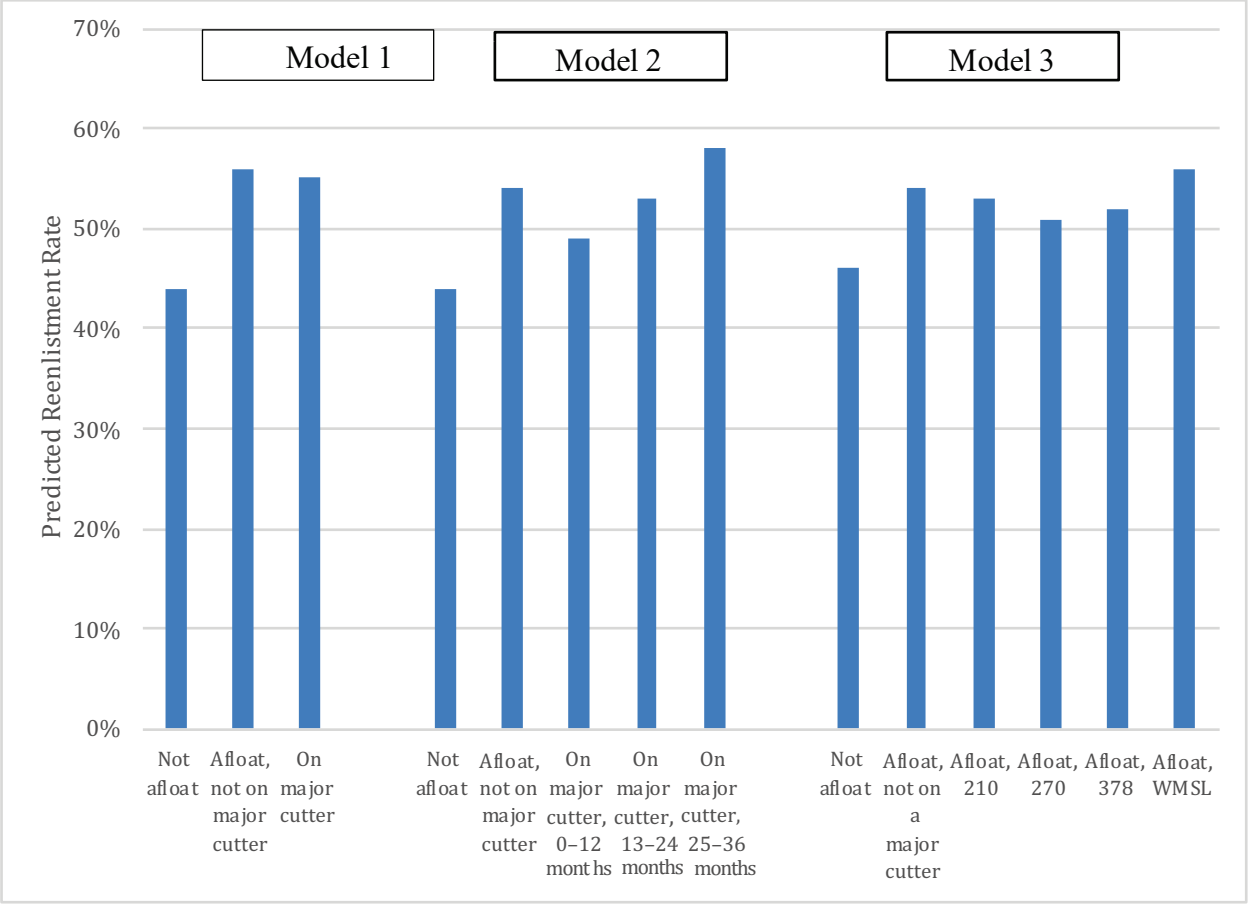
[15] We do not include years of service or rank/pay grade in our models; given the standard length of new contracts, there is little variation in this measure at the reenlistment point other than that introduced by extensions (see next section). Promotions prior to E-5 also tend to occur with little variation; we explore the influence of cutter service on E-5 promotion in the next section.

[16] We use the Bureau of Labor Statistics seasonally adjusted national unemployment rate; see U.S. Department of Labor, Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey," undated. While there are reasons to think personnel consider conditional at a regional or local level when searching for civilian unemployment, we use the national rate because many USCG personnel on major cutters are assigned to such areas as Honolulu, Hawaii; Juneau, Alaska; and Kittery, Maine. Unemployment rates in such areas are, in some cases, not readily available; also, local rates are measured with substantial variation and may not reflect the conditions that personnel consider. Specifically, personnel who are stationed in such areas as Juneau may be less likely to seek permanent employment in these areas after leaving the USCG; thus, the national rate likely reflects more-pertinent information.

Our main outcome of interest is reenlistment at the end of the first term.[17] First-term reenlistment rates differ only in minor ways across the period covered by our data; the overall first-term reenlistment rate among enlisted personnel is about 50 percent, but the rate is roughly 55 percent among those making decisions in FY 2016 and FY 2017. We run a series of models explaining first-term reenlistment; we use the measures developed above to describe major cutter experience (for example, operational intensity measured as the ratio of DAFHP to total days assigned to a major cutter). Figure 5.5 includes the key marginal effects from several of the models; marginal effects express how the predicted probability of reenlistment differs between USCG members who are otherwise similar in terms of observable characteristics but who have different levels of major cutter experience. Each model also controls for individual characteristics, as well as FY and quarter of the decision, as well as the national monthly unemployment rate at the time of the decision.

[17] In some cases, service members choose to *extend* their contracts rather than making reenlistment decisions; we define extensions as additional periods of service that last no more than 23 months beyond the end of the initial contract. Reenlistments are defined as occurring when service members remain in the USCG for at least 24 months after the end of their contract; thus, we do not consider those who make an extension and then depart to have reenlisted. Following Hosek and Martorell, 2009, and, based on conversations with SMEs, we do not consider extensions to be reenlistments. See Appendix A for more-detailed information.

Figure 5.5. Marginal Effects of Cutter Service on Predicted Reenlistment Rates, Controlling for Observed Characteristics



SOURCE: Authors' analyses based on data provided by the USCG. Output from logistic regression models. First-term regression models also control for gender, age, AFQT score, rating category, family status at decision point, FY and quarter of decision point, national unemployment rate at decision point. Models include all enlisted personnel making an initial reenlistment decision (n = 20,197). Model 1 includes indicators of afloat or on a major cutter. Model 2 includes indicators of afloat or on a major cutter, as well as months spent on a major cutter. Model 3 includes indications of afloat, major cutter platform, and months on the major cutter. Complete results are included in Table E.3, Appendix E.

Model 1 includes personal characteristics, indicators of FY and quarter of decision, and the national unemployment rate at the time of the decision. Model 1 also includes indicators of serving in the afloat community or on a major cutter. Model 2 also includes indicators of months spent on a major cutter (for those who served on a major cutter prior to their first reenlistment decision); the nonparametric framework reveals a nonlinear relationship between months on a cutter and reenlistment and suggests that reenlistment rates are higher among those who served 13–24 months on a major cutter prior to reenlistment than among those who served either fewer

or more months.[18] Model 3 also includes indicators of specific platforms. In each case, reenlistment rates are higher among those who served in the major cutter community than among those who serve ashore. While the predicted reenlistment rates differ somewhat across platforms, we note that the differences between platforms (for example, between reenlistment rates of those serving on 210-foot WMECs versus those of people serving on WMSLs) do not achieve statistical significance. However, reenlistment rates are predicted to be higher among all who serve on major cutters (regardless of platform) than among those who serve ashore.[19]

The results across these three models shown in Figure 5.5 suggest positive aspects of serving on a major cutter in terms of retention—those who serve on major cutters have higher reenlistment rates than those who serve ashore; those who spend more months on major cutters have higher reenlistment rates than those who spend fewer months.

Next, we include measures of work intensity: DAFHP and inport operations days.[20] We express these measures as proportions; for example, we divide the total DAFHP by the total number of days assigned to the cutter. We also include squared terms to capture nonlinear effects.[21] Figure 5.6 presents marginal effects from this model. The proportion of time spent in inport operations status is correlated with reenlistment. Predicted reenlistment is higher at levels that represent median or average levels of intensity. Predicted reenlistment rates are lower among those who have spent substantially more time than most either away from home or on inport operations. In the case of inport operations, spending very little time on inport operations is also associated with lower levels of reenlistment. In the case of time away from home port, predicted reenlistment rates are highest among personnel who spend roughly 40 percent of their days away from home. Note that the coefficients on the DAFHP and DAFHP-squared are jointly, but not individually, significant. For that reason, we recommend caution in interpreting the predicted differences in reenlistment rates between different ratios of DAFHP. In any case, predicted reenlistment rates vary only slightly across a wide range that describes the experiences of many service members; predicted rates are quite similar across ratios from 20 to 40 percent and are not markedly lower until time away from home well exceeds 50 percent, suggesting that service

[18] The difference in reenlistment rates between those serving 13 to 24 months and those serving 25 or more months is small and does not achieve statistical significance, but the pattern noted above is consistent across multiple models.

[19] Differences in reenlistment rates across platforms sometimes achieve statistical significance if a measure of months on the cutter is not included. This suggests that personnel may rotate onto different platforms at slightly different points in their careers.

[20] We measure DAFHP, as well as inport operations days, as ratios, dividing them by total days assigned to the cutter, as some personnel serve less time on cutters than others in the first years of their careers. We experimented with including maintenance days as well, but this measure is highly correlated with DAFHP and inport operations days.

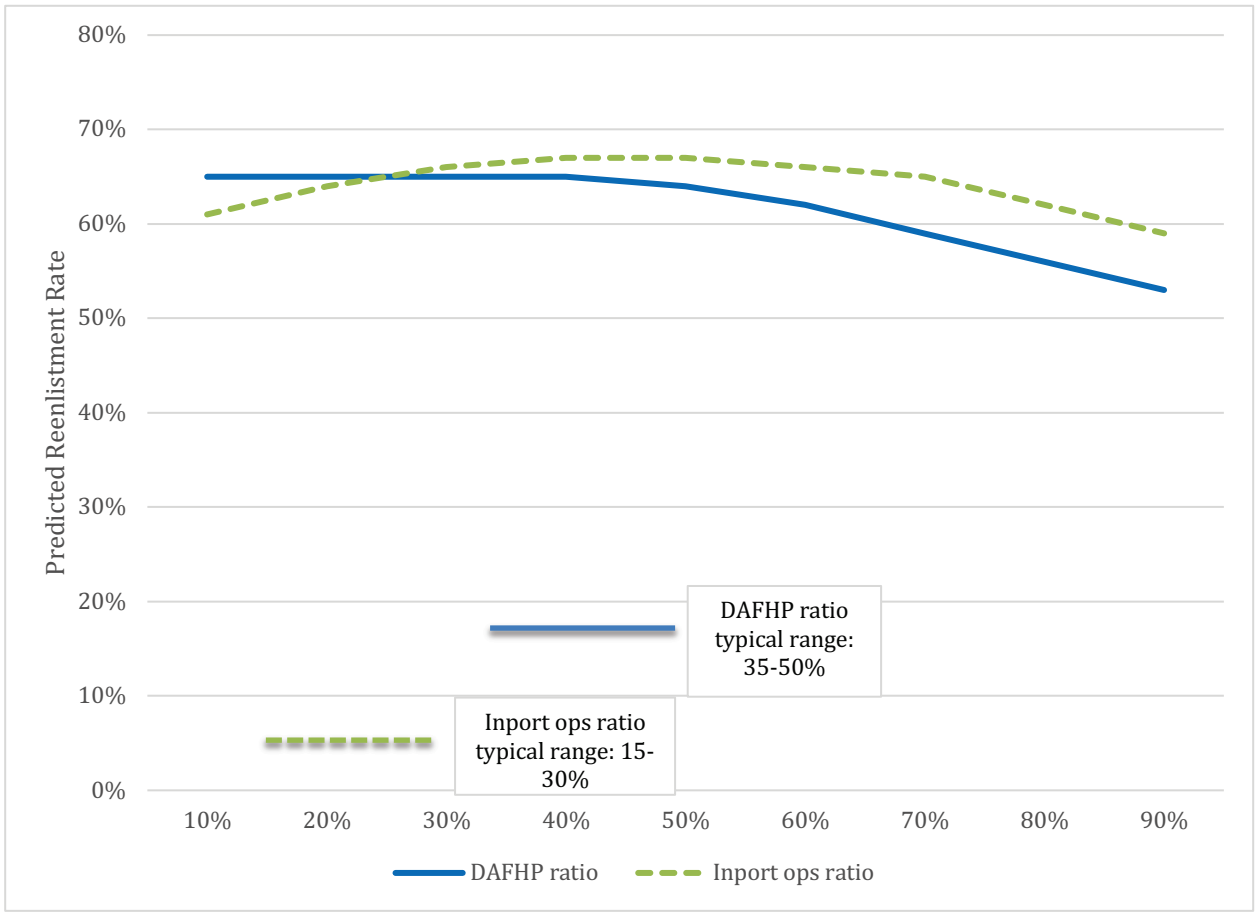
[21] In this case, given the high correlation between the variables, we tested for joint significance; the variables are jointly significant, indicating that, together, they are correlated with reenlistment.

members are not overly sensitive to OPTEMPO as expressed by proportion of days away from home port, at least not in the range that describes most service members' experiences. Rates are predicted to be about 2 percentage points lower when DAFHP rises to 60 percent. For context, DAFHP would be expected to average near 50 percent under current policy (although, again, variation occurs because of timing of personnel transitions between cutters and other factors). The preferred level of inport operations appears to occur near 30-50 percent. In the case of inport operations, predicted reenlistment rates begin to drop sharply beyond about 60 percent.[22]

Service member expectations would be expected to play into these results; the maximum reenlistment rates might be expected to occur in the ranges in which operations meet service member expectations. In particular, we might expect that service members whose work environment includes substantially more time away from home than *expected* to be less content and thus potentially less likely to remain in the USCG (and this is consistent with previous relevant research, as discussed in Chapter 3). This suggests that any changes to policy should be accompanied by a careful communications strategy and, if possible, by other changes to improve quality of life.

[22] Our relatively simple model examines the relationship between DAFHP and retention, holding constant all other factors (including inport operations); it does the same with inport operations and retention holding DAFHP constant. It is likely that there is some relationship between these variables that is not captured in this model. We patterned our measures of DAFHP and inport operations after those in Hosek and Martorell, 2009, by including information from the three years prior to the reenlistment decision. As suggested by Hosek and Martorell, 2009, we also tested measures formed from the year prior to the reenlistment decision; these results were very similar to those presented above. Finally, we modeled the second reenlistment decision; the results indicated that personnel making a second reenlistment decision were less sensitive to operations. In general, operational variables were not correlated with the second reenlistment decision.

Figure 5.6. Marginal Effects of Cutter Service on Predicted Reenlistment Rates, Intensity of Service



SOURCE: Authors' analyses based on data provided by the USCG. Output from logistic regression models. First-term reenlistment models also control for gender, age, AFQT score, rating category, family status at decision point, FY and quarter of decision, national unemployment rate, indicator of spending 90-plus days away from home in a row, and platform, as well as ratios of DAFHP to total days assigned to the cutter and inport operations to total days assigned to the cutter (this is the fourth model listed at the beginning of the chapter). The model includes only those enlisted personnel making a reenlistment decision after serving in the major cutter community (n = 4,919). Individual coefficients on DAFHP variables do not achieve statistical significance, but the coefficients are jointly significant, indicating that reenlistment does vary with DAFHP. See Appendix E, Table E.3.

In this specification, we also include an indicator for spending 90-plus days away from home port in a row. Spending at least 90 days away from home port is associated with higher levels of reenlistment.

Finally, we include a specification that measures operational intensity in terms of the total number of days deployed in the year prior to making a reenlistment decision. In this specification, the variables describing the number of days away from home port in the year prior to the decision are not statistically significant. This suggests that the ratios above may better describe personnel experiences as they relate to reenlistment decisions. Complete results for this model, and the other reenlistment models discussed above, appear in Appendix E, Table E.3.

Table E.4 in Appendix E includes parallel models for the second reenlistment decision. In most ways, these results are broadly similar to the results reported above for the first reenlistment decisions. In particular, reenlistment rates are higher among men, those who are married at the second decision point, and those who have children at the second decision point. Many of the coefficients on variables describing operational intensity on major cutters do not achieve statistical significance. The smaller sample sizes available to estimate these models may explain some of this. As was the case in the models of first reenlistment decision, serving afloat is associated with higher levels of reenlistment than serving ashore is. Some of the results indicate that reenlistment rates are lower among personnel serving on major cutters prior to their second reenlistment decision than among those serving elsewhere in the afloat community. As was the case above, serving more months on a major cutter is associated with higher reenlistment.

The results from reenlistment (and continuation) models indicate that, among enlisted personnel, *serving in the major cutter community is associated with higher levels of continuation and reenlistment than serving ashore is*. In general, those serving on a major cutter appear to reenlist at similar or slightly lower rates than those serving elsewhere in the afloat community. Some reenlistment rates vary slightly by platform, and there is some limited evidence that service members are sensitive to operational intensity. At this point, reenlistment rates among personnel serving on WMSLs appear to be comparable to, or occasionally higher than, rates among those serving on other platforms.

Continuation: Officers, Warrant Officers

Officers make up about 15 percent of active-duty USCG personnel, and warrant officers make up about 3 percent of personnel. Therefore, even given our relatively long time frame, the samples of these groups serving on major cutters are quite small. Additionally, officer contracts are recorded differently from enlisted contracts in the USCG personnel data; in many cases, the data indicate that officers have very long contracts (up to 30 years). For these reasons, we estimate continuation rates (rather than reenlistment rates) for officers; for warrant officers, we explored descriptive statics but lack the information necessary to explain reenlistment or even continuation with an emphasis on the major cutter community.[23]

For officers, we estimate the probability of continuing in the USCG for 66 months. This represents continuation beyond initial service; as shown in Figure 5.4 (above), officer continuation drops off sharply after 60 months, then stabilizes. We estimate models with some of the measures of major cutter service outlined above. We do not estimate a version of the completion equations reported for enlisted personnel because continuation rates among officers are quite high; over 90 percent of officers remain in the USCG for at least 57 months (we would

[23] For warrant officers, we note that continuation rates are very high; achieving warrant officer status requires first serving many years in the USCG (and thus choosing to reenlist multiple times). Therefore, 114-month continuation rates among warrant officers are roughly 90 percent.

consider an officer to have completed his or her initial obligation at this point). Thus, we have little variation in this outcome. Overall, 91 percent of officers reach at least six months, but, by 66 months, fewer than 80 percent remain. Conditional on remaining 66 months, about three-quarters of officers remain for at least 114 months.

We estimated 66-month models for officers with indications of each type of major cutter (as well as an indication for serving elsewhere in the afloat community); we also focused on the major cutter community and included measures of the ratio of time spent away and on inport operations. These models are quite similar to the enlisted retention models, but we have no AFQT scores for officers, and there is less variation in age at entry. Some of our results are similar to those for the enlisted community; men have higher continuation rates, as do those who had dependents upon entry into the USCG.

We do not present results in figures similar to Figures 5.5 and 5.6 above because many of the measures in our models are not statistically significant; therefore, the results could have occurred by chance.[24] But a general pattern does emerge from these models—as is the case for enlisted personnel, officers who serve afloat (not on a major cutter) stay in the USCG at higher rates than those who serve ashore. Officers who serve on a major cutter remain the USCG at somewhat lower rates than others, but officers who spent at least 25 months (out of the 36 months prior to the decision point) on a major cutter have continuation rates higher than those of officers serving elsewhere in the afloat community. About 78 percent of officers who served ashore continue in the USCG beyond 66 months; about 86 percent of officers who spend at least 25 months on a major cutter continue in the USCG. In most cases, there are no differences across platforms, but the continuation rate of officers serving on WHECs is about 5 percentage points lower than that of officers serving on other platforms or ashore. This could reflect something about work conditions, assignment policies, or other factors.

