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**THESIS**

**THE COSTS AND BENEFITS OF INCREASING THE  
MINIMUM SERVICE REQUIREMENT FOR  
NROTC GRADUATES**

by

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December 2008

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**THE COSTS AND BENEFITS OF INCREASING THE MINIMUM SERVICE  
REQUIREMENT FOR NROTC GRADUATES**

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Submitted in partial fulfillment of the  
requirements for the degree of

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from the

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## **ABSTRACT**

On 9 June 2008, during the Future Years Defense Program Officer Accessions Brief, the Chief of Naval Personnel requested more information on increasing the Naval Reserve Officer Training Corps (NROTC) minimum service requirement (MSR) for newly commissioned officers from four years to five years. The present study used a distributed survey to assess the potential impact of increasing the minimum service obligation on NROTC program recruitment. The survey responses as a whole suggest that increasing the MSR from four to five years will have no impact on the propensity for college students to apply for scholarships for the NROTC program. In terms of specific demographic groups, the survey results suggest that the impact on female applications would be minimal, but the impact on minorities would be small but statistically significant.

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## LIST OF ACRONYMS AND ABBREVIATIONS

<b>AFHPSP</b>	Armed Forces Health Professions Scholarship Program
<b>APC</b>	Academic Profile Code
<b>AVF</b>	All-Volunteer Force
<b>CNP</b>	Chief of Naval Personnel
<b>CNA</b>	Center for Naval Analysis
<b>DOD</b>	Department of Defense
<b>FYDP</b>	Future Years Defense Program
<b>HPRAIS</b>	Health Professions' Retention-Accession Incentives Study
<b>HSI</b>	Human Systems Integration
<b>IRB</b>	Institutional Review Board
<b>MECEP</b>	Marine Enlisted Commissioning Education Program
<b>MPT&amp;E</b>	Manpower, Personnel, Training and Education
<b>MSR</b>	Minimum Service Requirement
<b>NPC</b>	Navy Personnel Command
<b>NPS</b>	Naval Postgraduate School
<b>NPRST</b>	Navy Personnel Research, Studies and Technology
<b>NSTC</b>	Naval Service Training Command
<b>NROTC</b>	Naval Reserve Officer Training Corps
<b>OCS</b>	Officer Candidate School
<b>OJT</b>	On the Job Training
<b>OMB</b>	Office of Management and Budget
<b>ROTC</b>	Reserve Officer Training Corps

<b>STA-21</b>	Seaman to Admiral-21
<b>SWO</b>	Surface Warfare Officer
<b>URL</b>	Unrestricted Line
<b>USNA</b>	United States Naval Academy

## **EXECUTIVE SUMMARY**

On 9 June 2008, during the Future Years Defense Program Officer Accessions Brief, the Chief of Naval Personnel requested more information on increasing the Naval Reserve Officer Training Corps (NROTC) minimum service requirement (MSR) from four years to five years for newly commissioned officers.

Of the benefits discussed regarding the extension of the MSR, the main benefit would be to allow the Navy an opportunity to earn a return on its increasingly expensive investment in the commissioning new officers. In the Surface Warfare Community, for example, it takes nearly two years for new officers to qualify in their specialty, leaving only two years for them to be fully productive as Division Officers in the fleet. The increase in the Navy's return on investment concept may lead to a reduction of the pace of initial training. Extending the MSR to five years may allow the initial training timeline to be extended, allowing for more thorough and possibly advanced training resulting in these new officers arriving in the fleet more confident and knowledgeable of systems and operations.

The most important potential drawback of the proposed longer service obligation is its potential to reduce the number of qualified college students who will be attracted to the Navy, especially during a long conflict. Obtaining and retaining sufficient managerial human capital is paramount to military recruiting, retention, performance, and readiness. In addition to affecting the recruiting baseline for the Navy, the life cycle cost of operations and support related to manpower, personnel, training and education (MPT&E) could be affected by the service extension. Extending the MSR to five years could require higher compensation or other benefits to attract an equal number of NROTC scholarship candidates, thus imposing higher costs on the Navy. If greater monetary incentives are required, it is not clear that increasing the MSR will increase the return on investment on the NROTC program.

This study analyzed, through the use of a distributed survey the possible impact of the higher minimum service obligation for officers on recruitment of NROTC candidates.