When we estimated similar models for 114-month continuation, we found no correlations that achieved statistical significance between major cutter service and retention. The sample of officers who served in the major cutter community and whom we can follow for more than ten years is quite small.

Promotion

Our goal is to examine measures that capture various aspects of performance and success in the USCG (as well as personnel satisfaction). Here, we model promotion, which may measure somewhat different aspects of performance than retention. Individual service members will have little direct input into some promotion decisions (aside from working to meet the promotion criteria). However, promotion can be thought of as a measure of "fit"—those whose skill sets are

[24] Our sample of officers is much smaller than our enlisted sample; in small samples, estimates are less precisely estimated. We include complete regression models in Appendix E, Table E.5.

best suited to USCG tasks are likely to be promoted first. Indeed, past research suggests that promotion speed reveals aspects of quality or job match that are not readily available in other measures, such as education credential or test scores, and those who promote quickly also appear to have positive longer-term outcomes.[25] In this sense, the promotion process may be viewed as successfully rewarding the most-effective personnel.

Initial promotions occur in a somewhat automatic fashion, and there is little variation in time to promotion. But by the point of promoting to E-5, there is substantial variation in the timing and individuals are reviewed as part of the process. Thus, we focus on the promotion to E-5 for enlisted personnel. There is no single definition of an early or fast promotion; in our data, about one-third of those who promote to E-5 do so within four years. Thus, we use promotion within 4 years as our definition of a "fast" promotion.[26] We model promotion using similar explanatory variables to those used to model retention (and remaining in the cutter community).[27] In particular, we include measures of the amount of time spent on cutters and indicators of specific platforms.

For enlisted personnel, the results indicate that those who spend time afloat and in the major cutter community are promoted to E-5 faster than other personnel who are not afloat. The differences are substantial; those who serve in the major cutter community are roughly 5 percentage points more likely to be promoted fast to E-5, and those who serve in other parts of the afloat community are even more likely to be promoted quickly (both groups are compared with those who serve ashore). There are no meaningful differences between the platforms in the

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[25] See Michael P. Ward and Hong W. Tan, *The Retention of High-Quality Personnel in the U.S. Armed Forces,* Santa Monica, Calif.: RAND Corporation, R-3117-MIL, 1985; James R. Hosek and Michael G. Mattock, *Learning About Quality: How the Quality of Military Personnel Is Revealed over Time*, Santa Monica, Calif.: RAND Corporation, MR-1593-OSD, 2003; and Beth J. Asch, John A. Romley, and Mark E. Totten, *The Quality of Personnel in the Enlisted Ranks*, Santa Monica, Calif.: RAND Corporation, MG-324-OSD, 2005. Other aspects of service may also help to explain promotion; see Jennie W. Wenger, Caolionn O'Connell, Louay Constant, and Andrew J. Lohn, *The Value of Experience in the Enlisted Force*, Santa Monica, Calif.: RAND Corporation, RR-2211-A, 2018, in which the authors report finding that the characteristics of enlisted leaders also help to explain promotion speed, although the effects are much smaller than the effects of individual characteristics.

[26] In this model, we include only those who remain in the USCG for at least 48 months; we cannot know what the promotion outcome would have been for those who leave prior to serving 48 months. To avoid excluding those who leave a few months early from a four-year initial enlistment term, we also test an alternative definition of *fast*—promotion within 3.5 years (42 months). About 22 percent of those who promote to E-5 do so within 42 months. The results are similar to those produced by the model using the 48-month definition. In the case of enlisted personnel, we do not calculate this metric among the small number who enter at E-4. Because the sample of warrant officers included in our data is so small and because of the relatively slow speed of promotion among warrants, we do not model promotion for warrant officers.

[27] Promotion and retention could be jointly determined—for example, personnel who do intend to remain in the USCG could choose not to undertake any of a variety of activities that would increase their probability of promotion. If this is the case, then our estimates may be biased because of our decision to model these outcomes independently. However, Hosek and Totten did model these two decisions jointly and found that estimated effects of deployment on outcomes are quite similar in the joint model to estimates produced by models similar to ours (Hosek and Totten, 1998). This suggests that the bias from modeling the decisions independently is likely to be small.

major cutter community, but those who spend more months assigned to major cutters are more likely to be promoted fast. Complete results appear in Table E.6, Appendix E.

Officer promotions differ from enlisted promotions in several key ways. First, initially serving afloat is very common in the USCG officer corps. Second, officers are rank ordered based on their class rank at graduation (as well as the date they entered the USCG); promotions are determined based on a combination of vacancies and list order. Although performance is considered in the promotion decision, promotion rates will be driven heavily by initial class rank throughout an officer's career. We initially explored a definition of *fast* promotion to O-4 (where *fast* was defined as promoting within 10.5 years). Just over one-third of officers who promote to O-4 do so within 10.5 years of entering the USCG. While there were some differences by platform (and between those serving ashore and afloat), it is likely that our results are driven primarily by class rank. Also, our sample was small as it included only those officers who we observed for at least 10.5 years. Finally, officer data do not include any test scores, class rank, or other similar measures (with such measures, it might be possible to correct for class rank or at least to understand how rank or quality influences promotions). Without such measures, regression results are open to multiple interpretations. Therefore, we do not include models of officer promotion.

Remaining in the Cutter Community After the First Term

The capacity to retain personnel within the cutter community is key to maintaining USCG effectiveness. Of course, personnel can be ordered to serve on cutters, but failing to at least consider personnel input in assignment decisions can have negative consequences in an all-volunteer force. Therefore, the USCG allows service members to have some input into the assignment process. While personnel in some ratings are much more likely to serve on cutters than personnel in other ratings, *continuing* to serve on a cutter can be viewed, at least partially, as a choice made by the service member. Therefore, we model choosing to remain in the community much as we modeled retention. We define *continuing in the community* by first limiting our sample to those who were assigned to a cutter during their first term, have completed an initial contract, and had decided to remain in the USCG (and to do so for at least four years). In this way, we capture personnel who served on a cutter initially, made a decision to remain in the USCG, and had an opportunity to go through the assignment process after reenlisting.[28]

[28] We could have examined longer-term outcomes, but doing so decreases the size of our sample and excludes more of those who joined the USCG in recent years; even with the current measure, we examine only personnel who joined the USCG in 2009 or earlier, to have enough time to observe their decision after the first reenlistment period. We do not model this outcome for officers or for warrant officers, as we lack sufficient information.

We model remaining in the cutter community using a model similar to the one we used to examine promotion; we use individual characteristics, as well as indicators of serving on specific platforms and the amount of time spent in the cutter community.[29] We consider personnel who spend at least 180 days assigned to a major cutter in the four years following reenlistment to have stayed in the community. While most who remain in the cutter community spend substantially more than 180 days in it, the vast majority of enlisted personnel who are assigned to a cutter during their first term do *not* remain in the community during their second term. Of course, personnel may return to the community later in their careers; rotating to shore duty after being afloat is not unusual.

The results of our models indicate that spending more months on a major cutter during the first term is correlated with a lower probability of remaining in the cutter community (compared with the probability for those who spend one to 12 months). This result likely simply reflects the rotation patterns found in USCG careers. There are a few differences across platforms; in particular, those who were assigned to WMSLs in their first term are *more* likely than those assigned to other platforms to remain in the cutter community (complete results appear in Table E.6, Appendix E). We lacked sufficient sample sizes to run parallel models for officers or warrant officers.

Quantitative Results Summarized

In this chapter, we characterize the personnel in the USCG and the operations of the major USCG cutters. While only a small fraction of USCG personnel serve on major cutters at any point in time, these cutters form the operational backbone of the USCG, and understanding how personnel respond to operational tempo could allow the USCG to accomplish objectives with greater efficiency.

Among enlisted personnel, serving on a major cutter is associated with many positive outcomes. Enlisted personnel who serve on major cutters are more likely to achieve key milestones: complete at least 48 months in the USCG, complete an initial term of service, promoting to E-5 more quickly than their peers, and reenlisting for a second term. However, there are small differences related to platform. Reenlistment is associated with operational intensity; enlisted personnel who serve on cutters with typical operational intensity reenlist at higher rates than those who experience the highest levels of operational intensity. In general, outcomes are positively related to serving on a WMSL. However, we caution that WMSL operational patterns could change over time and that current data may not well represent the future because WMSL personnel in our data often are plankowners and may be more inclined than others to remain in the major cutter community. (*Plankowner* is a term used to refer to a

[29] We also experimented with including measures of operational intensity (ratio of DAFHP and ratio of inport operations). These measures did not achieve statistical significance, either individually or as a group.

member of a ship's original crew.) For officers, serving on a cutter is associated with fewer positive career-related outcomes. In fact, retention among officers serving on major cutters is similar to, or in some cases lower than, that of officers serving ashore.

6. Focus Groups with Major Cutter Crews

In this chapter, we describe the key themes from focus groups with USCG personnel serving on major cutters. We organize key themes into three main categories: (1) work environment, (2) quality of life, and (3) retention. We first discuss key factors related to the major cutter work environment and quality of life, followed by themes on improvements to both areas that participants identified. Within each theme, we discuss a series of specific factors identified by focus group participants. We follow with a discussion of key factors related to retention and suggested improvements to retention challenges in the major cutter community.

Throughout the chapter, we use illustrative quotes to contextualize the themes. These quotes are examples of themes and are not meant to represent the full range of experiences and thoughts of USCG cutter crew members. Also, some quotes might include misperceptions of current USCG policy and practice. To convey the prominence of the themes, we also provide percentages of focus groups in which major themes were discussed. However, the percentages do not imply that every participant responded in the same way within the groups in which a theme was mentioned. We avoid providing percentages for themes within broader categories because they can be misleading and do not convey the nuance of responses within groups.

Work Environment on Major Cutters

We asked focus group participants to discuss the many factors that affect their work environments when they are away from home port. We organized the factors into themes; Table 6.1 lists key themes that arose during discussions about the work environment on major cutters. We focused on key themes related to work schedules and workload (e.g., watch schedules, length of the time away from home port, OPTEMPO, mission type), leadership and command, training and education, and camaraderie with others on the cutter. In some cases, participants described how work environment features affect quality of life and desirable benefits, such as educational opportunities. Table 6.1 also provides the percentage of focus groups that discussed each of the major topics related to work environment on major cutters.

Table 6.1. Percentage of Focus Groups Discussing Themes Related to the Work Environment on Major Cutters

Theme	Percentage of Groups
Watch schedules	85
Length of time away from home port and OPTEMPO	62
Mission type	66
Leadership and command	77
Education and training	45
Camaraderie	66

Work Schedules and Workload

The most prominent theme of the focus groups involved factors related to work schedules and workload. Most focus groups (85 percent) discussed the importance of *watch schedules*, which are the periods of time when personnel are assigned to a key area of the cutter (e.g., engine room, bridge) to ensure that the cutter remains operational (e.g., the engineering section watch ensures that the engines and other important machinery are running properly). Groups also discussed the role of length of time away and OPTEMPO (62 percent of groups) and mission type (66 percent of groups).

Watch Schedules

Discussions about watch schedules tended to center on what factors make them challenging or on how watch schedules affect workload stress and quality of life. Participants identified the percentage of qualified crew as an important factor affecting watch schedules. Because major cutter crew members need qualifications to stand different types of watch, having fewer personnel with those qualifications means that more of those who are qualified have to stand more watch. Some participants identified transfer season—when personnel change assignments—as particularly difficult because the major cutters receive an influx of new, not-yet-qualified personnel. As one participant explained, transfer season means that qualified personnel stand more watch as new personnel get qualified:

> It's a cyclical thing. . . . always worse right at the start of transfer season because we get new people who aren't qualified so they have to compensate and stand watch for them until they are. It affects us underway and not just in port—actually hurts the crew more in port when they need a break. Finally [at] home but not really because you still have 24-hour duty multiple times a week sometimes.

Participants identified other factors that can affect watch schedules, including the type of mission. Participants specifically cited the challenges of having detainees onboard the cutter, as crew members have to stand watch over them. As one junior enlisted participant described, detainee watch requires adjustment to the watch schedules:

> If we pick up detainees, we have to adjust the watch schedule. You can pull from the other departments for the watch schedule, but it's usually the nonrates. It just depends on how many watches need to be stood. It's usually a 1:4 watch, detainee rotation. For more detainees, we have to give more people [to stand watch].

Participants also mentioned that commands vary in whether they try to reduce watch schedule length to give crews more rest. As one early-to-mid career enlisted participant noted,

> I've been on units where each day has six four-hour blocks [for watch], and I know units who tried to mitigate it to three hours [per watch block], but that's at the discretion of the command. The only easy watch is the mid watch, [which is] 12 to 4 [p.m.] and 4 to 8 [p.m.]. Watches that are toughest are 4 [a.m.] to 8 [a.m.] watches.

Patrol Length, OPTEMPO, and Mission Type

In addition to discussions about watch schedules, about two-thirds of focus groups (62 percent) discussed the impacts that length of time away on patrol and OPTEMPO have on major cutter workload, schedules, and quality of life. Feedback from the groups was mixed as to whether the preference is for longer patrols with longer time in port (e.g., 90 days away followed by 90 days at home) versus shorter rotations (e.g., 60 days away followed by 60 days at home). Some participants noted that longer DAFHP helps the crew achieve the mission and establish a work rhythm (i.e., less disruptive to the schedule). As explained by a senior enlisted participant of a WMSL group,

> Honestly, the way the schedule is set up is essentially three months out, three months in. If you were to shorten it [to] anything less than 60 days at a time, it doesn't give enough time in the operational area to develop a rhythm with the crew, and by the time you have it, you're leaving the ops area and you never get to your peak performance level in theater. From my side and what I do, once you get into a rhythm and operating—I think if you shortened it, you'd go through growing pains every time you go underway.

Some participants also noted that a benefit of longer DAFHP followed by longer time at home is that there are fewer transitions from home life to cutter life. Participants who preferred shorter DAFHP cited such concerns as being away from family for long stretches of time and not having expected to go on long (90-day) patrols as hurting crew morale. This latter concern came from WMEC focus groups because the USCG changed the employment standard for WMECs to include 90-day patrols. As one WMEC enlisted participant described,

> Sudden change in expectations. Talking to a [machinery technician] who reported [to the cutter] six months ago [and] who was planning on a two-month patrol, and now he heard we're going on three-month patrols with a dry dock. That's not what he signed up for. We have a problem changing the mission. These ships aren't built for that; we're not manned for it. They need to pay you more—there's just nothing about it that's fair.

As the quote above indicates, another concern cited in WMEC groups is that these older cutters lack the operational capability to conduct 90-day patrols. A senior officer from a WMEC described the trade-off of longer DAFHP to complete the mission and the challenge of maintaining the older cutter:

> The [USCG]-wide strategy for counternarcotics and overall is changing the strategy because of the canal transit. [Another participant nods in agreement.] The financial mitigating strategy is to extend patrols. You have to pay for canal transit, so you keep them [the major cutters out] longer, but now the asset is further from home for a longer period of time that gets more wear and tear and you start spending more money to support the asset.[1]

Some groups also noted that OPTEMPO and patrol length interact to affect how long the patrols seem to crew members and this, in turn, affects crew morale. If OPTEMPO is slow and the patrol is long (e.g., 90 days), crew members lose motivation sooner than those on a higher-OPTEMPO mission and/or shorter patrol. As a senior officer in a WMEC group put it, "If you're not that busy and it's a long patrol that becomes redundant, people lose their focus. At the same time, if it's too long and too high tempo, that's also draining." Some participants also noted that, although they prefer certain missions (e.g., counternarcotics), those missions can have operations occur in the middle of the night, which disrupts sleep. As an enlisted participant describes it,

> A lot of ops take place at night because we're bright white and very slow, [so it's] difficult for us to catch anything [during the day]. That cuts into sleep time. And commands are not all flexible about compensating sleep time.

In general, focus group participants noted a preference for a consistent, balanced cutter schedule so they can establish rhythms in their work life (on the cutter) and personal life (at home). The impact of long work hours and shifting schedules on major cutter crew members is captured by a senior enlisted participant:

> The fact that we work on average 15–16 hour work days with no real set schedule. [The cutter commands] tell you that you start at 0800 and end at 1600. Literally never happens. [You] work seven days a week for sometimes three-plus weeks straight without any time off, then [when you are] in port [you are] still standing watch. [That's] 30-plus straight days working 16-plus hours a day, and that can grind you down.

Leadership and Command

Over three-fourths (77 percent) of groups noted the importance of leadership and command to major cutter work life. Especially for enlisted participants, command communication was

[1] In September 2018, USCG experts estimated that the USCG pays between $15,000 and $16,000 per trip for WMECs to transit the Panama Canal. The fees do not reflect the total cost of a WMEC's transit from its Atlantic home port to the operational area in the Pacific. Moreover, according to the USCG expert who supplied the transit fee estimates, moving Atlantic Area WMECs' home ports would incur more in financial costs (e.g., personnel moves) than sending the Atlantic Area WMECs to the Pacific.

cited as important. In particular, timely communication about changes in schedule and workload are valued. A midcareer enlisted member noted the risk of not communicating well with the crew: "Lack of clear communication from the top means a lot of talk at the lower level, and that's when people get attitude."

Some enlisted groups provided examples of command demonstrating that they value hearing from the crew. Below is an example from an enlisted participant of how leaders demonstrated to them that they listen to the concerns of the crew:

> Your command is what makes it. If you have someone you don't get along with who is in charge of you, you're gonna feel harassed. My [electronics material officer] is always there to talk to you, and he checks in to see how we're doing; he notices if we're stressed. I know my command cares for me.

Some groups also described cases of what they think of as poor command behavior. Examples of poor behavior included poor planning, focused on "entertaining" guests at ports despite crew fatigue, secretiveness, and micromanagement. A junior officer described the challenge of micromanagers:

> For junior officers particularly, there's not a set work schedule, and it's very supervisor-driven. [If you have] one that sort of understands that [about the work schedule], [it's] great. If not, you have a micromanager . . . then, every single second of your day, [that supervisor is] analyzing the same thing. Supervisor is a deal breaker if don't have a good one.

Enlisted focus groups also discussed the value of leadership at senior enlisted levels to minimize crew fatigue and represent the crew to command. An enlisted participant noted the importance of a strong chief's mess: "If you don't have a strong leadership, bad morale can fester. A strong chief has to stand up for you and keep the shop in order."

Enlisted groups also mentioned that junior officers might not always exhibit strong leadership, which in some cases may result from junior officers not wanting to be on a major cutter. As one senior enlisted member put it, "The officers are here to train, and it's not necessarily their first pick. It might be the first tour of this type or the first tour they've commanded ever, so you won't always have good leadership." Another senior enlisted participant noted that junior officers might also lack strong leadership because they need command's recommendation for future assignments.

Some junior officer groups also mentioned junior officers' leadership roles on major cutters, describing them as a link between enlisted crew and senior command. As one junior officer participant described it, "As a junior officer, you're a division officer and in charge of people, whom you want to do right by, but you also have responsibility to people above you. You're a bridge and trying to align priorities."

Overall, enlisted groups indicated that command communication and decisionmaking is a key determinant of cutter crew work environment. Senior officer groups also discussed the

importance of command decisions on crew endurance, with some highlighting the challenge of balancing crew needs with the mission. As one senior officer participant described,

> They [USCG leadership] say [to major cutter commands]: "Know when to say no." Fine, if I say "no" to a mission because the crew is overworked, exhausted, sick, and at risk and it's in the Bahamas, but the freighter we were called to sinks . . . who has to live with that? It sounds crazy, but that's how it is out here.

Education and Training

About half (45 percent) of groups discussed issues related to education and training. The topics can be split into two broad themes: (1) training needed for work on a major cutter, which is related to qualifications and drills, and (2) opportunities to pursue education (e.g., college courses) while assigned to a major cutter.[2]

In terms of training, some groups mentioned that completing drills is challenging because of high OPTEMPO. As a participant from a senior enlisted WMSL group explained,

> Mission affects training. [We are] out to sea 90 days and extremely busy. On Tuesdays and Thursdays, we have scheduled drills. If working a case, it's impossible to conduct that training. So, they try to frontload all the training on the beginning of deployment before we get to the operational area. They evaluate on the way home and try to run them on the way back if we're not done. That affects the crew, especially on the way home. Have to keep the ship running, and you're exhausted from everything else, and now have to do three drills in a day to make up for the ones we missed because we were so busy on the ops side of things.

High OPTEMPO and heavy workload also restrict time for qualification training for crew members. An officer from a WMSL group described it as follows:

> We increase workload on the crew to the point where you can't train. Breaking in and people learning on the bridge, you don't get quality when more than one person is being trained and when the training is cut short or one time or interrupted constantly.

Some groups also cited OPTEMPO and unpredictable schedules as limiting crew members' educational opportunities. An enlisted participant from a WMSL put it succinctly: "On the cutters, education is just a hard thing to do, especially with the OPTEMPO of these boats." Even when major cutter commands try to provide educational supports on board, OPTEMPO can hamper their effectiveness. A participant from a senior enlisted WMSL group offered an example:

> One patrol, we took a person [instructor] with us to take [college] classes while underway, and the mission kept interrupting class time, and it's still tough

[2] The topic of educational opportunities does not fit into the category of factors that directly affect the cutter work environment. Instead, the discussion is focused on how work environment affects educational opportunity. Later in this chapter, we describe how educational opportunity could affect retention in the major cutter community.

> because, even when in port, we have so much going on, it's tough to take classes. You have to be very dedicated.

About a third of groups specifically identified unreliable internet connection and using email only without attachments as limiting educational opportunities while underway. An example from a senior enlisted group provided context:

> You can't take courses online. There's no guarantee you'll have access or the ability to do your work because of the internet issues and just the schedule in general. [Another participant adds:] Oh and you can't send attachments. It has to be in the text of the email. So, you can't send in a paper, for example.

Some groups also indicated that irregular schedules of major cutters also limit training and education in home port. As a participant explained,

> Even when you're supposed to be in port, you're never actually in port. We're expected to go to classes, but how can we attend classes when we have irregular schedules?

In summary, focus groups with major cutter crew members identified the OPTEMPO and unpredictable schedules of major cutters as the main limitations on training and educational opportunities and timely completion of crew qualifications and drills.

Camaraderie

A majority of groups (66 percent) discussed the importance of crew camaraderie on major cutters as a way to reduce workload stress. Some participants stated that camaraderie is stronger on major cutters than at shore-based units, which may attract personnel to major cutters. As one enlisted participant explained,

> Camaraderie and bonding is really important, for a unit as a whole. It's a lot stronger on the cutters compared to any land-based unit because [on a cutter] you're forced to be underway, you see all the same faces, and you share misery if it's a really bad port call. I've seen every department making shots at each other and having fun, but when you're shore-side, you don't see that. And when I talk to people on the cutters, that's what they say brings them up. It feels more like a family and less like a job.

However, some groups—particularly enlisted WMEC groups—indicated that too much time together can be taxing for cutter crews, particularly when they do not have enough privacy and personal time to decompress. Some participants note that there is a point in a patrol at which camaraderie degrades. As one enlisted WMEC participant explained, "Things start to go bad at about the midpoint. Weeks five or six [of a patrol]. People start getting tired of each other, and the close proximity wears on the crew."

On the flip side of limited personal space, too much personal space can also limit camaraderie. Specifically, some WMSL focus groups (namely, those with experienced crew members) noted that the design of WMSLs limits how much time crew members spend together. A senior enlisted participant from a WMSL group offered the following description:

> I'd say the WMSL is unique in regards to camaraderie. Because on other cutters, everyone hangs out in the lounges or on the mess deck. On these decks, everyone has a computer in their room, TV, there's no reason for them to come out. We were actually talking about that yesterday. There's not as much camaraderie on the WMSL platform because of the way they're designed.

However, another WMSL participant in the same group countered that the trade-off between personal space and camaraderie points to the WMSL's advantage: "But it's a healthy trade-off. One TV for 140 people [on other cutters], that causes problems. Here [on WMSLs], it's eight [TVs]. You have internet in all the areas too, so that helps."

Besides personal space, mission affects camaraderie. A mission that is considered boring and low OPTEMPO can wear on the crew, as one enlisted participant explained: "I've never seen a crew more on edge than when we were just floating around [name of USCG district]."

On the whole, groups that discussed camaraderie noted that it helps reduce workload stress and may be stronger on major cutters because of the mission and amount of time that crew members spend together. However, not enough personal space (notably on WMECs), too much personal space (notably on WMSLs), or slow missions can put a damper on camaraderie on major cutters.

Quality of Life on Major Cutters

In addition to work environment, we asked participants about quality of life on major cutters while away from home port. Key themes included sleep and fatigue, ability to communicate with family and friends, privacy and personal space, and entertainment and amenities.[3] Table 6.2 provides the percentage of focus groups that discussed each of the major themes related to quality of life on major cutters.

Table 6.2. Percentage of Focus Groups Discussing Themes Related to Quality of Life

Theme	Percentage of Groups
Sleep and fatigue	79
Ability to communicate with family and friends	59
Privacy and personal space	77
Entertainment and amenities	49

[3] We also asked participants about opportunities to socialize with other cutter crew members, but responses aligned largely with discussions of camaraderie. Therefore, we do not provide a description of socializing opportunities in this section.

Sleep and Fatigue

Most groups (79 percent) discussed sleep and fatigue as a significant challenge for major cutter crew members. Most groups commented that there is insufficient sleep, citing long stretches of being awake. As one junior enlisted participant stated, "You can be up for 24 hours."

Concerns about sleep related not only to total amount of sleep but to changes in sleep schedules. Participants note that the inconsistent schedules of major cutters result in inconsistent sleep schedules for crews. As a participant explained, "We have inconsistent sleep schedules, and that ties into everything else. Not much sleep at all, and sleep cycle changes day-to-day."

For enlisted crew members on WMECs, crowded berthing areas affect sleep quality because of the noise made by others who are going to sleep or waking up for their shifts. An enlisted WMEC participant explained:

> They recently integrated berthing areas, so you have engineers, ops, [and] support all in one [berthing area], and all have separate times and schedules. Any given time, there are three or four waking up and another six sleeping and another few going to bed. Just always hearing noise and waking up.

Sleep deprivation of major cutter crews was also discussed by officer groups. An officer participant cites the risk of sleep deprivation: "Sleep is like a danger, because you don't actually recognize when you're not functional due to sleep deprivation until you're already collapsing from deprivation." However, some officer groups also indicated that, while there is crew endurance guidance, it is not mandatory and ultimately gets lower priority when missions need to be accomplished (and there are not enough qualified crew members). A senior officer described the challenge:

> [Crew endurance guidance to commands is] not mandatory, it's just recommended. It talks about sleep schedules, lighting and how it affects people, REM [rapid eye movement] cycles. . . . All of that information can be helpful for leadership to understand. But at the end of the day, what makes it a more difficult problem is that it depends on how many people are qualified. A ship loses anywhere between one-third and one-half of its crew every summer, and the new crew has to get qualified. So, in order to operate, you can't avoid a schedule that results in some type of sleep deprivation.

Ability to Communicate with Family and Friends

Over half (59 percent) of focus groups talked about the challenge of not being able to communicate with family and friends while underway. Several noted it as a source of stress that affects morale and performance. As one participant succinctly put it, "Family, absolutely family. I draw strength from them, so if I can't communicate well while I'm underway, that affects my productivity."

A dominant theme in discussions about communicating with family while underway was frustration with unreliable internet connection and limited online applications for communicating. Some participants questioned why the USCG is seemingly far behind others

(notably, the Navy) on the latest technology. An enlisted participant from a WMSL group indicated that he would be willing to go away for longer stretches of time if he could communicate with his wife more often and using better technology:

> I could be away for 100 days if there was a better way to communicate with my wife, but it's really hard for her to do these [long patrols] when she doesn't hear from me for two weeks. But if I could Skype with my wife, I could get underway for half a year. We're in 2018 and still emailing and using Outlook—I have friends in the Navy who are FaceTiming in their ships.

Family communication challenges were not limited to participants with spouses and children. Participants who are single also noted that they need to get in touch with family or friends to help them take care of personal needs. As one participant notes, someone has to help them pay the bills and check on their belongings:

> If you're single, you have to set bills up to be paid for 90 day periods. Then [you have to] take care of things back home. [You need to] have someone in place or set up before you leave to check in on your apartment or car. It's a factor in it but also not for everyone, and they realize that when they're out to sea.

A few single members also described the problem of starting romantic relationships and then going underway when they could not communicate with new partners. A participant described it: "Yeah, the ideal is meet someone the first two weeks you're in port. Then throw a wrench in it like by [saying to this person]: 'See you in three months. Uh, wait for me?' Ha ha, like, you can't expect someone to do that."

Although many groups discussed the down sides of not communicating with family and friends while underway, some groups raised the idea that too much communication could distract crew members. A senior officer indicated a preference for less communication to focus on life underway: "Some people want daily emails from their families. For me, it's just easier to not think about it and compartmentalize when I'm underway."

Privacy and Personal Space

Over three-quarters (77 percent) of groups discussed privacy and personal space aboard major cutters. Concerns about privacy were prominent among WMEC enlisted groups, with the large, crowded berthing areas a major source of frustration. A WMEC enlisted participant explained,

> The biggest thing is space for most people. The rack has the dimensions of a coffin, can't really read; [you can] watch movies on phone but it's not comfortable. If [you're] by yourself for an hour, that's virtually impossible, unless you sit in engine room in the back, and if someone sees you, it would be like "that's weird." Hard to get away from people, if that's what you need to do.

A few WMEC groups also noted the lack of space and limited number of common areas. An enlisted participant provided an example: "Crew comfort factors outside berthing areas—like

community heads for each berthing area [are] usually only two or three stalls and maybe two showers. Gets really crowded, and lounge areas aren't that big either."

In contrast to WMEC enlisted groups, WMSL enlisted groups were generally positive about personal space (enlisted berthing on WMSLs has far fewer people than enlisted berthing on WMECs). One participant from an enlisted WMSL group favorably compared WMSL berthing with berthing in the Navy and on other USCG cutters: "The berthing is nice. My last one in the Navy was 500-plus, so it's still nice. Even the smaller USCG boats had 30-plus [people]. So, the smaller berthing areas are nice."

However, a few enlisted WMSL groups noted that the USCG is adding more racks to WMSL berthing areas, which could make assignments to WMSLs less attractive for enlisted personnel. As a participant from a senior enlisted WMSL group explained, "Berthings were a selling point at first. That was the one selling point that brought people to WMSLs. Now, you're increasing that. So, the one selling point you had, it's now taken away."

Officers who commented on personal space tended to comment on the challenges for enlisted crew members compared with those for officers. A WMEC officer summarized the difference: "Quality of life may get a different answer from us [officers] and the enlisted. We have two-person state rooms versus nine [in enlisted berthing]. For us, it's a little bit better. We have our own computers too. In general, our quality of life is better."

Entertainment and Amenities

About half of the groups (49 percent) discussed entertainment options, particularly television and internet access, as important factors affecting quality of life on major cutters.

For WMSL groups, comments about entertainment options were generally positive or neutral in tone. However, some of the more experienced personnel on WMSLs noted the trade-off of more personal entertainment options and less socialization than on other cutters. A senior enlisted participant from a WMSL described it as follows:

> The rooms in the new ships are spacious, so people spend more time in their rooms watching TV and playing video games now. They do it because they want to, but it seemed like a negative thing to me that people were locking themselves in their rooms, because it was so easy to sit and watch TV and play video games. So, it's positive in a way, but now there is seclusion.

Compared with those in WMSL groups, participants in WMEC groups tended to cite limited or lacking entertainment options, such as satellite TV and internet access for using social media. Participants expressed frustration because TV and internet provide stress relief and a connection

to the outside world.[4] An enlisted participant from a WMEC described the impact on crew morale when TV is limited:

> We don't have TV unless we pay for DIRECTV while in Latin America, and even if we pay for it, we only get service if we're close enough to shore. There's a big difference in morale if there is TV; people can watch their local news or watch sports from their area, a little piece of home and comfort.

Some WMEC groups also voiced concern that the WMECs will have a hard time attracting and retaining junior crew members because of the lack of connectivity and entertainment. As one participant explained,

> We can bring stuff like tablets, but because no one has connectivity, I download multiple books and shows but I burn through that in a month. It's common to wind up finding people in a lounge looking at a blank wall. [A few others in the group agree]. If they [would] just implement some kind of entertainment system . . . The technology is there, so why the service and a lot of people don't understand [such a system] and are afraid of it, I don't know. But people won't stay unless they do [have an entertainment system].

Some of the more experienced members of WMEC crews from the focus groups noted that limited funding was a reason the WMECs do not have more entertainment options; units (the cutters themselves) cannot afford the entertainment options. An officer from one of the groups explained,

> [There are] no standardized ways to watch TV, and the network we had was unstandardized and had to be deestablished. The [USCG] is putting it on the unit to fund things like this themselves. To get entertainment installed like we have on Navy ships, we'd have to take it out of the ship's budget. As soon as we cross a certain line in the ocean, we lose all connectivity.

WMSL and WMEC groups also tended to differ in how they viewed the amenities (including food) on major cutters. WMSL groups were generally positive about amenities, including food quality and laundry. As an enlisted participant from a WMSL group explained, "Coming from a [WHEC], this [WMSL] is a yacht. This year, one thing I'm happy about is the living conditions onboard. For the job we do, it's pretty awesome."

In contrast, WMEC groups were negative about amenities. For example, laundry facilities were discussed by some groups. As a participant explained,

> Laundry sucks. It can make or break your day. There are four washers and four dryers, and sometimes people just can't be decent human beings, leaving your

[4] Given the concerns that participants raised about getting enough sleep, they may have limited opportunity to use additional entertainment options were they to get the amount of sleep they desire. We did not directly compare crew members' sleep levels with their desired use of entertainment to determine whether additional investment in entertainment options would be worthwhile. However, some forms of entertainment would not require much time to use (e.g., checking sporting event scores on a website) or could be accessed while doing other necessary activities, such as eating (e.g., watching local news on TV while eating breakfast).

> clothes on top of the dryer half wet. People can be very inconsiderate with other people's things.

Although laundry and food came up in some WMEC groups, more WMEC groups cited challenges with exercise facilities. WMECs lack permanent, dedicated spaces for gym equipment, so many have exercise equipment in helicopter hangars. As a participant from a WMEC group described, when a helicopter arrives on board, the crew loses the gym: "We're getting a helicopter for our next patrol, so all the equipment for the gym, which is kept in the hangar, is getting moved out." Participants pointed to the role of exercise in reducing stress. As one explained, "I'm a person who needs to work out as a stress reliever, and when we had detainees [in the helicopter hangar], that [exercise area] went away." In addition to stress relief, the ability to exercise and eat quality food while underway ties into crew members' physical fitness, which the USCG assesses through weigh-ins. An officer from a WMEC explained,

> Health and fitness need to be better funded. They [USCG] weigh us [cutter personnel], but they need to balance things better. We have to weigh, again back to funding on here, but privacy and little bit of comfort or fitness equipment and space. I realize this [cutter] isn't designed to do those things, but it should be part of the financial planning. And food is the other one. We have massive limitations on this platform and the budget is so restricted for it. Yet we have semiannual weigh-ins.

In general, WMSL groups were positive about the amenities and entertainment options available to them while underway. In contrast, WMEC groups tended to relay frustrations related to limited entertainment options (e.g., satellite TV, internet), food quality, and other amenities. Lack of dedicated exercise facilities were a particular source of frustration for participants from WMEC groups.

Improvements to Work Environment and Quality of Life

During the focus groups, we asked participants what the USCG could do to assist major cutter crew members in their work environments and quality of life. Participants offered a variety of responses to that question but also identified areas for improvement when discussing factors that affect their work and quality of life on major cutters.

We identified four categories of themes for improving work environment and quality of life on major cutters. These are summarized in Table 6.3 and described below.

Table 6.3. Focus Group Themes for Improving Work and Quality of Life on Major Cutters

Category	Percentage of Groups	Recommended Changes from Focus Groups
Manning and qualified crew	66	• Provide cutter qualifications/job training before arriving to the major cutter. • Use surge manning in home port so crews can rest. • Reduce workload if manning cannot be increased.
Internet access	60	• Invest in internet improvements (more-reliable service). • Allow communication apps so crews can communicate with family/friends.
Command support	47	• Commands should quickly communicate changes to crew. • Leadership training is needed earlier in careers. • Change incentives so commands prioritize crew endurance.
Training and education	47	• Account for cutter schedule when conducting crew training and offering education supports while underway. • Give crew time in port to pursue education opportunities.

Manning and Qualified Crew

A majority of the focus groups (66 percent) pointed to manning of cutters, including qualifications of crew, as an area for improvement. Many of these groups recommended adding more qualified personnel to major cutters as a way to reduce overall workload and add stability to work schedules.[5] This recommendation was raised in both WMSL and WMEC groups, as we demonstrate with the two quotes below (one from a WMSL officer, the other from a senior enlisted member of a WMEC):

> If you lose a man to certain events—for example, someone has a baby—that means there's more pressure on the rest of the crew. A bigger crew would definitely help for this class of cutter.

> The number of people qualified [even] when we're "optimally" manned is not enough. When we're underway, we have normal tasks—mission, fixing the boat and then detainee watch, drug watch . . . that "optimal" number is constantly suboptimal. Plus, if we lose people unexpectedly for various reasons, it crunches down. That altogether can make watch brutal. I can see why people get out because of that.

Several groups suggested that personnel should come to the major cutters already qualified, and that the qualification process should be more streamlined. The quote from an enlisted participant offered context for this recommendation:

> I don't know if there needs to be a streamlined qualification standard or pipelined school. . . . If I had a school or class to prep me, it'd help. And we need people to

[5] Based on discussions with SMEs from the Personnel Service Center about how assignments work in the USCG, assignment officers prioritize assignments to the cutters. However, these discussions did not yield information on what proportion of personnel assigned to the major cutters have the crew qualifications needed to perform certain types of duties.

> come in ready at full capacity. Not unqualified. What other service would do that? DoD wouldn't.

In addition to the suggestion to add more qualified crew members to major cutters, participants suggested surge manning, especially when in home port, so that the crew who went underway can rest.[6] An enlisted participant from a WMEC put it simply: "I don't know how realistic it is, but if we could swap crews when we get in port. Fully at first, but maybe phase back into helping—that would be huge." The desire for crew rotation was also raised in WMSL focus groups. As one WMSL participant explained,

> And don't forget, the initial design [for the WMSL] was . . . to have multiple crews, and that didn't happen. It happened in some places for like a year. Idea was [that the] new crew took over duty and ship to allow us time off when [we] return to port and that would make these ships a lot more attractive. I could visit family—and not be [in] home [port] working and answering the phone and dealing with craziness—because the other crew is here.

Some participants also suggested that workloads be reduced by better understanding how much work the tasks on major cutters require. An enlisted participant describes how "collateral duties," such as "trainings and repairing things that break," are not "budgeted into the schedule" but are expected to be performed. An officer on a WMEC described the situation for engineering:

> Another thought is I don't think the [USCG] spends time determining if the things an engineer does expectation-wise can be done by one person. We create requirements and send them out in manuals and then yell at people if they can't do it, without considering if it's actually possible to do that. That relates to taking off some of the inport burden. I'm trying to plan inport maintenance from my desk in the middle of the ocean, which is not efficient, and I can't be present on the ship because of my time spent coordinating.