The survey responses as a whole suggest that increasing the MSR from four to five years will have no impact on the propensity for young potential officers to apply for scholarships for the NROTC program. Specifically, 94% of Freshmen, 92% of Sophomores and Juniors, and 96% of Seniors remained unwaivering in their propensity to accept a scholarship for the NROTC program. Survey results also suggest that the recruiting impact on female applications will be minimal. Eighteen percent of the respondents were female, and sixteen percent were minorities. Of these, 92% of the females and 91% of the minorities remained very positive regarding the NROTC program. However, the positive response rate for minorities was significantly below that of whites (a five percentage point difference). Moreover, a 10 percent loss of minority applicants would translate into about 35 fewer applicants per year, and would place some additional burden on recruiters to replace these applicants.

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## **I. INTRODUCTION**

### **A. OBJECTIVE**

On 9 June 2008, during the Future Years Defense Program (FYDP) Officer Accessions Brief, the Chief of Naval Personnel (CNP) requested more information on increasing the NROTC minimum service requirement (MSR) from four years to five years for newly commissioned officers. The Army and Air Force ROTC programs both have an MSR of four years. On the other hand, the United States Naval Academy (USNA), as well as the other Service Academies, imposes a five-year MSR. In contrast to the other service ROTC's, NROTC commissions officers into communities with various MSR's. For example, the Aviation community requires eight years for Pilots, six years for Naval Flight Officers, five years for Submarine/Nuclear communities, and four years for Nurse and Marine Corps communities. The MSR extension would not affect these career options. In fact, the only career path affected by the MSR would be the Surface Warfare Community.

The main benefit of extending the MSR for NROTC graduates from four to five years would be to allow the Navy a longer period to earn a return on its increasingly expensive costs of commissioning new officers. Currently, for example, in the Surface Warfare Community, it takes nearly two years for new officers to qualify in their specialty, leaving only two years for them to be fully productive as Division Officers in the fleet. In addition, the service extension might benefit the Navy by allowing the initial training timeline to be extended, resulting in more thorough, and possibly advanced, training leading to these new officers arriving in the fleet more confident and knowledgeable of systems and operations.

One important potential drawback of the new service obligation is its potential to reduce the number of civilian candidates who will be attracted to the Navy, especially during a long war. Obtaining and retaining sufficient managerial human capital is paramount to military recruiting, retention and performance. In addition to affecting the recruiting baseline for the Navy, the life cycle cost of operations and support related to

manpower, personnel, training and education (MPT&E) could be affected by the service extension. Extending the MSR to five years could require more compensation or other benefits to attract an equal number of NROTC scholarship candidates, thus imposing higher costs on the Navy.

Another way the effect of the lengthened MSR may emerge is not in the quantity of new applicants, but in their quality. It is possible that the additional obligation, with a fixed scholarship amount, may not harm recruiting numbers, but may lower the quality of the applicants. This effect has been seen in other officer communities (Moore, 2000; Brannman et al, 2003). This effect could be assessed by analyzing changes in the SAT scores of applicants under the new policy compared to SAT scores for applicants under the earlier MSR regime.

Another adverse effect of the MSR extension might be to change the propensity for women and minorities to accept NROTC scholarships. The history of female and minority service in the military is rich with struggle and accomplishment. It is possible that the MSR extension could have disproportionately negative effects on the recruitment of these individuals, which would hamper the Navy's diversity efforts.

The different entities within the Department of the Navy affected by this study include Manpower, Training, Personnel, and Budgeting. Each sub-department has a stake in the benefits and/or detriments of the proposed service obligation extension. Essentially, the study performed herein will cover three domains of Human Systems Integration (HSI): *Manpower, Training, and Personnel*.

The purpose of this research is to analyze the impact of the minimum service obligation for officers and its potential effects on recruitment. This study aims to determine the ramifications of extending the obligated service for NROTC scholarship students from four years to five years on applications and recruitment into the NROTC program. It also aims to look at the effects, if any, of the policy change on recruitment of specific groups of officer applicants, especially as females and minorities. Finally, this study intends to examine whether additional compensation may be necessary to offset any negative recruitment effects.