About a third of focus groups, mostly from WMECs, indicated that their manning challenges are tied to operating older cutters, particularly on long patrols (90 days). A WMEC officer put the challenge into context:

> The boat is so old, the cost of operating it is going up, especially on maintenance. The lack of support we have, coupled with increased performance requirements, provides unique challenges for the crew, and they have to execute a mission initially designed to be handled by a lot more people. Obviously, [it's] a different set of challenges.

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[6] Based on discussions with SMEs from CG-45, one of the challenges for shore maintenance relates to logistics and contractor support. Specifically, major cutters may receive last-minute notice of which port to go to for maintenance because of constraints on where the needed contractors and parts are located. Moreover, the CG-45 SMEs indicated that not only do crews on the major cutters experience PERSTEMPO issues due to maintenance but so do shore maintenance personnel (i.e., personnel, such as port engineers, who are on maintenance augmentation teams or weapon augmentation teams).

Overall, the majority of focus groups cited a desire for more manning, particularly a larger number of qualified crew members, to relieve the workload on major cutters. For WMEC groups, the challenges of operating older cutters were cited as adding another layer to the manning issues (e.g., limited berthing to have larger crews and aging equipment that requires significant time and effort to maintain).

Internet Access

Sixty percent of groups recommended that internet on major cutters be improved. Participants indicated that limited access to internet and applications reduces work efficiency, hurts morale by not allowing personnel to communicate more often with family and friends and have more entertainment options, and reduces the feasibility of pursuing education online. The following quotes illustrate the impact of internet on these outcomes:

- work efficiency [WMEC officer group]

  > Internet [is a challenge] . . . [it] interferes with our ability to use enterprise-based data management connection to capture what's required in the enterprise systems, [which] requires internet. We might not get connectivity based on our physical location, or we may not have access systems. Yet, we're required to use them for our reporting requirements. Includes processing things like pay, leave, orders for individuals.

- morale: communication with family and friends [WMSL officer group]

  > Connectivity could be improved. We're more connected now, but the [USCG] would benefit from more access to social media and ability to communicate with family. That would definitely improve quality of life on the ship.

- morale: entertainment [WMEC officer group]

  > Internet is a big thing, not just for work but I can't even look up a score on ESPN. For me, that was a big deal because I missed March Madness.

- education online [WMSL senior enlisted group]

  > I've seen people do it [pursue education] and do it successfully, but when on board and on that line of fleet broadband, and even with good internet, you can't download anything [or] pull PDFs for research. You can't do anything. Impossible to finish or meet deadlines sometimes.

Some groups noted that the USCG knows about the internet challenges but lacks the funding and motivation to address the challenge. An officer describes it bluntly:

> The [USCG] doesn't want to throw money at these issues and fix the root cause. When you look at the Navy, they have everything: video chat, Facebook, everything. It's out there, we just have to facilitate it. What it comes down to is money and someone giving a s**t.

Some groups, particularly senior enlisted groups and officer groups, raised the concern that the USCG will not attract and retain junior members if internet options do not improve. As a WMSL officer explained,

> Habitability was a big focus on the design of the WMSLs. Implementation of the advance of technology, in terms of both connectivity and operations, is important, both to complete tasks but also to stay connected to the outside world. It's important with the millennial generation. If we don't continue to improve in this, it will be a retention issue. If we want to continue getting the best and brightest, competing with the other branches [of the U.S. military], we have to keep up with the tech advances. Berthing is much better, as is the galley. All of these add up to improve quality of life.

Command Support

About half the groups (47 percent) discussed improvements to command support on major cutters. Many of these groups noted that command consideration of crew needs could be improved without specifics. However, some groups provided specific areas for improvement.

Enlisted groups commented especially on getting better, quicker communication from command, especially on scheduling changes. Without good communication, crews are left to fill in the blanks. As one junior enlisted participant put it,

> Another thing is, sometimes we have a hard time communicating what's going on, trickling info down from the captain down to the nonrates. We were told we were missing a holiday port call just two days before, even though we had been planning on it. We hadn't been able to speak with our families . . . . More-timely communication would be helpful.

As described earlier in this chapter, enlisted participants cited cases of command behavior that they valued. One example involved a commanding officer and executive officer standing watch with junior crew members, allowing those crew members to have face time with command to express their needs. As another enlisted participant described, other command behaviors signal that command cares about the crew's quality of life:

> We were gone for all the major holidays during last patrol, so command let us use the sat [satellite] phones to communicate with family. It showed that the [commanding officer] was family-oriented and wanted to keep morale up. This doesn't happen on all boats, though.

To address leadership challenges on major cutters, some groups (particularly enlisted groups) suggested leadership training should occur earlier than it does currently. As one enlisted participant described, enlisted leadership training occurs after some enlisted personnel are in leadership positions on major cutters:

> Leadership is not taught in the [USCG] until the rank of chief. In order to make E-6, you take Leadership and Management School (LAMS). It goes over leadership, but it is so shallow. It's basically like teamwork training, and it's really late in the game. Like, the Air Force does leadership school when you hit E-4, and it's five weeks long. So, already, they have more training than our USCG E-6s and E-7s on leadership. You can be an E-4 boatswain's mate and be a coxswain in charge of a boat . . . and there are huge issues with leadership in that realm. They are in charge of a vessel and they know their job really well, but they've had no leadership training. And they are training younger Coast

> Guardsmen, and they don't know how to manage people. And as an E-6, you definitely need more training in management and how to evaluate people. So, there are big issues with boatswain's mates and their mentality as well.

Participants also cited need for better junior officer leadership training or incentives. Although few offered specific ideas about how to address junior officer preparation to lead on major cutters, one officer participant noted that he believes that preparation at the USCG Academy should change:

> When I was at the academy, for the summer internships, you were underway. Now, only 70–75 percent are getting underway. The rest get farmed out to other types of internships. It does nothing for the [USCG], the ensigns, or the cutters to which those junior officers get assigned. . . . [The Academy has] become 100 percent academics now, and there's little to no leadership and no cutter time. They're setting the kids up for failure, and it becomes an admin burden for the [executive officers].

Finally, some groups indicated that incentives for commands on major cutters are to "make numbers," which puts pressure on crews to perform. As an enlisted participant put it,

> We're [major cutters] a percentage mark, and, if the percentage is off and it looks bad on command, then they [command] don't promote to the next level and that's it. Part of the grand scheme of the problem is the way incentives and rewards work in the [USCG].

> You get leaders who have individual agendas, not focused on the USCG mission. Sometimes they pass work down to guys below them. They don't want to be the leader who takes concerns up to the command.

Some participants suggest that less focus be put on mission-related metrics and more focus put on crew endurance.

Training and Education

Roughly half the focus groups (47 percent) discussed the desire to improve educational and training opportunities for major cutter crews. As with the other areas of improvements, not all groups provided specific ideas. Here, we highlight the key themes related to desired improvements to education and training opportunities, which participants indicate as part of quality of life and a factor in retention. (We describe the retention aspect later in the chapter, in the retention section.)

As described earlier in the chapter, participants cited the main challenge to pursuing education is the unpredictable schedules and high workload on major cutters. They also indicated that unreliable internet access is a challenge to pursuing online educational opportunities.

To address these challenges, some groups suggested better alignment of educational benefits to cutter work life. Some noted that educational benefits, such as tuition assistance (TA), be provided in a way that enlisted cutter crews can feasibly use them without penalty. One participant describes having to pay back TA: "If you fail a course with your TA, you have to pay

it back. There are circumstances while afloat that get in the way of taking courses, so it's not even that tangible of a benefit."

Some participants suggested that the USCG provide dedicated time for cutter crews to pursue education while in home port. As a senior enlisted participant explained, "Make sure there's a rotation for young folks. If they can't take classes and use their benefits and have a positive experience, they'll get out."

Finally, some groups described having an instructor go underway with the crew to provide college courses, but the OPTEMPO was too high and disrupted course time. As one enlisted participant described his experience, "We brought a teacher along and tried to do courses because people couldn't finish online classes without internet. I felt like it went poorly for the mission and watch schedules. Not the teacher—she was great—but multiple times a week it'd get interrupted." One option is to bring an instructor underway when the mission is expected to have a slower OPTEMPO (e.g., fisheries but not counternarcotics).

In addition to the challenges of OPTEMPO (and the associated watch schedules) of having crew members take courses from an onboard instructor, the cutter would need to provide berthing for the instructor on an already-crowded cutter. However, major cutters have experience hosting civilians and contractors as needed. Another consideration for having an instructor on board is the types of courses the instructor would provide. A few participants noted that onboard instructors have taught general education courses needed for college credit (e.g., English literature) because those were useful to the largest number of crew members. Technical or college major–specific courses may be of limited utility, although each command could poll its crews to determine which courses would be of greatest value.

Retention in Major Cutter Community and USCG

We asked focus group participants about retention not only in the major cutter community but also in the USCG overall. Participants described factors that they consider when deciding how long to stay in the major cutter community and the USCG, as well as changes to or additional USCG policies, programs, and benefits that could improve retention.

USCG Retention

Focus group participants discussed factors that positively influence retention in the USCG, as well as factors those that have a negative influence on retention. Below, we highlight the key themes related to USCG retention that emerged from focus group discussions.

Table 6.4 provides the percentage of focus groups that discussed each of the major themes related to retention in the USCG.

Table 6.4. Percentage of Focus Groups Discussing Themes Related to USCG Retention

Theme	Percentage of Groups
Benefits	81
Compensation	72
Commitment to USCG mission	60
Job security	53
Leadership	32
Geographic location	55

Benefits

Focus group participants identified benefits most often as a factor influencing USCG retention, with 81 percent of groups raising this factor. Comments made about benefits were overwhelmingly positive and cited as a reason for members to stay in their USCG careers. In terms of types of benefits, health care was frequently mentioned as influencing members to remain. Participants expressed that having medical coverage for themselves, as well as their families, is a positive factor. One participant from a junior enlisted WMEC group noted,

> We have the best medical in the country. You're taken care of in the [USCG]. You call, go, and don't pay for the appointment. That eliminates stress.

In discussing benefits, participants also frequently raised retirement benefits as a retention factor. Many participants expressed that they planned to stay in for at least 20 years because of the retirement benefits available to them at that point in their careers, with several members noting that similar retirement benefits would not be available in the private sector. However, some participants mentioned that the new Blended Retirement System would not have the same positive impact on retention and that members might leave the USCG earlier in their careers without the same incentive to reach 20 years. Despite this potential impact on retention, several participants noted that they were glad to have the new option through which they could receive some retirement benefits if they choose to leave before they reach 20 years of service. One participant from a midgrade enlisted WMSL group stated,

> There isn't really a company that can compete with our retirement system. That was a huge carrot for a lot of people to make it to the 20-year mark. Now the Blended Retirement System makes it easier to get out, and it makes our retirement way less competitive.

While comments raised about benefits were almost exclusively positive, a small number of participants did note that USCG child care benefits should be improved.

Compensation

Participants in 72 percent of focus groups raised level of compensation as a factor that influences members to leave the USCG. Enlisted members were more likely to raise this factor

than officers participating. Additionally, compensation was raised more often in WMEC groups than in WMSL groups.

Many participants expressed that they felt that the compensation they received for the hours of work required to do their jobs was inadequate. One midgrade enlisted participant from a WMEC group noted,

> I calculated our hourly wage. Average days underway and in port. For an E4 and below, it's below minimum wage. Frankly, if you value time as much as you value money, you're not going to stay in the [USCG], period.

While some participants recognized that benefits may offset some pay issues, they still felt that compensation was too low. Many participants also emphasized that higher pay is available in the civilian world doing jobs with fewer hours and less harsh conditions. This was seen as especially relevant for certain ratings. One member from a senior enlisted WMSL group stated,

> That's why retention sucks. If I'm an [electronics technician] and I become an SME on the system here, I can go to land and get $60,000, or I can become a contractor and get $80,000–90,000 to work on what I've been working on for three years, minus the chain of command, minus the BS, minus having to [go underway]. It's a no brainer—I'm going to become a contractor.

While comments about compensation raised by participants were overwhelmingly negative in terms of impacts on retention, a small number of participants did mention that the stability of receiving a constant paycheck from the USCG was a reason to stay in their careers.

Other USCG Retention Factors

While benefits and compensation were mentioned most frequently as influencing USCG retention, focus group participants also noted a number of other factors they consider when deciding how long to stay in their USCG careers.

In 60 percent of focus groups, one or more participants raised commitment to the USCG mission as a reason to stay in their careers. Officers were more likely than enlisted members to raise this factor as influencing retention. Participants described job satisfaction and having pride in what they do as a USCG member. Members expressed feelings of patriotism and enjoying working with other USCG members as a reason to stay in their careers. A senior enlisted member participating in a WMEC group commented, "One positive thing, a reason for staying, is there are some really awesome things we do. Can't say I'd do the same things on the civilian side."

Job security, raised in roughly half of focus groups, was also identified as a factor that influences members to stay in the USCG. Participants emphasized the stability that USCG job security provides including being able to provide for a family. Participants noted that this same job security and stability would not be guaranteed in the private sector job market. One member from a midgrade enlisted WMEC group stated,

> The job security is a huge factor in staying in the service. It avoids the scramble of keeping your life together and providing for your family.

Roughly one-third of focus groups raised some aspect of leadership as a factor influencing retention in the USCG. Comments about leadership impacts were raised more frequently by enlisted members than by officers. Participants predominantly discussed how leadership can influence members to leave the USCG, rather than being a reason members stay. Participants described specific experiences with bad leaders that could cause some members to leave the USCG.

Despite experiences with negative leadership, a small number of participants also described positive experiences with leaders as a reason to stay in the USCG. They explained how good leaders could positively influence climate and make members want to remain in their careers.

Just over half of focus groups also mentioned geographic location as a factor that could cause members to leave the USCG. Some participants described the burden of moving so often, including the impacts that frequent moves have on families, that can drive members out of the USCG. Other participants expressed flexibility with moving but noted that there were certain undesirable locations that, if assigned, would make them want to leave the USCG. These locations might be far away from family or just in a part of the country that is undesirable to the member.

Major Cutter Community Retention

In addition to retention in the USCG overall, we asked focus group participants about factors that influence their decisions regarding how long they will remain in the major cutter community. It is important to note that, when asked about retention intentions, participants were more likely to indicate a desire to stay in the USCG generally than in the major cutter community specifically. Below we outline the factors that participants identified as influencing their retention in the major cutter community.

Table 6.5 provides the percentage of focus groups that discussed each of the major themes related to retention in the major cutter community.

Table 6.5. Percentage of Focus Groups Discussing Themes Related to Retention in the Major Cutter Community

Theme	Percentage of Groups
Separation from family and friends	91
Workload stress	87
Sea pay	49
Assignment priority	45
Major cutter mission	53

Separation from Family and Friends

Raised in 91 percent of focus groups, separation from friends and family was the theme that participants identified most frequently as a reason members leave the major cutter community. This theme resonated with both officers and enlisted members, as well as with participants from different types of major cutters.

Many participants discussed the difficulties of being separated from spouses and children as a result of being in the major cutter community. Participants described missing milestones in their children's lives and the frustration of missing out on parenting while underway. Participants commented that, if the major cutter lifestyle became too difficult on their families, they would leave the community. One participant in a senior officer WMEC group stated,

> Being away from my children is a factor against going back to a ship. That could influence my career viability. I have a viable career without going back to a ship. There are other paths where not going back to ships makes your career path not viable with regards to promotions. If you're a cutterman, going back to a ship is how you get promoted.

Some participants also noted that unpredictable schedules and long hours when in port also have negative impacts on family and personal lives and could influence them to leave the major cutter community. Unmarried participants without children also described the impact on their personal lives, as stated by a junior officer in a WMEC group:

> I don't have family near, but I have a girlfriend. I don't even see her when I'm in port all the time, so that kind of sucks. That's a big factor for not wanting to go back underway. I would not want to go underway if I had a family like you do.

A few participants pointed out that this separation from family and friends due to the major cutter community lifestyle can lead to depression and put strain on marriages.

Workload Stress

Workload stress was raised in 87 percent of focus groups as a theme that influences members to leave the major cutter community.[7] Participants noted busy schedules and long hours without time off or time to decompress for weeks at a time. Some participants also expressed frustration with the high workload and the additional requirement of qualifications, adding to their stress. One junior enlisted member from a WMEC group commented,

> The cutter life is hard—if you can make it on a cutter, you can make it anywhere else. I've got people from my company that went to a small boat station, and it looks easy—you get to go home every night. Most of the stress and tension is that you just can't leave. Even if you can leave, people look at you and say, "Aren't you supposed to be getting qualified?" It's kind of like having a body ache that never goes away.

[7] Earlier in the chapter, we discuss work schedules and workload as factors that participants indicate directly affect workload stress. Here, we raise these issues in the context of how workload stress, in turn, could affect retention.

Some participants noted that workload stress did not occur only when underway. The workload and related stress was also very high—and even higher for some—in port. Unpredictable schedules exacerbate this stress. Participants also complained that additional duties, beyond their primary jobs, added to the stress and pushed some members to the breaking point of leaving the major cutter community. A senior enlisted member from a WMEC group noted,

> There's a personnel aspect where people have all these additional or collateral duties. So it's not just the work day, watch, and extra stuff with detainees and working a longer mission than the ship and crew should. We have trainings and repairing things that break. That stuff isn't budgeted into the schedule, but you're expected to perform. That all wears people down.

A few participants also commented that the nature of the work on major cutters (e.g., drug interdiction) can put members on edge and add to stress levels compared with other types of USCG settings. In addition, participants noted that resources were lacking, causing members to feel like they had to "work till they drop" because there were not enough personnel to replace them. All of these workload stress factors were identified as potentially influencing members to leave the major cutter community.

Other Major Cutter Community Retention Factors

In addition to the two most frequently mentioned themes, separation from family and friends and workload stress, focus group participants identified other factors that may influence how long members decide to remain in the major cutter community.

Roughly half of groups raised sea pay as affecting major cutter community retention. Generally, participants commented that sea pay and increased sea pay are thought to positively affect retention in the major cutter community and that reducing it will lead people to leave the community. Participants noted that sea pay is a retention incentive largely for enlisted members rather than officers, but sea pay is very low for junior enlisted members and nonrates. A few participants mentioned the restructuring of sea pay and how they felt that it had a negative impact on junior members, which could affect their retention in the community. A senior enlisted member from a WMSL group commented,

> The money is better because you get sea pay. But sea pay can be better for the older guys—junior members don't get much to make it totally worthwhile.

Forty-five percent of groups mentioned assignment priority as a factor that could influence retention in the major cutter community. Many participants expressed that they do not feel that they are receiving the assignment priority they should when coming off their major cutter assignments. They noted that giving members high priority when coming off major cutters could improve retention in the community. A participant in a midgrade enlisted WMEC group stated,

> It would help for retention for sure if we could pick whatever we wanted after this [assignment]. People would want to come to these boats if that was part of the deal.

Participants had mixed views on whether assignment priority received from a major cutter assignment was better or worse than it has been in the past. Of note, a few participants did mention that they had taken their current assignment with the expectation that it would help them receive a preferred choice for their next assignment.

Members in over half of focus groups also raised the mission in the major cutter community as a factor that has an impact on retention. Participants in WMSL focus groups were slightly more likely to raise this retention factor than those in WMEC focus groups. Similar to the commitment to mission's positive impact on overall USCG retention, participants described having a sense of pride in their work in the major cutter community and found the work rewarding. Members expressed that they felt that they were making a difference with their work on the major cutter and that it was worth the time spent underway and away from home. Participants also noted that the camaraderie felt aboard a major cutter can be a reason for some members to stay in the community. A senior officer from a WMSL group commented,

> The mission is exciting, and it's meaningful. That's why we do it, from the nonrates to the captain. Everyone gets fired up for that. Saving lives is awesome. The crews are wonderful, and it's a great opportunity to work with a diverse spectrum of rates at this time in my career.

Not all comments about the mission of the major cutter community were positive, however. Some participants, primarily enlisted members rather than officers, commented that they felt that the mission in the major cutter community is changing for the worse and that this could negatively affect retention. Members described longer deployments that they felt were more similar to the Navy lifestyle rather than that of the USCG, with the major cutters going farther off coast. A few participants mentioned that they were unclear about the purpose of keeping detainees onboard for an extended period of time and were not always comfortable with this part of the mission. One midgrade enlisted member from a WMEC group commented,

> It's the mission here too . . . . We had 200 migrants on the deck and they weren't even trying to get to the United States. It makes you think, "Why am I down here? This isn't protecting our country" . . . . We want to save them. But detaining them for that long, it's just not for everyone.

Although comments were mixed regarding the major cutter community mission, this factor can have an impact on members' retention in the community, both positive and negative.

Improvements to Retention on Major Cutters and in the USCG

After participants identified factors that they felt influenced retention decisions in the USCG overall and the major cutter community specifically, we asked them what the USCG could do to improve retention in terms of changes to or additional policies, programs, or benefits. We

describe those suggested improvements in the sections below. Table 6.6 summarizes these factors, which are separated into monetary incentives and other factors; we include a description about each.

Table 6.6. Focus Group Themes for Improving Retention on Major Cutters and in USCG

Theme	Percentage of Groups	Recommended Changes from Focus Groups
Monetary incentives	50	• Increase sea pay. • Allow crews to keep more Basic Allowance for Subsistence (BAS) while in home port.
Other retention improvements	Variable[a]	• Promote geographic stability for members. • Improve assignment priority and career advancement. • Fully fund education benefits and increase access.

[a] Percentages by topic are as follows: geographic stability (30 percent), assignment priority (28 percent), and education (45 percent).

Monetary Incentives

Participants in half of all focus groups identified monetary incentives as having the potential to improve retention, particularly in the major cutter community. Increased sea pay was the monetary incentive mentioned most frequently by participants. Many participants do not feel that the current level of sea pay is adequate for what is required of members during major cutter assignments. A senior officer in a WMEC group commented,

> The biggest motivator is money. The [USCG] kind of went in the right direction to revamp the sea pay system. The ensigns only get $5 per month, which is kind of an a****** move. It's like a middle finger, and it should have just gone to zero, but the money went to the right place. It went to the junior enlisted. The ensigns coming in, it's a bit tougher because of how they were brought up in the Academy. Nonrates coming out of boot camp are pointed to the cutter community. They know what they're getting into, but . . . their expectations are skewed. The money thing is really it. The incentives early on, maybe we need to talk sea pay, tax breaks. Money talks.

Some participants also suggested that the USCG provide hazard pay because sea pay does not cover the hazards to which members are exposed on a major cutter. A midgrade enlisted member from a WMSL group commented on this issue:

> Better incentives, extra pay for the hazards of being underway in itself. You don't have to be doing any missions to have those hazards. Just being on a cutter in six-foot seas, you can fall and cause a career-ending injury.

A small number of participants also suggested that bonuses would improve retention in the major cutter community. Some participants recommended that the USCG align monetary incentives with major cutter classes, as stated by a midgrade enlisted member from a WMEC group:

> There's no incentive for the difference in cutter classes. Maybe if they changed the incentives, say, $300 on an 87 or $350 a month for a 210. The $50 isn't worth it.

Additionally, participants mentioned inport BAS as a way to improve retention in the major cutter community. Participants expressed that taking away BAS when in port is not fair because it is taken away even when members are not eating all of their meals on the boat. When in port, members often eat meals at home, so the deductions from BAS differ from those made when they are away from home port. Participants mentioned that this affects families because they lose funds for groceries when BAS is taken away.[8] Comments about the inport BAS issue were more prevalent with enlisted members than with officers. One midgrade enlisted member from a WMEC group stated,

> I don't eat every meal here. When I'm in port, I'm still going home, and I still need to get groceries. I do feel like the way they're taking our BAS [away] doesn't equate to the meals we're being offered. It especially affects people with families. We're losing money.

Other Retention Improvements

Beyond monetary incentives, participants identified several other suggestions for improving retention. For example, participants recommended that geographic stability could improve retention for members. This suggestion was raised in just under a third of focus groups and was more prevalent in WMEC groups than in WMSL groups. Participants noted that moving frequently and being deployed often is difficult on children and spouses. Members expressed that staying in one area for longer would help with family issues, such as spouses' career consistency and children being able to remain in the same schools, which could improve retention. One participant from a senior enlisted WMEC group commented how geographic stability would improve his retention:

> I'm leaving this summer to go to another unit to hit the 20-year mark. If they told me that from years 20–30 I can stay in one area for ten years, I'd stay in. But to do that, I'd have to move at least three times, and I'm done with that.

Some participants also noted that geographic stability specifically in the major cutter community would improve members' retention in the community. A participant from a senior enlisted WMSL group noted,

> Geographic stability. If they had a way to move people from the cutter and keep them in same area so we're not moving families so often.

[8] All USCG members receive BAS as part of their compensation packages. The assertion by some participants that BAS is taken away is not accurate. Instead, the amount of BAS that is deducted can vary such that the net amounts that members see in their paychecks can vary, but the gross amounts they receive stay the same. Also, per USCG policy, BAS is not meant to provide subsistence for family members, only USCG members. See U.S. Coast Guard, Human Resources, Health, Safety, and Work-Life, "Sea Legs—Pay and Benefits," webpage, undated.

Additionally, participants recommended the USCG provide more advance notice before transfers. They commented that it is difficult to deal with moving logistics, especially for members with families, with such short notice.

In addition to recommendations related to geographic stability and transfers, participants suggested that the USCG increase the impact that major cutter assignments have on career advancement to improve retention in the major cutter community. Participants expressed that the USCG needs a way of determining advancement that is not based primarily on exams; members based on land have more time to study for exams and are better prepared for promotion. Participants did not feel that the experience they gained underway translated into advancement because of the current exam-based system. Additionally, many participants expressed that members stationed on land have career advantages because they have time for other career-enhancing activities. One participant from an early-midlevel enlisted WMEC group commented,

> The [USCG] needs to find a way to better its advancement. The service-wide exam doesn't really work, and [land-based members] have lots of time to study for the tests on land. The tests determine who advances. A person who is more experienced—like an E-4 in for seven–eight years and second-class petty in for four years. The guy below him has way more work experience than the guy who was good at taking a test and had the time to study.

To further increase the impact that major cutter assignments have on career advancement, participants noted that the USCG needs an incentive program, such as additional points for tours on a major cutter, guaranteed priority coming off a major cutter, or priorities in accordance with the sea pay table to reward those on ships with more-demanding lifestyles. Participants commented that not having the appropriate assignment priority or not getting preferred assignments can affect advancement and influence retention in the major cutter community.

Finally, participants in 45 percent of focus groups suggested that the USCG fully fund educational benefits and increase access to educational opportunities to improve retention. Several enlisted members mentioned TA as a good educational benefit but also complained that it is one of the first items on the chopping block when the USCG is making budget cuts. Participants expressed their disappointment in those cuts. A participant from a junior enlisted WMEC group noted,

> They recently cut the tuition assistance down in half, and that was a big thing I liked when I joined. It was like $4,000 a year, and now it's $2,000. Cutting those [benefits is] bad, and maintaining what they have, or at least what is promised to you when you enlisted, [is] nice.

Participants felt that the GI Bill is a great benefit both for themselves and for their dependents. Officer participants also expressed positive comments regarding the free graduate school benefits available to them. Participants emphasized that maintaining these educational benefits is important for retention.

Some participants suggested that the USCG take steps to improve their access to educational opportunities and benefits while underway. Members identified the need for better online

courses, improved internet access, and potentially an onboard teacher for in-person instruction. Participants also suggested that the USCG explore options for members to receive degree credits from on-the-job training. If technical training members received while underway could count toward a degree, members underway would have an easier time working toward a degree and be less disadvantaged compared with their land-based peers in terms of educational opportunities.

Summary

In this chapter, we described key themes from focus groups with major cutter crew members. Key themes fell into three broad categories: work environment, quality of life on major cutters, and retention (both in the major cutter community and in the USCG). We described the factors that participants identified as affecting each category. We also summarized the types of changes that participants indicated could improve major cutter work environment, quality of life, and retention.

Focus groups discussed challenges of working and living on major cutters, including unpredictable schedules, long work hours, insufficient sleep, limited communication with family and friends while underway, not enough personal time in home port, and (for enlisted crews on WMECs) little to no privacy and personal space while underway. WMEC groups cited the recent increase in patrol length to 90 days as not meeting their expectations and being able to affect their morale. Focus groups indicated that such factors as long work hours and time away from family and friends can create stress and reduce morale, which can then reduce retention in the major cutter community and, in some cases, in the USCG. Other retention concerns focused on compensation and benefits: amount of sea pay (mainly for junior enlisted), sea time points and assignment priority (which affect advancement opportunities and geographic stability), and the ability to fully use such benefits as tuition assistance and BAS.

However, focus groups did not only cite negative aspects of life on major cutters. Participants assigned to WMSLs appreciated the amenities (e.g., personal entertainment options), especially when compared with those on older cutters. Focus group participants also cited pride in the missions they accomplish and job security as reasons they would stay in the USCG.

Focus groups also identified other changes they thought could improve life for crews and ensure that retention does not decrease significantly. Recommendations included better internet access and online applications to communicate with family and to access entertainment; greater opportunities to use educational benefits (e.g., dedicated time in home port); retaining or increasing compensation for junior enlisted crews (i.e., more sea pay, keeping more BAS in home port); and increasing advancement opportunities and geographic stability for those who serve on major cutters.

7. Conclusions

In this chapter, we summarize our major findings and offer options to the USCG as it seeks to find an appropriate balance between its mission requirements and the endurance of its service members aboard the major cutters.

Major Findings

Serving on a major cutter is associated with many positive outcomes for enlisted personnel, including continuation rates, completion of an initial term of service, promotion to E-5, and first- and, in some cases, second-term reenlistment. While there are some differences across platforms, enlisted personnel at sea are more likely to stay in the USCG than those serving ashore. This is consistent with our qualitative findings and the idea that service members value the opportunity to contribute to the USCG mission. The results for officers are different, and serving on a major cutter is associated with less positive outcomes for officers.

Current DAFHP limits appear to be set well. This is fundamentally good news: First-term reenlistment rates are highest near the most common levels of operational intensity, which suggests that the USCG likely does not have to make substantive adjustments to the way in which it mans its major cutters to support reenlistment. Indeed, the USCG could likely make small increases to its deployment levels without experiencing a large decline in reenlistment. However, recall that reenlistment models focus on personnel in the early phases of their careers. Both qualitative and quantitative results indicate that the USCG should not disregard operational intensity, nor should it presume that service members will be unaffected by substantial increases in operational intensity. Additionally, operational intensity includes more than DAFHP; reenlistment rates are lower among personnel who experience higher-than-expected levels of inport operations.

Working conditions matter. Service members who participated in our focus groups consistently emphasized the adverse role that unpredictable schedules (including watch schedules), long work hours, and extra duties played in their work environment and quality of life. They also noted limitations on their ability to reliably communicate with family and friends while underway. While the data do not exist for us to quantitatively assess the extent to which these conditions affect retention in the USCG and in the major cutter community, the consistency with which these issues were raised suggest that they are important and are on the minds of service members who participated in the focus groups.

Extended periods of time away may need continued monitoring. Our quantitative analyses show no evidence of a negative association between 90 or more consecutive DAFHP and reenlistment. However, our focus groups with personnel serving on medium-endurance

cutters highlight these extended periods of time away as a source of service member dissatisfaction. Broadly speaking, service members express both concern and tolerance for the time spent away from home; while being away from home causes stresses on service members and their families, time away is inherently required to perform key aspects of the major cutters' missions. But service members discussed the length of individual deployments and reported that deployments of 90 days or more have become more common in recent years, especially on some platforms. Service members were divided in their reactions to longer deployments.

Retention in the major cutter community may be a challenge. Our analysis reveals that more time spent on major cutters is negatively associated with continuing to serve in the cutter community after the first reenlistment point. This could be driven by rotational patterns (those serving afloat often move to shore billets), but the qualitative results suggest that retention in the community could be a challenge.

Options to Improve Crew Endurance and Satisfaction on the Major Cutters

Our qualitative analyses indicate multiple ways in which the USCG could improve working conditions and quality of life to promote crew endurance and satisfaction for personnel serving on major cutters. Given the qualitative nature of our data, we offer these as options, not recommendations, and discuss some of the trade-offs associated with making these adjustments.

Better Connectivity While Underway Would Improve Quality of Life

Almost all of our focus groups indicated that time away from family and friends is a key reason that personnel choose to leave the major cutter community. Participants cited limited internet access and restrictions on communication applications as exacerbating the difficulty of being away. Some groups noted that better internet connectivity would not only improve crew morale, by allowing crew members to better communicate with the outside world while underway, but also help them perform their USCG work more effectively.

Investing in more-reliable internet services or other communication infrastructure would, of course, come at a financial cost. Operational security factors and risks of distraction from the mission should also be considered. However, given our focus group participants' universally strong feelings about being able to reliably reach family and friends, exploring options for improving personal communication on major cutters is prudent. Improving connectivity would not involve changes to manpower or personnel policies, potentially allowing the USCG to achieve improved personnel outcomes without adjustments to its employment strategies.

Greater Command Communication and Standardization of Work Schedules May Promote Crew Endurance

Focus group participants, especially enlisted personnel, cited command issues as important to crew endurance. Clear, frequent communication by major cutter leadership is a relatively low-

cost effort but something our participants indicated that they value. This applies throughout the chain of command, not only to the senior officers but also to junior officers and senior noncommissioned officers. Training leaders on principles of effective communication would involve an investment of training resources but could result in improved morale and retention within the community.

The USCG could also explore how to incentivize commanders to embrace the crew endurance program, especially when it comes to setting watch schedules. Although there is a USCG commandant instruction about crew endurance management,[9] some officers in focus groups indicated that a focus on crew endurance is more "guidance" than "requirement" for commands. Furthermore, there would be little cost, and potentially a large benefit, in providing a forum for personnel to offer suggestions for improvements to leadership. For example, some focus group participants cited examples, such as moving the wake-up times by an hour, as having significant benefits for the crew's rest. Participants also value standardization, or predictability, of their work schedules. One option would be to identify a leader on each major cutter to serve as a "dedicated crew endurance manager," to engage with crew members, solicit their feedback, and communicate these ideas to senior leaders.

These alternatives do have modest costs associated with them. However, like with improvements to connectivity, they would not involve major changes to manpower or personnel policies, and they have the potential to improve quality of life and, with it, retention in the USCG and in the major community.

Other Options Cited by Focus Group Participants Could Have Value but Could Be Expensive

Focus group participants also identified other factors that could mitigate the extent to which personnel leave the major cutter community. For example, participants mentioned increased sea pay and sea points, bonuses for cutter assignments, higher assignment priority upon leaving a cutter assignment, more geographic stability, and increased opportunities to use educational benefits. These factors are not specifically targeted to improving quality of life but instead can be thought of as compensating differentials to offset the lower quality of life associated with serving on major cutters. The challenge with these options is that they ultimately involve payments not just to individuals who require them to continue serving in the major cutter community but also to those who would have continued without them. We describe the most-relevant pay elements in Chapter 2. There is a literature on how various types of pay influence retention, and some information is available on how other quality-of-life factors are related to retention. In this analysis, we did not explore the costs of the specific options cited by focus group participants. If the USCG has interest in exploring these options, we would recommend a pilot program (actual

[9] Commandant Instruction 3500.2, *Crew Endurance Management*, Washington, D.C.: U.S. Coast Guard, 2006.

implementation on a small scale) or simulation modeling to identify the potential costs and benefits of using these tools.

Increasing Standardization of Crew Qualification Process and Addressing Workload Requirements Could Help but Would Require Changes to Employment Strategies

According to participants from our focus groups, the number and mix of personnel who have the necessary qualifications to work on major cutters significantly affects crew PERSTEMPO. For example, the number and mix of qualified personnel on a major cutter affects how much time and resources the command and crew need to put toward qualification training for new members and how many crew members are available to stand watch. Several focus group participants suggested having more qualified available personnel, including surge manning in home port. Several participants also recommended that qualifications should be acquired *before* personnel are assigned to major cutters and that the qualification process be streamlined. The preassignment qualification process might take the form of a basic training program.

However, increased qualified manning, surge manning, and a new qualification program would require significant resources to implement. Because we did not conduct a formal cost-benefit analysis of implementing these options, we instead recommend that the USCG leadership identify ways in which it could increase standardization of the qualification process. This might include, for example, reducing qualification requirements that do not significantly increase the risk of crews not being able to execute the missions on major cutters.

In addition, some focus group participants noted that, if manning cannot be increased to relieve the burden on crews, the USCG should take a look at how much manpower is really needed to perform certain tasks (e.g., engine maintenance) and plan billets and assignments accordingly. That is, the USCG should explore the feasibility of undertaking a rigorous analysis of workload requirements on major cutters to determine whether workloads can be reduced for existing crews.

Implications for USCG Employment Strategies

The USCG's major cutters deploy frequently, and some deployments are quite lengthy, currently stretching beyond the 90-day mark. OPTEMPO is limited by USCG policy; major cutters currently deploy no more than 185 days per year, averaged over a two-year period. However, personnel who are assigned to major cutters may be deployed for more or less than 185 days per year, depending on when they rotate and the exact pattern of cutter deployments. Therefore, PERSTEMPO varies; our analysis indicates that personnel who are assigned to major cutters early in their careers and face an initial reenlistment decision may have spent the majority of their time in the USCG assigned to a major cutter *and* may have spent the majority of that time deployed. In contrast, other personnel approach the initial reenlistment decision with far less deployment and cutter experience. In some cases, personnel may choose to take back-to-back positions with heavy deployment levels to accomplish specific career goals.

The central focus of this research was on determining how personnel on major cutters respond to time deployed. Deployments may influence personnel in a broad variety of ways. A change in the total time deployed could result in a change in attitudes toward serving in the major cutter community, a change in willingness to remain in the community, or even a change in willingness to continue serving in the USCG. In fact, individual responses will vary; all of these responses would likely be observed across the community. Our quantitative analyses focus on retention (in the USCG and in the major cutter community), as well as promotion rates among enlisted personnel. Our quantitative analyses also focus on service members in the earlier parts of their careers because these are the personnel for whom we have complete service records. Our qualitative analyses allow us access to service members in the major cutter community across all experience levels; collecting qualitative information also allows us to focus on intentions to remain in the USCG and on attitudes toward USCG service.

Information from these sources of data indicate that service members are not overly sensitive to DAFHP at the first reenlistment points. In particular, enlisted personnel are roughly as likely to reenlist if their DAFHP experience to date is at the current limit, slightly above the limit, or somewhat below (in this context, *slightly above* and *somewhat below* refer to changes in the range of 5 to 10 percent of days, as in shifting from 45 to 50 percent time spent away from home port). However, all personnel are sensitive to inport operations (inport operations were a key topic of discussion in our focus groups, and our quantitative results indicated that they are linked to lower levels of reenlistment). The qualitative analyses, which include broader outcomes, such as attitudes toward serving on major cutters and intentions to reenlist, affirm that personnel understand the necessity of deployment to accomplish the mission. However, personnel also indicate that time away from home is costly to them and to their families.

Any change in DAFHP should be accompanied by careful tracking and analysis of individuals' deployment experiences. Issues related to retaining personnel (in the major cutter community or in the USCG), if they arise, may occur first among relatively experienced personnel. Combined, the quantitative and qualitative results indicate that changes in DAFHP should be accompanied by clear and careful communication for the reasons behind the change. Additionally, we recommend that any increases in DAFHP be accompanied by some of the options discussed above, such as increasing connectivity levels while at sea, standardizing work schedules, or limiting inport operations schedules. These changes have the potential to increase crew resilience and endurance; such options could mitigate negative effects related to an increase in DAFHP.