## **B. SCOPE, LIMITATIONS, AND ASSUMPTIONS**

The hypothesis of this thesis is that extending the service obligation of commissioned officers from NROTC sources from four to five years will adversely impact recruiting goals, possibly leading to increased spending on recruiting and retention bonuses and scholarships. This hypothesis is based on a review of prior studies of changes in service obligations for military service members, including both officers and enlisted.

The scope of this study is limited to Navy and Marine Midshipmen. A pilot survey was developed and delivered via website to NROTC units across the United States to create a database for analysis. The goal of the survey was to obtain the perceptions of NROTC Midshipmen regarding the extension of the service obligation. Additionally, an extensive literature and research review was conducted to allow a comparative study of the statistical differences between published studies and the survey.

## **C. METHODOLOGY**

The methodology of this study included a literature review, a survey, and analysis. The literature review explored a history of the NROTC program and its operating costs compared to other commissioning sources, the motivations for joining the military of women and minorities, and an examination of case studies involving service requirements pertaining to medical service members and aviators.

A self-reporting survey was developed and distributed to all NROTC units within the Continental United States, with the intent of gathering data to ascertain the propensities of young men and women who had already accepted NROTC scholarships, to reevaluate their decision based on a hypothetical increase in the service obligation. It also sought to determine if added benefits such as increased monthly stipends or post-commissioning bonuses might be necessary to maintain the status quo if the MSR were increased to five years instead of four years. The survey method was chosen to gather the most current and accurate data regarding opinions of potential NROTC candidates based on current NROTC midshipmen.

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## **II. LITERATURE REVIEW**

The purpose of this literature review is to analyze and compare the racial/gender history, recruiting, and training aspects of the Naval Reserve Officer Training Corps (NROTC) program. This literature review is divided into three sections. The first section discusses the NROTC program, including how the numbers of officers produced from NROTC has changed over time, and how other countries administer ROTC-like programs. Additionally, this section briefly discusses the cost of the NROTC program. The second section focuses on women and minorities in the Navy, and their motivations for joining. The third section looks at case studies of the potential effect of increasing the MSR in the Medical Service and Aviation communities. These studies are used to develop the hypothesized effect of a higher MSR for NROTC midshipmen, especially for those who service select the Surface Warfare option.

### **A. NAVAL RESERVE OFFICER TRAINING CORPS**

#### **1. A Brief History**

Each year the Navy spends “hundreds of millions of dollars” (Bernard, 2002) to meet their annual requirement for newly commissioned officers. Historically, the U.S. Naval Academy (USNA) has been the primary source of regular commissioned officers. However, since World War II, a secondary source of commissioned officers has made its mark: the NROTC. The NROTC offers young men and women the opportunity to obtain a commission in the Navy or Marine Corps upon completion of their college education. Officers commissioned through the NROTC program are either scholarship students, receiving a monthly stipend, or contract students. Contract students are those that are prior enlisted utilizing the STA-21 or other enlisted commissioning program. Yet, while the prospect of producing educated officers for the fleet is now a primary goal, it has not always been this way.

Before 1845, most new Naval officers received their training while at sea, where they learned by means of trial and error, or on-the-job training (OJT). However, with the

increasing complexity and mechanization of the fleet, the need for more qualified junior officers and engineers necessitated the formation of the Naval Academy in 1845 (Kleinman & Goudreau, 1977). From 1845 through World War I, most officers entering the fleet began their journey at the Naval Academy.

In 1925, Congress authorized the Secretary of the Navy to follow in the Army's footsteps and establish a Naval Reserve Officer Training program. The intent of the program was to provide educated junior officers to the Navy and Marine Corps Reserve (Kleinman & Goudreau, 1977). Despite the growing number of colleges participating in the Naval training program, this did not happen as expected because of the Navy's focus on training its officers for rapid insertion, rather than educating them due to its immediate manpower needs.

During World War II, increasing manpower needs caused the Navy to focus on training, rather than educating, its officers (Kleinman & Goudreau, 1977). However, the end of the war saw Navy leadership turning back toward the education of its officers, and decided that more technically educated officers would be needed (Strano, 1990). It was at this point that a board of advisors, under Rear Admiral James Holloway, was appointed to determine the particular form, system, and method of educating Naval officers. This plan, dubbed the "Holloway Plan," called for procuring regular officers from 52 civilian colleges and universities (Kleinman & Goudreau, 1977). The Holloway Plan provided the flexibility needed to meet the changing demands in the number of officers required throughout the years. It also provided the capability to obtain a sufficient number of civilian-educated officers without undermining the role of the Naval Academy (Kleinman & Goudreau, 1977). In 1946, Congress authorized the NROTC scholarship program.