Tracking and analyzing individuals' deployment experience and relating this experience to retention in the major cutter community and the USCG would provide valuable, real-time information to the cutter community. As the community continues to undergo changes with new platforms, understanding how deployment experience is changing over time will provide a valuable tool for managing the force and maintaining capacity to accomplish the USCG's mission.

Appendix A. Quantitative Data, Definitions, and Details

In this appendix, we describe our data, as well as definitions of key variables. Our quantitative data are drawn from two separate sources: the USCG's administrative personnel database and the USCG database that characterizes each cutter's activities. We merge data from these two sources together to describe personnel on the cutters and to characterize their experiences in terms of DAFHP and other activities. We discuss each source of data in turn.

Data Describing USCG Personnel and Their Careers

Our quantitative data are drawn primarily from the USCG's administrative personnel database. We include information beginning in January 2005; while personnel records are available for earlier dates, we set the beginning date in January 2005 because cutter deployment data were not consistently available prior to this date. The most-recent data available when we began this project were from September 2017. Throughout this report, we present information by FY, but we do not have information from the first three months of FY 2005. Because we generally present proportions or rates, information from FY 2005 can be compared with information from other FYs.

We included regular active-duty personnel, as well as reservists on extended active duty. The USCG files were provided to us at the person-month level. Some 40,000 people serve in the active-duty USCG at any point in time; combining information on service members over time produced about 6 million person-month observations. The data exist at the person level but without identifiable information. All data collection and research processes used as part of this effort were reviewed and approved by RAND's Institutional Review Board (the Human Subjects Protection Committee), as well as by the USCG Institutional Review Board.

The USCG personnel files did not include information from three months within our time period: May 2008, July 2009, and January 2015. When calculating time in the USCG and time on major cutters for personnel serving during these periods, we used first and last months observed. Therefore, total experience is reflected (despite the missing months). We cannot discern between those who left the USCG or the cutter community in a missing month and those who left in the month prior to a missing month. In these cases, we assume that the service member left in the month prior to the missing month. We therefore slightly underestimate experience; these differences, however, appear to be very small.

The vast majority of enlisted personnel have initial terms of four or six years in length. About 1.5 percent of enlisted personnel have initial terms of eight years. We exclude them from our analyses; the vast majority entered the USCG within the past eight years, so we generally cannot observe first-term completion.

The data include measures of age at accession, marital status and presence of children at accession, race/ethnicity, and gender. For enlisted personnel, the data also include AFQT scores at accession. The AFQT is formed from four of the subtests of the Armed Services Vocational Aptitude Battery. The subtests that form the AFQT focus on math and language (vocabulary and reading comprehension). AFQT scores are scaled as percentiles; for purposes of enlistment, the scores can be divided into the following categories: category 1: 93–99th percentile, category 2: 65–92nd percentile, category 3A: 50-64th percentile, category 3B: 31–49th percentile, and category 4: 10–30th percentile. We follow this convention. There are very few USCG enlisted personnel with AFQT scores below 31, and their performance is quite similar to those with scores in the 3B range. However, some personnel have missing AFQT scores; in regressions, we include a variable to indicate that the score is missing.

Based on conversations and feedback from SMEs, we divide ratings of enlisted personnel into groups related to job tasks: operations-oriented ratings, engineering-oriented ratings, service- and support-oriented ratings, and nonrates.

Primary variables of interest include retention (especially reenlistment at the end of the first contract), promotion, and retention in the cutter community. We discuss each in turn.

While contracts are of prescribed lengths (such as six years), personnel who do not reenlist sometimes leave the USCG a month or two prior to the end of the contract or remain for an additional month or two. Potential reasons include completing a deployment, accomplishing a task while in port, or family-related issues. Therefore, we define contract completion as occurring for all who leave no more than three months prior to (or after) the contract end date.[1] In some cases, personnel remain in the USCG for a substantial period of time after the end of an initial contract but do not reenlist. SMEs indicated that extensions generally occur for the convenience of the service member (for example, to accommodate school or work schedules of other family members). Extensions are defined as less than 24 months in length; service members who depart the USCG 23 months after the end of the initial contract are considered to have extended, while those who stay for at least 24 months are considered to have reenlisted. Service members may extend their initial period and then make a reenlistment decision. For these reasons, the first reenlistment decision does not always occur on the date that the initial contract ends. We do not consider extensions to be reenlistments—instead, we consider the reenlistment decision to occur at the end of the extension. Extensions are not unusual; about one in eight enlisted personnel extend at the end of their initial terms. Second extensions (directly following the first) also occur, although they are much more unusual. In these cases, we consider the reenlistment decision as occurring at the end of the second extension.

Some of the variables included in our analyses change over the course of a service member's career. Examples include marital status, rating, and pay grade (as well as years of service and time serving on a major cutter). Because we have monthly observations on each service member,

[1] When we experimented with using a six-month cutoff, results were very similar.

we can track these changes over time. When the service member is considering a decision at the end of the first contract, we include the current status in our models. For example, when modeling the probability of reenlistment, we include marital status at the first decision point (rather than at accession).

In the case of officers, contract dates are less helpful; in many cases, officers' initial recorded contract dates are set to end decades in the future. Therefore, in the case of officers, we consider the first term to be five years in length and consider the point at nine years of service to be another key point for officers. However, we recognize the imprecision in these measures and therefore refer to these measures as continuation (rather than reenlistment). As in the case of enlisted personnel, we consider officers who leave the USCG no more than three months prior to the five-year (four-year) mark to have completed their initial (second) terms.

We consider two key promotion decisions: In the case of enlisted personnel, we consider promotion to E-5 within four years; in the case of officers, we consider promotion to O-4 within 10.5 years. About one-third of enlisted personnel achieve this promotion mark; the proportion of officers who achieve O-4 by 10.5 years is higher, about 37 percent. We do not present models of officer promotion because promotion in this group is driven largely by class rank at the time when the officer enters the USCG and by position availability. When modeling fast promotion among enlistees, we include only those who remain in the USCG for at least four years because we cannot know what the promotion outcome would have been for those who leave prior to serving 48 months. However, we also tested alternative definitions requiring "fast" promotion six months earlier to avoid excluding those who leave a few months from the end of their terms. The results are similar to those produced by the models presented in Chapter 5. We do not model promotion separately for warrant officers, both because of the relatively slow promotion speed found among warrant officers and because of the small number of warrant officers included in our sample.

We define retention in the cutter community among the subset who serve on a major cutter during their initial term, complete their initial term, and remain in the USCG for at least 24 months after their initial term. For this group, we define remaining in the cutter community as spending at least six months assigned to a major cutter after the retention point.

Data Characterizing Cutter Activities

We include information on all cutters and on additional platforms. This list is dominated by tugs, patrol boats, and patrol cutters but also includes icebreakers and the other major cutters. We focus our analyses on those serving on large, white-hull cutters (WMECs, WHECs, and WMSLs) but include these other platforms in some of our descriptive analyses.

We merge the information on each cutter's operational status with information from the personnel database; in this way, we can describe both the major cutters' DAFHP and inport operations patterns, as well as the patterns experienced by the personnel on the major cutters.

The relationship between cutter activities and service member retention is a key focus of this research. Therefore, we define activities prior to the reenlistment point with care. As noted above, some service members extend their initial contracts; in such cases, the service members make a reenlistment decision after the contract end date. Prior research (especially Hosek and Martorell, 2009) indicates that deployments experienced in the years immediately prior to a reenlistment decision are correlated with the decision. Therefore, we focus on cutter activities that occur in the three years prior to the reenlistment decision. (For any reenlistment decision that occurs after an extension, we shift the three-year window to include the years immediately preceding the decision rather than leaving the window fixed on the final years of the initial contract.) We define activities prior to the second reenlistment decision in a parallel fashion. We also constructed a set of measures including only the year preceding the decision; results were broadly similar.[2] Finally, when we excluded those with extensions prior to the reenlistment decision, results were similar to those reported in the text.

In some cases, a single WMSL had multiple entries; these entries appeared to be based on the initial crew swap policy. For example, some variables were coded for BERTHOLF and CREW ALPHA (BERTHOLF). We combined these observations into a single observation.

Determining an appropriate start date for the new major cutters that came online during the period covered by our data is not straightforward. We used dates of commission and included information beginning in the month after commissioning. We recognize that the early months after commission represent an unusual operational time for cutters. We caveat our results in Chapter 5 based on this. However, excluding additional information from the WMSLs would have created misleading calculations on a variety of aspects of USCG operations, including the number of personnel, and total DAFHP.

[2] In following service members through extensions to a reenlistment decision and in constructing variables focused on the three- and one-year windows prior to that decision, we follow the procedure developed for Hosek and Martorell, 2009.

Appendix B. Focus Group Materials

This appendix provides the language used in the consent form, background questionnaire, and protocol for the focus groups with major cutter crew members.

INFORMATION SHEET FOR PARTICIPANTS

HSOAC Study on Coast Guard Major Cutter Personnel Tempo

This study is being conducted by the Homeland Security Operational Analysis Center (HSOAC), a federally funded research and development center (FFRDC) operated by the RAND Corporation under contract with DHS. The research is being sponsored by the Coast Guard to help identify strategies for optimizing the employment of major cutters.

As part of the study, we are conducting focus groups with Coast Guard officers and enlisted members to learn about the factors associated with time assigned to major cutters and other Coast Guard vessels that personnel may consider when making decisions about their Coast Guard careers.

VOLUNTARY PARTICIPATION

Your participation in this discussion is entirely voluntary. You can choose not to participate or skip any points you would rather not discuss. Additionally, if at any time you no longer want to participate, just let us know, and we can stop the conversation.

CONFIDENTIALITY

HSOAC will treat the information you provide as confidential. We will not disclose the individual responses you provide to anyone outside of the research team, except as required by law (We cannot provide confidentiality to a participant regarding comments involving criminal activity/behavior, or statements that pose a threat to yourself or others). Information from the discussion will be summarized in aggregate form across all participants for any reports or presentations we make and will not be attributed to specific individuals. We will be taking notes on the discussion today, but to protect confidentiality, we will not include names or any other information that might identify you in our notes.

We do plan to use some comments/quotes from the focus group in reporting our findings and conclusions. However, all comments/quotes will be reported as anonymous and will not contain information that would lead you to be identified.

Do NOT discuss or comment on classified or operationally sensitive information. In addition, please do not discuss anyone else's comments after the group is over. Although we are asking everyone in the group to keep each other's answers confidential, we cannot guarantee that the other participants here will do so. Please do NOT answer any questions in the discussion that you do not feel comfortable sharing in front of the group. Instead, feel free to say "pass" to those questions, and you will have an opportunity to provide written comments after the group discussion.

FOR MORE INFORMATION

For questions about the study, please contact Jennie Wenger at (310) 393-0411 / jwenger@rand.org or Maria Lytell at (703)-413-1100 / mlytell@rand.org.

If you have questions about your rights as a research participant or need to report a research-related injury or concern, you can contact RAND's Human Subjects Protection Committee toll-free at (866) 697-5620 or by emailing hspcinfo@rand.org. If possible, when you contact the Committee, please reference Study #2017-0824.

BACKGROUND INFORMATION

1. What is your current rank?

2. If you are an officer, what is your primary specialty? If you are enlisted, what is your rating?

3. What is the name of the cutter to which you are currently assigned?

   _____

4. When was the last time you spent time away from home port on a cutter?
   - o A week or less ago
   - o 2-4 weeks ago
   - o 4 or more weeks ago
   - o I have not been away from home port on a cutter

5. When are you next scheduled to spend time away from home port?
    - A week or less from today
    - 2-4 weeks from today
    - 4 or more weeks from today
    - I am not scheduled to spend time away from home port

6. Are you a cutterman? (Connotes 5 years of service assigned to a cutter)
    - Yes
    - No
    - Don't know

7. What is the highest level of education you have completed?
    - GED, or no high school degree
    - High school
    - Some college
    - College graduate (*If you attended a military service academy, please specify which one:* _____)
    - Graduate school degree (e.g., law degree, master's degree, M.D., Ph.D.)

8. If you are an officer, were you enlisted prior to becoming an officer?
    - Yes
    - No
    - Not applicable (not an officer)

9. What is your marital status?
    - Single (never married)
    - Married
    - Divorced or separated
    - Widowed

10. If you are married, what is your spouse's military status?
    - Coast Guard, active
    - Coast Guard, separated/retired/Reserve
    - Military (not Coast Guard), active
    - Military (not Coast Guard), separated/retired/Reserve
    - Civilian, not a current or former military service member

11. Do you have children?
    - Yes
    - No

12. What is your gender?
    - Female
    - Male
    - Do not wish to answer

FOCUS GROUP PROTOCOL

Provide Study Overview and Administer Consent

General Background/Ice Breaker Questions

1. We are first going to begin with questions regarding the characteristics of this group.
    a. What is your current rank?
    b. What is your primary specialty [officers] / rating [enlisted]?
    c. How long have you been in the Coast Guard?
    d. How many months or years do you have remaining on your current service obligation?
    e. Do you currently intend to remain in the Coast Guard past your current obligation?
        i. For those who do not intend to remain in the Coast Guard:
            i. Do you have a separation date?
            ii. Are you planning to remain affiliated with the Coast Guard by serving in the Reserve?

Time Away From Home Port

Now, we'd like to ask about your time away from home port aboard Coast Guard's cutters.

2. About how much time have you spent away from home port on cutters since joining the Coast Guard?
    a. *Probe:* What kinds of cutters (e.g., 210s, 270s, 378s, 418s) have you spent time away on?
3. What factors affect your work environment when you are away from home port?
    a. *Probes*: How do watch schedules affect work environment?
        i. How do watch schedules for different types of positions on a cutter affect the work environment?
        ii. How do watch schedules on different types of cutters affect the work environments on those cutters?
    b. *Probes:* Do any other factors affect the work environment? For example,
        i. Length of the time away (consecutive days away from home port)?
        ii. Leadership?

iii. Mission?
iv. Training opportunities (ability to learn how to perform your job)?
v. Camaraderie/bonding with fellow cutter crew members?
vi. Others?

4. What factors affect your quality of life when you are away from home port?

    a. *Probes:* Do any other factors affect quality of life on cutters? For example,
        i. Privacy/personal space?
        ii. Sleep?
        iii. Entertainment (e.g., television)?
        iv. Opportunities to socialize with co-workers?
        v. Ability to communicate with family?
        vi. Amenities (e.g., food, laundry, exercise facilities)?
        vii. Religious and cultural accommodations?
        viii. Others?

5. Are there other factors that affect the work environment or quality of life during time assigned to the type of cutter you are currently assigned to? How might those differ from factors related to time assigned to another type of Coast Guard cutter?

6. Do you plan to remain in the cutter community for the time you intend to remain in the Coast Guard? Why or why not?

Retention Factors

We are interested in hearing about your personal thoughts on your career and what you know about reasons your fellow peers have chosen to stay or leave.

7. What factors have contributed or would contribute to you staying in the Coast Guard?

8. How does family influence decisions regarding how long to stay in the Coast Guard?

    a. *Probes:*
        i. For those of you with spouses or partners, how do spouses/partners influence decisions regarding staying in or leaving the Coast Guard? How, if at all, does compatibility of one's career with their spouse's/partner's career influence decisions? Decisions about remaining in the cutter community?
        ii. How do children influence decisions regarding staying in or leaving the Coast Guard? Decisions about remaining in the cutter community?

9. How does the work environment influence decisions regarding how long to stay in the Coast Guard?

    a. *Probes:*
        i. How do watch schedules influence decisions regarding how long to stay in the Coast Guard?
        ii. How does the number of days away from home port/PCS [permanent change of station] influence decisions regarding staying in or leaving the Coast Guard? Decisions about remaining in the cutter community?
        iii. How does the timing or schedule of days away from home port influence decisions regarding staying in or leaving the Coast Guard? Decisions about remaining in the cutter community?
        iv. Do your expectations about time away from home port influence decisions to stay in the Coast Guard? In the cutter community?

    b. *Probes:* Do any other work-related factors influence decisions on how long to stay in the Coast Guard? For example,
        i. Living conditions on cutters (e.g., quality of the food, social activities, privacy)?
        ii. Leadership?
        iii. Promotion opportunities?
        iv. Salary?
        v. Benefits?
        vi. Mission of the cutters?
        vii. Others?

10. What changes to or additional Coast Guard benefits, programs, or policies would lead cutter crew members to further consider remaining in the Coast Guard, or within the cutter community, beyond their initial obligation?

    a. *Probes:*
        i. Are you aware of changes to the retirement system? If so, how do you think retirement options might influence decisions to stay in or leave the Coast Guard?
        ii. Are you aware of the Coast Guard Temporary Separation (TEMPSEP) program? If so, how do you think this program might influence decisions to stay in or leave the Coast Guard?
        iii. Are you aware of the Coast Guard educational opportunities and benefits (i.e., TA and G.I. and Post 9/11 Bill)? If so, how do you think these benefits might influence decisions to stay in or leave the Coast Guard?
        iv. Are you aware of how your salary, pays (e.g., sea pay), and benefits compare to civilian jobs? If so, how do you think those differences in salary, pay, and benefits might influence decisions to stay in or leave the Coast Guard?

Closing Questions

11. What would be your number one factor or “deal breaker” that would cause you to separate from the Coast Guard? From the cutter community?

12. What would be your number one factor that has or would cause you to stay in the Coast Guard? In the cutter community?

13. How might the Coast Guard better assist personnel assigned to cutters with family-related or personal matters? With work environment and career matters?

14. Do you have any additional suggestions for changes that can be made that could inform the Coast Guard’s decisions regarding time away from home port for major cutters?

Appendix C. Qualitative Coding Guide

For our focus group analysis, we used a structured, iterative process to identify relevant themes. In this appendix, we provide an overview of the coding process used in the study.

Type of Group

We first coded for type of focus group, based on experience/grade of participants in each group and by cutter type. Because some focus groups had members from different cutters (albeit all from the same type of cutter), we categorized two cutter types: WMSL and 270-foot WMEC. We also had crew from a 210-foot WMEC participate in the focus groups (six groups total); we included the 210-foot WMEC groups in the 270-foot WMEC category. At some locations, participants in early to midlevel enlisted groups were from the same occupational category (e.g., operations ratings). However, we collapsed across occupational category because we did not have occupationally homogeneous groups at most locations (sample size and scheduling limitations).

Information about type of focus group is indicated by the file name of the focus group transcript and confirmed by participant responses to the background sheets. Table 4.2 in Chapter 4 provides the breakout of types of focus groups.

Content Coding

To identify relevant themes, we coded text from the focus group transcripts. This coding focuses on the group level of analysis, not individual participants. At least two team members coded text from the discussion notes to align with the codes in Table C.1. Coders captured text that provided enough context for us to understand comments made by participants in the groups. The initial content codes were derived from the focus group protocol questions but were expanded as coding commenced. Coders were instructed to use the protocol questions as an initial guide but to code text throughout each set of notes to identify relevant content that participants might provide information in response to other questions that are relevant to themes elsewhere in the protocol.

Code levels are nested such that level 1 codes are at the highest level of detail, with levels 2 and 3 being more specific. Coders were instructed to code at the most specific level of code possible and not to code the associated broader code levels (e.g., code at level 3 if available, but not code at associated levels 2 and 1). The team did not code all of the responses to the icebreaker/background questions, as those were meant to get participants in the groups comfortable with the discussion.