The advent of the Korean War brought about the development of an additional officer accession source: Officer Candidate School (OCS). This was the Navy's first post-college accession program, and it provided a wealth of educated individuals ready to be trained for Naval service. Though OCS developed a reputation for picking up the slack from other programs (Kleinman & Goudreau, 1977), it has remained one of the top three accession sources for officers today.

As the military expanded during the cold war, ROTC began to move from primarily supplying reserve officers to commissioning active duty officers. In the early 1960s, the enrollment in many ROTC units fell, but in 1964, the ROTC Revitalization Act funded a large number of scholarships, allowed cross-town enrollments, and added a “two-year” option for cadets and midshipmen. This caused the number of enrollments to increase (Coumbe, 1999). However, the fear of being drafted was the significant motivating factor that caused many students to pursue ROTC. After 1969 when the draft lottery gave indication of who was likely to be called, enrollment then began to decline (Leal, 2008).

With the implementation of the All-Volunteer Force (AVF) in 1973, the military faced the challenge of attracting students to ROTC without the fear of the draft as a motivation. Many units faced the challenge of maintaining quotas, but were able to increase applicants through recruiting campaigns, the unrestricted admission of women to the program, and a focus on diversity (Leal, 2008). As shown in Figure 1 and 2 below, from 1974 to 2004, there were two drawdowns and one buildup in the active duty officer corps. According to the Office of the Under Secretary of Defense, these changes in military structure are attributed primarily to changes in the world situation. The first drawdown, occurring in the mid-to late-1970s occurred due to the demobilization of the armed forces following the conflict in Vietnam. The buildup in the 1980s was due to the escalation of the Cold War. The second decline, lasting through the 1990s, resulted from the end of the Cold War and the fall of Communism.

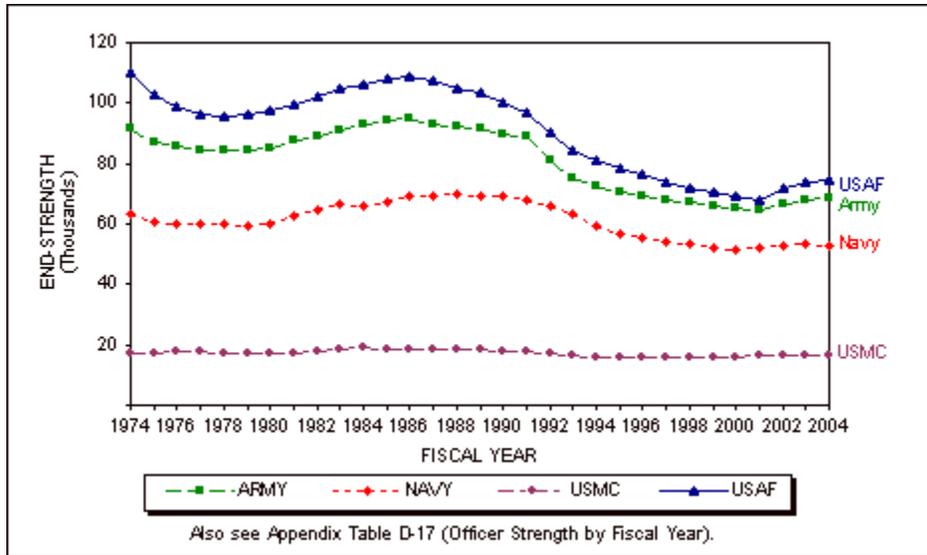


Figure 1. Active Duty Officer Numbers, by Service, FY's 1974-2004

In FY 2002, most likely as a result of the attacks of 9/11, the number of active duty officers commissioned increased by 1 percent, to a total 21,518 officers. The majority of this increase occurred in the Navy and Marine Corps, with a total of 7,382 officers (5,340 Navy and 2032 Marines) as shown in Figure 2 below.

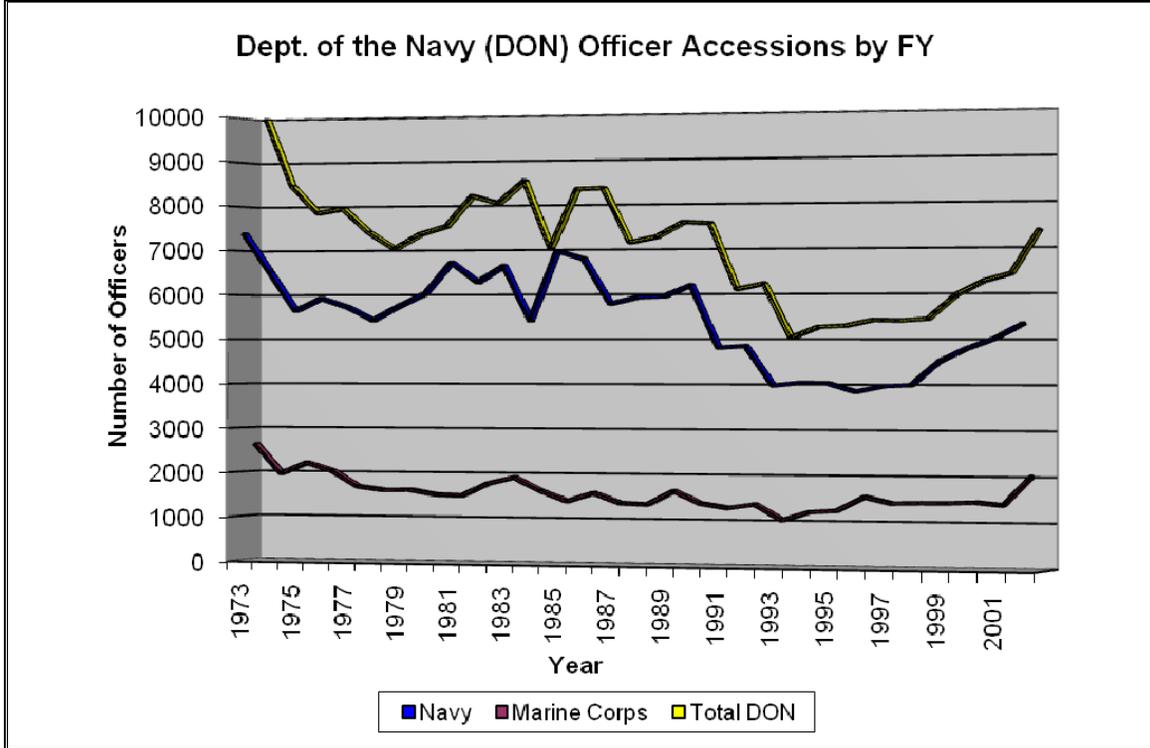


Figure 2. Active Duty DON Officer Accessions FY's 1974-2002

Today the Navy's ROTC program thrives with 71 colleges and universities (including their cross-town affiliates) participating. In 2004, of the 19,084 active duty officers commissioned within the Department of Defense (DoD), 6,303 were Army, 5,700 were Navy, 1,251 were Marine Corps, and 5,830 were Air Force. There were 6,866 officers commissioned via ROTC, while 3,413 were produced via the service academies (Leal, 2008). Of the 5,700 commissioned Naval Officers, 20.6% were NROTC scholarship students while 1.8% were NROTC non-scholarship students (Population Representation in the Military Services, 2008). Non-scholarship students are comprised of those active duty enlisted members who qualified for acceptance to the NROTC program. These students can be either Marine Enlisted Commissioning Education Program (MECEP) students or Seaman-to-Admiral-21 (STA-21) students. Nearly 15% of the students in the NROTC program are contract students.

The current mission of the NROTC program is:

to develop midshipmen mentally, morally and physically and to imbue them with the highest ideals of duty, and loyalty, and with the core values of honor, courage and commitment in order to commission college graduates as naval officers who possess a basic professional background, are motivated toward careers in the naval service, and have a potential for future development in mind and character so as to assume the highest responsibilities of command, citizenship and government (The U.S. NROTC Web Page “Program Mission,” 2008).