Table C.1. Content Codes

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
Watch schedules while away from home port			Discussion of how watch schedule affects work environment while cutter is away from home port	How do watch schedules affect work environment?
	Type of impact		Discussion of type of impact that watch schedules have on work environment while away from home port	How do watch schedules for different types of positions on a cutter affect the work environment? How do watch schedules on different types of cutters affect the work environments on those cutters?
		Positive	Discussion of watch schedules having a positive impact on work environment while away from home port	
		Negative	Discussion of watch schedules having a negative impact on work environment while away from home port	
		Unsure or neutral	Discussion about being unsure about watch schedules' impact on work environment or not having a positive or negative opinion about watch schedules	
	Position type		Discussion about differences in type of position (or rating/specialty) on how watch schedules affect work environment while away from home port	
		Nonrates	Specific mention of issues related to watch schedules for personnel who are nonrated (no assigned rating)	
		Operations	Specific mention of issues related to watch schedules for personnel in operations ratings/specialties	
		Engineering/ maintenance	Specific mention of issues related to watch schedules for personnel in engineering or maintenance ratings/specialties	
		Support/ supply	Specific mention of issues related to watch schedules for personnel in support or supply (e.g., culinary specialist, storekeeper, hospital corpsman) ratings/specialties	
		Other	Specific mention of issues related to watch schedules for other types of personnel	
	Cutter type		Discussion about differences in type of cutter on how watch schedules affect work environment while away from home port	
		WMSL	Specific mention of issues related to watch schedules for personnel on WMSLs	

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
		210-foot/ 270-foot WMEC	Specific mention of issues related to watch schedules for personnel on WMECs	
		Other	Specific mention of issues related to watch schedules for personnel on other types of cutters (e.g., buoy tenders)	
Work environment while away from home port			Description of factors other than watch schedules as affecting work environment for cutter crews while they are away from home port	Do any other factors affect the work environment? For example, • Length of the time away (consecutive days away from home port)? • Leadership? • Mission? • Training opportunities (ability to learn how to perform your job)? • Camaraderie/bonding with fellow cutter crew members? • Others?
	Length of time away		Description of amount of time away as having an impact on cutter work environment while away from home port	
		70–90 days away	Specific mention of lengthy (70- to 90-day) patrols/days away as having an impact on cutter work environment	
		Transition time	Discussion of transition time needed when first going underway and transition time needed for adjusting to family life after returning to home port	
		Cutter durability	Discussion of challenges of using cutter for longer patrols/deployments when platform not built for long patrols. Discussion may focus on WMECs	
	Operational mission		Discussion of operational mission as having an impact on cutter work environment while away from home port	
		Drug interdiction	Specific discussion of drug interdiction as having an impact on cutter work environment	
		Migrants/ detainees	Specific discussion of having to have migrants or detainees on board as having an impact on cutter work environment	
		Other	Discussion of other types of missions (e.g., fisheries) having an impact on cutter work environment	
	Command/ leadership		Discussion of command or leadership as having an impact on cutter work environment while away from home port	
	Education/ training		Discussion of challenges pursuing educational opportunities (e.g., college credit) while assigned to a cutter	
		Internet connectivity	Specific mention of lack of reliable internet connectivity as creating challenges for pursuing educational opportunities while underway	

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
		Work hours/workload	Specific mention of long work hours/workload as creating challenges for pursuing educational opportunities while underway	
	Drills/ qualifications		Discussion of number of drills or qualification requirements for crew members as having an impact on work environment while away from home port	
	Sea state		Description of sea state (e.g., heavy seas) having an impact on cutter work environment when away from home port, notably while underway	
	Camaraderie		Description of camaraderie/bonding with other crew members as having an impact on work environment while away from home port	
	Other		Description of other factors affecting work environment while away from home port	
Quality of life while away from home port			Description of factors affecting quality of life for cutter crews while they are away from home port	What factors affect your quality of life when you are away from home port? Do any other factors affect quality of life on cutters? For example, • Privacy/personal space? • Sleep? • Entertainment (e.g., television)? • Opportunities to socialize with co-workers? • Ability to communicate with family? • Amenities (e.g., food, laundry, exercise facilities)? • Religious and cultural accommodations? • Others?
	Privacy/ personal space		Discussion of privacy/personal space as affecting quality of life while away from home port	
	Sleep/fatigue		Discussion of lack of sleep and fatigue as affecting quality of life while away from home port	
	Entertainment		Discussion of entertainment options on cutters while away from home port	
		Security level	Specific mention of higher security level cutting off access to satellite television	
	Socialize with other cutter crew members		Discussion of socializing with other cutter crew members. May focus on distinction between time spent underway versus when in port	
	Ability to communicate with family and friends		Discussion about the ability to communicate with family and/or friends while away from home port	
		Internet connectivity	Specific mention of impact of internet connectivity to email, call, or otherwise communicate with family and friends while away from home port. May include mention of comparison between cutter platforms (e.g., WMSL versus 270-foot cutter)	

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
		Living apart ("geobachelor")	Specific mention of choice to live in another geographic location than family (i.e., be a "geobachelor") to avoid having to move family	
		Family issues as distraction	Specific mention of family/social issues affecting cutter members' focus on work while away from home port	
		Challenges for single members	Specific mention of not having a spouse/partner to take care of bills/household needs while away from home port	
	Amenities		Discussion of amenities affecting quality of life while away from home port	
		Gym/workout facilities	Specific mention of limited workout facilities or equipment on cutters as affecting quality of life while away from home port; may involve discussion on distinction between cutter platforms (e.g., WMSL versus 270-foot or 210-foot WMEC)	
	WMSL versus other cutters		Specific mention of more and/or better quality-of-life factors (e.g., amenities, personal space) on WMSLs than on older platforms (e.g., 270-foot)	
	Other		Discussion of other factors affecting quality of life on cutters while away from home port	
Retention in cutter community			Participant's indication of whether he/she plans to stay in the cutter community after the current assignment ends	Do you plan to remain in the cutter community for the time you intend to remain in the USCG? Why or why not?
	Yes		Participant indicated plans to stay in cutter community	
	No		Participant indicated plans to leave the cutter community	
	Unsure		Participant is unsure about plans to stay in the cutter community	
Factors related to retention in cutter community			Description of factors that lead cutter crew members to stay or leave the cutter community	What would be your number one factor or "deal breaker" that would cause you to separate from the cutter community? What would be your number one factor that has or would cause you to stay in the cutter community?
	Sea pay		Discussion of sea pay as contributing to USCG cutter crew staying in or leaving the cutter community	
	Assignment priority		Discussion of sea points/assignment priority as contributing to USCG cutter crew staying in or leaving the cutter community	
	Workload stress		Discussion of factors related to workload stress (e.g., feeling overburdened, too many work hours, being undermanned) that contribute to USCG cutter crew staying in or leaving the cutter community	

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
	Separation from family and friends		Discussion of extended time away from family and friends as contributing to USCG cutter crew staying in or leaving the cutter community	
	Commitment to mission and work		Discussion of factors related to participants' commitment to the missions they perform on cutters or substance of work on cutters that contribute USCG cutter crew staying in or leaving the cutter community	
	Leadership/ command		Discussion of factors related to cutter command that contribute to USCG cutter crew staying in or leaving the cutter community	
	Career field–specific		Discussion of factors specific to certain career fields (ratings or specialties) that contribute to USCG cutter crew staying in or leaving the cutter community	
	Other		Description of other factors related to retention in the cutter community; note that it should be clear that the participant is referring specifically to retention in the cutter community, not overall USCG retention	
Retention in USCG			Participant's indication of whether he/she plans to stay in the USCG overall	Do you currently intend to remain in the USCG past your current obligation?
	Yes		Participants indicated plans to stay in the USCG	
	No		Participants indicated plans to leave the USCG	
	Unsure		Participants are unsure about plans to stay the USCG	
Factors related to retention in USCG			Description of factors that lead cutter crew members to stay or leave the USCG	What factors have contributed or would contribute to you staying in the USCG?
	Compensation		Discussion of factors related to compensation that contribute to USCG cutter crew staying in or leaving the USCG	How does family influence decisions regarding how long to stay in the USCG?
	Job security		Discussion of factors related to job security that contribute to USCG cutter crew staying in or leaving the USCG	How does the work environment influence decisions regarding how long to stay in the USCG?
	Advancement opportunities		Discussion of factors related to lack of advancement or promotion opportunities that contribute to USCG cutter crew staying in or leaving the USCG	What would be your number one factor or "deal breaker" that would cause you to separate from the USCG?

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
	Geographic preference		Discussion of factors related to geographic location preference that contribute USCG cutter crew staying in or leaving the USCG	What would be your number one factor that has or would cause you to stay in the USCG?
		Colocation with other USCG member	Discussion of being colocated with spouse/partner who is also in USCG as contributing USCG cutter crew staying in or leaving the USCG	
		Civilian spouse/partner preference	Discussion of being colocated with civilian spouse/partner contributing to USCG cutter crew staying in or leaving the USCG	
	Commitment to mission		Discussion of factors related to participants' commitment to the USCG mission that contribute to a USCG cutter crew staying in or leaving the USCG	
	Benefits		Discussion of factors related to USCG benefits (e.g., retirement, health care, base amenities) that contribute to USCG cutter crew staying in or leaving the USCG	
		Blended Retirement System	Discussion of factors related to the new Blended Retirement System and how they contribute to USCG cutter crew staying in or leaving the USCG	
		Child care	Discussion of factors related to child care and how they contribute to USCG cutter crew staying in or leaving the USCG	
		Health care (TRICARE)	Discussion of factors related to health care benefits and how they contribute to USCG cutter crew staying in or leaving the USCG	
		Other	Discussion of other benefits (e.g., basic allowance for housing) and how they contribute to USCG cutter crew staying in or leaving the USCG	
	Leadership/ command		Discussion of factors related to leadership or command that contribute to USCG cutter crew staying in or leaving the USCG	
	Workload stress		Discussion of factors related to workload stress (e.g., feeling overburdened, too many work hours, being undermanned) that contribute to USCG cutter crew staying in or leaving the USCG	
	Career field–specific		Discussion of factors specific to certain career fields (ratings or specialties) that contribute to USCG cutter crew staying in or leaving the USCG	

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
	Other		Discussion of other factors that contribute to USCG cutter crew staying in or leaving the USCG; this includes references to retention factors where it is unclear if participant is referring to overall USCG retention or cutter community retention	
Improvements to cutter work environment			Description of recommendations for ways the USCG can better assist cutter crew members to address work environment on major cutters	How might the USCG better assist personnel assigned to cutters with family-related or personal matters? With work environment and career matters? Do you have any additional suggestions for changes that can be made that could inform the USCG's decisions regarding time away from home port for major cutters?
	Manpower		Suggested increases to cutter manpower to reduce workload burden on cutter crews	
		Contractors	Specific discussion of use of contractors to perform maintenance on cutters while in port and suggestions to limit or change how contractors are employed by the USCG	
	Leadership/ command support		Suggested improvement to command support for cutter crew members; example: extra day off for crew	
	Operational employment of cutters		Suggested reduction in operational employment of cutters (e.g., reduce underway time); may be specific to WMECs	
	Internet connectivity		Suggested improvement to internet connectivity on cutters to allow cutter crew members to complete work or connect with family and friends	
	Educational opportunities		Suggested improvements in opportunities to pursue education by cutter crews while assigned to cutters	
	Other		Other suggested improvements to cutter crew retention in the cutter community	
Retention improvements			Description of recommendations for ways the USCG can better assist cutter crew members to address retention factors	What changes to or additional USCG benefits, programs, or policies would lead cutter crew members to further consider remaining in the USCG, or within the cutter community, beyond their initial obligation?
	Geographic stability		Suggested improvements to geographic stability/reduce permanent-change-of-station moves to retain USCG cutter members	
	Educational opportunities		Suggested improvements to opportunities to pursue education for cutter crew as a way to retain them	

Level 1	Level 2	Level 3	Description	Corresponding Protocol Questions
	Temporary Separation (TEMPSEP) Program		Suggested improvements to TEMPSEP program to retain cutter crew	
	Assignment priority		Suggested improvements to assignment priority for personnel assigned to cutters to retain them in cutter community and/or USCG overall	
	Monetary incentives		Suggested increase in monetary incentives (e.g., sea pay) for challenges of working on cutters to retain personnel in cutter community	
	Benefits		Suggested improvements to pays and benefits to improve retention	
		Retirement	Suggested use (or disuse) of Blended Retirement System for members who have choice between old and new retirement systems	
		Child care	Suggested improvements to child care costs and options for USCG personnel	
		Health care	Suggested improvements to the way health care benefits (TRICARE) are provided to USCG personnel	
	Other		Other suggested improvements to cutter crew retention in the USCG	
Other USCG improvements			Ways to improve the USCG more generally, not specific to cutter crew retention or time away from home port	No specific question; may come up when answering questions asking for suggested improvements related to cutter crew retention.
For discussion			Used if a passage needs to be discussed with other researchers	N/A
Of note			Used for a particularly relevant quote or clear evidence of a theme	N/A

Appendix D. Subject-Matter Expert Discussion Protocols

SME discussions were semistructured so that follow-on questions to clarify topics could be asked. Discussions were held either by phone or in person at USCG headquarters in Washington, D.C., in July 2018.

USCG Personnel Service Center

We'd like to learn more about the way personnel are assigned to cutters and how they are assigned after they have served in cutter assignments.

- First, can you briefly describe your roles within the Personnel Service Center?
- How does the USCG determine what assignment priorities to offer to those who do tours on cutters? How does it vary by type of cutter?
- What policies and mechanisms exist to ensure consistency in application of assignment priorities for those who do tours on cutters?
- How much influence do sea points have on assignment priority, vice other priorities (member-to-member co-location, needs of service, etc.)?
- Are there other incentives are included when assigning personnel to major cutters?

CG-45

We are interested in learning about how the USCG oversees major cutter maintenance and how that affects major cutter crew PERSTEMPO.

- First, can you briefly describe your roles within CG-45?
- What are the main requirements for ensuring proper operation and maintenance of the new major cutters?
- How does the acquisition system account for adequate personnel to maintain new cutters?
- What are the primary shortfalls or challenges in gaining necessary resources to maintain new cutters? Older cutters?
- How will these challenges impact the maintenance workforce?
- How does the USCG determine the level of contract maintenance to use for the major cutters?
- How does USCG track quality of contract maintenance work/what's their QC plan?
- Does the USCG receive feedback from the fleet on quality and timeliness of contract work? If so, how is that feedback used to make decisions for manning the fleet with engineers vice hiring contractors to do dock-side work?

CG-111

CG-111 covers policy on a variety of work-life areas, including employee assistance program, child care, family advocacy, suicide prevention, to name a few. We are interested in how policy is developed and communicated and how programs are implemented, particularly for supporting personnel in the cutter community.

- First, can you briefly describe your roles within CG-111?
- How does CG-111 develop policy across all the areas within its portfolio (e.g., employee assistance program, child care, family advocacy, suicide prevention)?
  - Are the policies largely driven by USCG, DHS, or other top-down regulations/requirements?
- Are any of the policy areas that CG-111 covers specific or mainly targeted at personnel on major cutters? If so, which ones?
- How do you promulgate policies?
  - Does promulgation differ for the cutter community than from other USCG communities?
- Do you have information on program costs and capacity levels? If so, would you be willing to share that information?
- What kinds of programs and resources are available for family and personal issues for cutter crew?
- What are common issues that CG-111 sees among cutter crew?
  - How does CG-111 track these issues?
  - Does CG-111 (or another USCG organization/position/activity) track effectiveness of programs/resources to address these issues?
- What are constraints for addressing some of these challenges?
  - Are the constraints due to law/regulation/policy? Limited resources? Logistics?

CG-751

We would like to learn about USCG decisions for how to employ which cutter assets to which missions and for what amounts of time.

- First, can you briefly describe your roles within CG-751?
- What factors did the USCG consider when determining length of DAFHP for major cutters? Examples include: asset endurance (food/fuel/maintenance), tactical commander needs, available assets, and required training and maintenance days?
- What prompted the move to 90-day DAFHP for major cutters, including 270-foot and 210-foot WMECs?
- How much notice was given to cutter commands about the change to 90 days for certain types of cutters? How much lead time was given to the rest of crew by headquarters?

- What plans does the USCG have for operational employment of the major cutters going forward? Will major cutters go on 90-day patrols for the foreseeable future?

Appendix E. Regression Results

Chapter 5 includes marginal effects of key variables from a wide variety of models. Below, we include the complete regression results for each model of continuation, retention, promotion, and remaining in the cutter community. Table E.1 includes descriptive statistics for the sample; the first panel includes information on enlisted personnel, while the second panel includes information on commissioned and warrant officers. Results on enlisted personnel appear in Tables E.2 through E.4 and in E.6, and models of officer continuation and promotion appear in Table E.5. We also discuss each model briefly.

Table E.1. Descriptive Statistics: Quantitative Sample

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Enlisted personnel					
Male	34,423	0.813	0.390	0	1
Married at accession	34,423	0.110	0.313	0	1
Have child(ren) at accession	34,423	0.057	0.231	0	1
Married at 1st decision	34,423	0.370	0.483	0	1
Have child(ren) at 1st decision	34,423	0.185	0.388	0	1
Aged 23–25 at accession	34,423	0.179	0.384	0	1
Aged 26-plus at accession	34,423	0.092	0.290	0	1
Asian–Pacific Islander	34,423	0.028	0.165	0	1
Black non-Hispanic	34,423	0.058	0.233	0	1
Hispanic	34,423	0.155	0.362	0	1
Multiple ethnicities	34,423	0.084	0.08	0	1
Ethnicity unknown	34,423	0.033	0.180	0	1
AFQT >= 93 (Category 1)	34,423	0.081	0.273	0	1
AFQT 65–92 (Category 2)	34,423	0.502	0.500	0	1
AFQT 50–64 (Category 3A)	34,423	0.263	0.440	0	1
AFQT 31–49 (Category 3B)	34,423	0.109	0.312	0	1
AFQT score missing	34,423	0.043	0.203	0	1
Unemployment rate	34,423	6.89	1.89	3.8	10.0
Variables describing first term					
Afloat, not on major cutter	34,423	0.160	0.366	0	1
Assigned to major cutter	34,423	0.217	0.412	0	1
1–12 months on major cutter	34,423	0.0171	0.130	0	1

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
13–24 months on major cutter	34,423	0.0512	0.220	0	1
25–36 months on major cutter	34,423	0.0559	0.229	0	1
Assigned to 210-foot	34,423	0.054	0.225	0	1
Assigned to 270-foot	34,423	0.069	0.253	0	1
Assigned to 378-foot	34,423	0.083	0.276	0	1
Assigned to WMSL	34,423	0.0187	0.135	0	1
DAFHP/total	12,902	0.413	0.198	0	1
(DAFHP/total)^2	12,902	0.210	0.192	0	1
Inport operations/total	12,902	0.229	0.259	0	1
(Inport operations/total)^2	12,902	0.119	0.212	0	1
Reenlist	20,197	0.495	0.500	0	1
“Fast” promotion to E-5	11,928	0.329	0.470	0	1
Remain in cutter community	11,475	0.121	0.326	0	1
Second term					
Married at 2nd decision	3,744	0.615	0.487	0	1
Have child(ren) at 2nd decision	3,744	0.442	0.500	0	1
Afloat, not on major cutter	3,744	0.340	0.474	0	1
Assigned to major cutter	3,744	0.167	0.372	0	1
Assigned to 210-foot	3,744	0.0465	0.211	0	1
Assigned to 270-foot	3,744	0.0462	0.210	0	1
Assigned to 378-foot	3,744	0.598	0.237	0	1
Assigned to WMSL	3,744	0.0179	0.133	0	1
DAFHP/total	3,575	0.387	0.183	0	1
(DAFHP/total)^2	3,575	0.183	0.167	0	1
Inport operations/total	3,575	0.326	0.261	0	1
(Inport operations/total)^2	3,575	0.174	0.218	0	1
Reenlist	3,744	0.697	0.459	0	1
Officers, commissioned and warrant					
Male	5,377	0.727	0.446	0	1
Married at accession	5,377	0.264	0.441	0	1
Have child(ren) at accession	5,377	0.173	0.379	0	1
Aged 26-plus at accession	5,377	0.329	0.470	0	1
Asian–Pacific Islander	5,377	0.0219	0.147	0	1
Black non-Hispanic	5,377	0.0911	0.288	0	1
Hispanic	5,377	0.0418	0.200	0	1
Multiple ethnicities	5,377	0.0926	0.290	0	1
Ethnicity unknown	5,377	0.0526	0.223	0	1

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Afloat, not on major cutter	4,337	0.110	0.313	0	1
Assigned to major cutter	4,337	0.262	0.440	0	1
Assigned to 210-foot	4,337	0.0874	0.282	0	1
Assigned to 270-foot	4,337	0.101	0.302	0	1
Assigned to 378-foot	4,337	0.112	0.315	0	1
Assigned to WMSL	4,337	0.0374	0.190	0	1
DAFHP/total	4,337	0.435	0.289	0	1
$(\text{DAFHP/total})^2$	4,337	0.273	0.306	0	1
Inport operations/total	4,337	0.231	0.274	0	1
$(\text{Inport operations/total})^2$	4,337	0.128	0.230	0	1
Remain >= 66 months	3,422	0.764	0.425	0	1
“Fast” promotion to O-4	499	0.373	0.484	0	1

Table E.2 includes regression results from models of continuation and completion. The dependent variable in each of these models is an indicator that the enlistee remained in the USCG; the coefficients indicate the relationships between the dependent variables and continuation. For example, men have higher continuation rates than women. Thus, the coefficient on “male” is positive and statistically significant in each model.

The results indicate that those who serve afloat but not on a major cutter and those who serve on a major cutter have higher predicted probabilities of continuation/completion than others do (the excluded category in this model is “not afloat”). The results indicate that the completion rates are higher among those who serve afloat and those who serve on major cutters than among other personnel. The fourth model indicates that, as discussed in the text, the marginal effects from logit models are nonlinear and, for this reason, the coefficients in Table E.2 do not indicate how much higher completion rates are among those who serve on a major cutter. Our preferred specification models 48-month continuation among those who complete at least 24 months in the USCG. This ensures that our results are not driven by early training losses. Predicted probabilities from this model indicate that the completion rate is about 85 percent among those who do not serve afloat but the rate is 89–90 percent among those who serve afloat or on a major cutter. Across these models, serving in the afloat community (either on a major cutter or on another platform) is associated with higher levels of completion.

Table E.2. Enlisted Personnel: Continuation, First-Term Completion

	Continuation				
	24-Month Continuation	48-Month Continuation	48-Month Continuation Conditional on Completing 24 Months	48-Month Continuation Conditional on Completing 24 Months, with Platform	Complete First Term
Male	0.266[a]	0.320[a]	0.358[a]	0.353[a]	0.256[a]
Married at accession	0.046	–0.007	–0.023	–0.025[a]	-0.065
Have child(ren) at accession	1.788[a]	1.326[a]	0.795[a]	0.792[a]	1.411[a]
Aged 23–25 at accession	0.200[a]	0.200[a]	0.186[a]	0.187[a]	0.328[a]
Aged 26–plus at accession	0.143[b]	–0.028	–0.119	–0.118	0.118[b]
Asian–Pacific Islander	–0.014	0.019	0.025	0.036	0.072
Black non-Hispanic	–0.500[a]	–0.365[a]	–0.182[b]	–0.183[b]	–0.434[a]
Hispanic	–0.130[a]	–0.048	0.037	0.039	–0.055
Multiple ethnicities	–0.156[a]	–0.066	0.014	0.015	–0.140[a]
Ethnicity unknown	–0.155	–0.067	–0.014	–0.021	–0.158
AFQT Category 1	0.153[b]	0.172[a]	0.216[a]	0.218[a]	0.20[a]
AFQT Category 3A	–0.389[a]	–0.287[a]	–0.152[a]	–0.155[a]	–0.322[a]
AFQT Category 3B	–0.662[a]	–0.496[a]	–0.210[a]	–0.209[a]	–0.576[a]
AFQT missing	–2.075[a]	–1.723[a]	–0.811[a]	–0.814[a]	–1.735[a]
Afloat, not on major cutter	1.885[a]	1.080[a]	0.438[a]	0.434[a]	1.277[a]
Assigned to major cutter	2.023[a]	1.011[a]	0.300[a]	—	1.127[a]
Assigned to 210-foot	—	—	—	0.355 [a]	—
Assigned to 270-foot	—	—	—	0.304[a]	—
Assigned to 378-foot	—	—	—	0.136[b]	—
Assigned to WMSL	—	—	—	0.833[a]	—
Constant	1.271[a]	0.556[a]	1.434[a]	1.454[a]	0.673[a]
R-squared	0.151	0.088	0.021	0.022	0.111
Total observations	29,627	26,129	22,463	22,463	25,187

NOTE: Logistic (logit) regressions. Models also control for FY and quarter of accession. Excluded categories: female, unmarried, no child(ren), less than 23 years of age at accession, white non-Hispanic, AFQT score Category 2, and not afloat.
[a] Statistically significant from 0 at the 1-percent level.
[b] Statistically significant from 0 at the 5-percent level.

Table E.3 includes complete regression results from all models of first-term reenlistment. Many of the results are quite consistent across the models. For example, men, service members

who are married at the point of the decision, and those who have children at the point of the decision reenlist at higher rates than otherwise similar personnel. Those who have not achieved a rating at 36 months are unlikely to reenlist. AFQT scores make little difference, but those whose scores are missing are less likely than others to reenlist.

Spending time afloat or on a major cutter generally is associated with higher levels of reenlistment. However, the results of model 4 indicate that there is a limit; the relationship is nonlinear and spending additional time either away from home or in inport operations status eventually is associated with lower reenlistment rates.

Table E.3. Enlisted Personnel: First Reenlistment

	Model 1	Model 2	Model 3	Model 4	Model 5
Male	0.305[a]	0.301[a]	0.303[a]	0.284[a]	0.312[a]
Married at decision	0.306[a]	0.307[a]	0.306[a]	0.359[a]	0.388[a]
Have child(ren) at decision	0.738[a]	0.743[a]	0.740[a]	0.699 [a]	0.513[a]
Aged 23–25 at accession	0.112[a]	0.109[b]	0.110[b]	0.193 [b]	0.149
Aged 26-plus at accession	–0.004	–0.012	0.010	0.181	0.180
Asian–Pacific Islander	0.155	0.151	0.153	0.019	–0.051
Black non-Hispanic	–0.076	–0.076	0.075	–0.094	–0.027
Hispanic	–0.044	–0.040	–0.038	–0.072	–0.028
Multiple ethnicities	–0.110[b]	–0.106[b]	–0.104	–0.098	–0.084
Ethnicity unknown	–0.512[a]	–0.501[a]	–0.498[a]	–0.612	–0.571[b]
AFQT Category 1	0.010	0.011	0.011	0.079	0.059
AFQT Category 3A	–0.013	–0.011	–0.012	–0.028	–0.028
AFQT Category 3B	0.010	0.018	0.018	0.127	0.100
AFQT missing	–0.412[a]	–0.413[a]	–0.415[a]	–0.047	–0.178
Nonrate\	–4.611[a]	–4.592[a]	–4.594[a]	–3.845[a]	–3.008[a]
Operations	–0.061	–0.047	–0.047	–0.035	–0.110
Service and support	–0.053	–0.042	–0.039	–0.244[a]	–0.201[b]
Other	0.420[a]	0.429[a]	0.426[a]	0.634[a]	0.642[a]
Unemployment rate at decision	0.085	0.092	0.093	0.200	0.194
Afloat, not on major cutter	0.684[a]	0.685[a]	0.674[a]	—	—
Assigned to major cutter	0.647[a]	0.429[a]	—	—	—
13–24 months on major cutter	—	0.187[b]	0.225[a]	—	—
25–36 months on major cutter	—	0.562[a]	0.584[a]	—	—
Assigned to 210-foot	—	—	0.419[a]	0.076	0.072
Assigned to 270-foot	—	—	0.320[a]	—	—
Assigned to 378-foot	—	—	0.348[a]	–0.045	–0.026
Assigned to WMSL	—	—	0.585[a]	0.171	0.183

	Model 1	Model 2	Model 3	Model 4	Model 5
Ratio DAFHP/total	—	—	—	0.413	—
(DAFHP/total) squared	—	—	—	–0.958	—
Ratio inport operations/total	—	—	—	1.696[a]	—
(Inport operations/total) squared	—	—	—	–2.331[b]	—
DAFHP >= 90 in a row				0.144[a]	—
150–179 DAFHP	—	—	—	—	–0.149
180–209 DAFHP	—	—	—	—	0.010
210-plus DAFHP	—	—	—	—	–0.041
Constant	–1.243	–1.326	–1.375	–1.861	–1.441
R-squared	0.274	0.275	0.275	0.161	0.080
Total observations	20,164	20,164	20,164	4,914	4,914

NOTE: Logistic (logit) regressions. Models also control for FY and quarter of decision. Excluded categories: female, unmarried, no child(ren), less than 23 years of age at accession, white non-Hispanic, AFQT score Category 2, and engineering rating. Models 1, 2, and 3 include all enlisted personnel making a decision; "not afloat" is an excluded category. Models 4 and 5 include all enlisted personnel assigned to a major cutter in the three years prior to their initial reenlistment decision; "Assigned to a 270" is an excluded category. In model 4, the variables describing operational intensity are jointly significant.
[a] Statistically significant from 0 at the 1-percent level.
[b] Statistically significant from 0 at the 5-percent level.

Table E.4 includes results from a series of models parallel to those shown in Table E.3, but the models in Table E.4 concern the second reenlistment decision among enlisted personnel. The samples are much smaller, and there are generally fewer estimates that achieve statistical significance in these models, but the overall results are broadly similar to those shown in Table E.3.

Table E.4. Enlisted Personnel: Second Reenlistment

	Model 1	Model 2	Model 3	Model 4	Model 5
Male	0.348[a]	0.355[a]	0.359[a]	0.681[b]	0.619
Married at decision	0.344[a]	0.343[a]	0.343	0.604[a]	0.753[a]
Have child(ren) at decision	0.596	0.593[a]	0.595[a]	0.133	0.030
Aged 23–25 at accession	–0.045	–0.041	–0.044	–0.101	–0.141
Aged 26-plus at accession	0.095	0.095	0.091	–0.013	0.028
Asian–Pacific Islander	–0.052	–0.050	–0.048	0.720	1.418
Black non-Hispanic	–0.172	–0.193	–0.194	–0.345	–0.168
Hispanic	–0.179	–0.183	–0.184	–0.472	–0.610
Multiple ethnicities	–0.397[a]	–0.393[a]	–0.394[a]	–0.556	–0.712[a]
Ethnicity unknown	–0.191	–0.190	–0.182	—	—
AFQT Category 1	0.165	0.169	0.165	–0.235	–0.526
AFQT Category 3A	–0.087	–0.082	–0.084	0.075	0.014

	Model 1	Model 2	Model 3	Model 4	Model 5
AFQT Category 3B	–0.036	–0.035	–0.035	0.312	0.085
AFQT missing	0.074	0.096	0.096	–0.050	–0.223
Engineer	0.068	0.057	0.059	0.355	0.441
Operations	0.172	0.160	0.161	0.548[b]	0.518
Unemployment rate at decision	0.100	–0.810	0.088	1.348	—
Afloat, not on major cutter	0.769[a]	0.770[a]	0.745[a]	—	1.466
Assigned to major cutter	–0.230	–0.641[a]	—	—	—
13–24 months on major cutter	—	0.686 [a]	0.632[a]	—	—
25–36 months on major cutter	—	0.578 [a]	0.557[a]	—	—
Assigned to 210-foot	—	—	–0.543[a]	0.090	0.042
Assigned to 270-foot	—	—	–0.666[a]	—	—
Assigned to 378-foot	—	—	–0.486[a]	0.030	0.129
Assigned to WMSL	—	—	–0.557	1.065	–0.106
Ratio DAFHP/total	—	—	—	–2.913	—
(DAFHP/total) squared	—	—	—	2.455	—
Ratio inport operations/total	—	—	—	–0.935	—
(Inport operations/total) squared	—	—	—	0.244	—
150–179 DAFHP	—	—	—	—	0.079
180–209 DAFHP	—	—	—	—	0.762
210-plus DAFHP	—	—	—	—	0.341
Constant	–0.898	0.090	–0.800	–10.353	–13.495
R-squared	0.049	0.051	0.051	0.086	0.093
Total observations	3,744	3,744	3,744	619	619

NOTE: Logistic (logit) regressions. Models also control for FY and quarter of decision. Excluded categories: female, no child(ren), less than 23 years of age at accession, white non-Hispanic, AFQT score Category 2, and ratings other than engineering or operations. Models 1, 2, and 3 include all enlisted personnel making a decision; "not afloat" is an excluded category. Models 4 and 5 include all enlisted personnel assigned to a major cutter in the three years prior to their second reenlistment decision; "Assigned to a 270" is an excluded category. In model 4, the variables describing operational intensity are jointly significant at the 5.5-percent level.
[a] Statistically significant from 0 at the 1-percent level.
[b] Statistically significant from 0 at the 5-percent level.

Table E.5 includes results from officer continuation models, estimating the probability that officers continue in the USCG for at least 66 months. As was the case with enlisted personnel, officers who are male, as well as those who are married or have dependents at the end of their initial obligations, are more likely than others to remain in the USCG. And those who serve afloat are more likely than others to remain in the USCG. However, serving on a major cutter is not generally associated with a higher probability of remaining in the USCG. There are some exceptions to this—officers who spend 25–36 months on a major cutter are more likely than others to remain. Many estimates are not statistically significant; the smaller sample sizes may be driving some of this.

Table E.5. Officer Continuation: Remaining in the USCG for At Least 66 Months

	Model 1	Model 2	Model 3	Model 4	Model 5
Male	0.253[b]	0.255[b]	0.259[b]	0.254	0.202
Married at decision	0.463[a]	0.473[a]	0.462[a]	0.322	0.254
Have child(ren) at decision	0.795[a]	0.795[a]	0.801[a]	0.343	0.416
Aged 26-plus at accession	0.822[a]	0.827[a]	0.838[a]	2.322[a]	2.141[a]
Asian–Pacific Islander	–0.550[a]	–0.538	–0.536	–0.354	–0.134
Black non-Hispanic	0.465	0.459	0.453	0.256	0.038
Hispanic	–0.007	–0.020	0.007	–0.348	–0.265
Multiple ethnicities	–0.108	–0.110	–0.093	–0.629	–0.632[b]
Ethnicity unknown	–0.121	–0.138	–0.134	–0.531	–0.276
Unemployment rate at decision	–0.073	–0.046	–0.097	0.544	–1.852
Afloat, not on major cutter	0.314[b]	0.312[b]	0.340[b]	—	—
Assigned to major cutter	–0.191[b]	–0.225[b]	—	—	—
13–24 months on major cutter	—	–0.131	0.020	—	—
25–36 months on major cutter	—	1.045[b]	1.209[a]	—	—
Assigned to 210-foot	—	—	–0.034	0.057	–0.031
Assigned to 270-foot	—	—	–0.007	—	—
Assigned to 378-foot	—	—	–0.382[b]	–0.270	–0.338
Assigned to WMSL	—	—	–0.325	–0.345	–0.171
Ratio DAFHP/total	—	—	—	–0.801	—
(DAFHP/total) squared	—	—	—	0.402	—
Ratio Inport operations/total	—	—	—	3.223 [a]	—
(Inport operations/total) squared	—	—	—	–3.611 [b]	—
DAFHP >= 90 in a row				0.229	
150–179 DAFHP	—	—	—	—	2.244
180–209 DAFHP	—	—	—	—	–0.654
210–plus DAFHP	—	—	—	—	–1.140
Constant	3.582	3.309	3.801	–2.917	21.809
R-squared	0.218	0.220	0.221	0.257	0.262
Total observations	3,137	3,137	3,137	995	995

NOTE: Logistic (logit) regressions. Models also control for FY and quarter of decision. Excluded categories: female, unmarried, no child(ren), less than 26 years of age when joining the USCG, and white non-Hispanic. Models 1, 2, and 3 include all officers; "not afloat" is an excluded category. Models 4 and 5 include all officers assigned to a major cutter in the second to fifth years of their career. "Assigned to a 270" is an excluded category. The ratios measuring operational intensity in model 4 are not jointly significant.
[a] Statistically significant from 0 at the 1-percent level.
[b] Statistically significant from 0 at the 5-percent level.

Table E.6 includes estimates from two additional outcomes among enlisted personnel. The first outcome is "fast" promotion to E-5 (where *fast* is defined as occurring within 48 months of

entering the USCG). The second outcome is remaining in the cutter community after an initial reenlistment decision; in this model, we include only those who served on major cutters during their first terms of service *and* who reenlisted. We define *remaining in the cutter community* as spending at least six additional months in the cutter community after reenlisting. We also attempted to estimate the probability of remaining in the cutter community after making a second reenlistment decision, but the sample was too small to produce valid estimates (fewer than 500 enlisted personnel in our sample served in the cutter community prior to a second decision and had complete information through the second decision).

Table E.6. Probability of Fast Promotion; Probability of Remaining in the USCG Past the First Term, Enlisted Personnel

	Fast Promotion to E-5	Remain in Cutter Community After First Reenlistment
Male	–0.133[b]	0.114
Married at decision	0.295[a]	0.028
Have child(ren) at decision	0.024[a]	–0.173
Aged 23–25 at accession	0.298[a]	–0.077
Aged 26-plus at accession	0.291[a]	–0.005
Asian–Pacific Islander	–0.076	–0.137
Black non-Hispanic	–0.104	0.057
Hispanic	–0.102	–0.043
Multiple ethnicities	0.038	0.020
Ethnicity unknown	–0.193	0.335
AFQT Category 1	0.419[a]	–0.003[b]
AFQT Category 3A	–0.235[a]	0.118
AFQT Category 3B	–0.634[a]	–0.092
AFQT missing	0.462[a]	0.234
Nonrate	2.525[a]	–0.202
Operations	0.722[a]	–0.589[b]
Service/Support	0.688[a]	–0.421[a]
Other	–0.658[a]	–0.800[a]
Afloat, not on major cutter	0.529[a]	—
13–24 months on major cutter	0.31[a]	–0.339[a]
25–36 months on major cutter	0.447[a]	–0.387[a]
Assigned to 210-foot	0.318 [a]	0.269[b]
Assigned to 270-foot	0.236[a]	—
Assigned to 378-foot	0.220[a]	0.202[b]
Assigned to WMSL	0.174	0.611[a]

	Fast Promotion to E-5	Remain in Cutter Community After First Reenlistment
Constant	0.192	–0.224
R-squared	0.112	0.029
Total observations	11,928	3,013

NOTE: Logistic (logit) regressions. Models also control for FY and quarter of decision. Excluded categories: female, unmarried, no child(ren), less than 23 years of age at accession, white non-Hispanic, and AFQT score category 2, and engineering rating. Models 1, 2, and 3 include all enlisted personnel making a decision; "not afloat" is an excluded category. Models 4 and 5 include all enlisted personnel assigned to a major cutter in the three years prior to their initial reenlistment decision; "assigned to a 270" is an excluded category.
[a] Statistically significant from 0 at the 1-percent level.
[b] Statistically significant from 0 at the 5-percent level.

It is not surprising that AFQT scores, age at accession, and family status are correlated with promotion; those variables likely measure both capacity for training and some aspect of motivation. But in the case of remaining in the cutter community, personal characteristics appear to play a far smaller role. Instead, rating category is predictive.

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The U.S. Coast Guard (USCG) has a broad set of missions in the maritime domain, including 11 statutory missions across the categories of maritime safety, maritime security, and maritime stewardship. Among its assets for accomplishing these missions are major cutters—large, oceangoing vessels capable of spending substantial amounts of time away from their home ports. The USCG faces a challenge in determining the optimal length of days away from home port for personnel on major cutters. Confronting this challenge requires an understanding of how personnel tempo (PERSTEMPO) relates to USCG servicemember behavior. However, the empirical relationship between days spent away from home port and servicemember behavior is unknown. To help address this knowledge gap, the authors analyze how servicemembers respond to various levels of PERSTEMPO, as well as the effects of working conditions and incentives on these responses.

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