The basic requirements for obtaining entry to the NROTC program are (The U.S. NROTC Web Page “Program Mission”):

- Be a United States Citizen
- Be at least 17 years of age
- Be no more than 27 years of age by June 30 of year of commissioning
- Be a high school graduate or equivalent
- Be physically qualified
- Have no moral obligations or personal convictions preventing the conscientious bearing of arms
- Apply for and be accepted to NROTC college
- Have qualifying SAT or ACT scores

Unlike the United States ROTC programs, our counterparts in Canada and the UK do not require service obligations upon completion of degrees. In the UK, for example, cadets have no obligation to join the armed forces when they leave the university and can resign from the Officer Training Corps at any time. They do, however, have the option to obtain commissions in the armed forces if they so choose.

## **2. A Comparison of the Makeup of the NROTC Program to Other Commissioning Sources**

The Navy’s Officer Corps (including the Marine Corps) is comprised of a variety of individuals. White, black, Asian, Native American, male and female alike, comprise the force of our young leaders. The primary sources of commissioned officers are ROTC, OCS, and USNA. Figures 3 and 4 below depict the breakdown of the number of

males and females commissioned in the Navy and the Marine Corps in FY 2004 (according to the Office of the Under Secretary of Defense) by commissioning source.

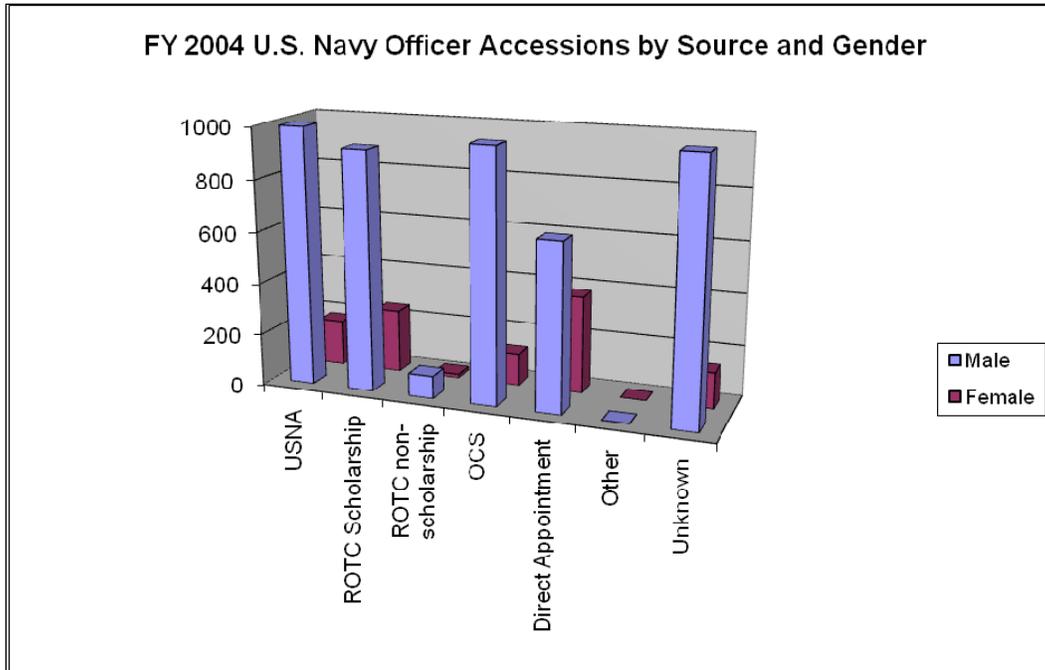


Figure 3. Navy Officer Accessions by Source and Gender FY 2004

As shown in Figure 3, the majority of Navy female officers commissioned in 2004 came from either Officer Candidate School (OCS), Direct Appointment, or ROTC Scholarship programs. The majority of Marine female officers commissioned the same year came from OCS or the U.S. Naval Academy. The numbers for males in the Navy seemed evenly distributed between the U.S. Naval Academy, ROTC Scholarship programs, OCS, and unknown sources. It is reasonable to assume that increasing the MSR may affect the number of females accepting NROTC scholarships, and could thereby reduce the total number of female officers accessed each year. Since the number of male officers seems evenly distributed, it is unlikely that the male population will be affected as much as the female population.

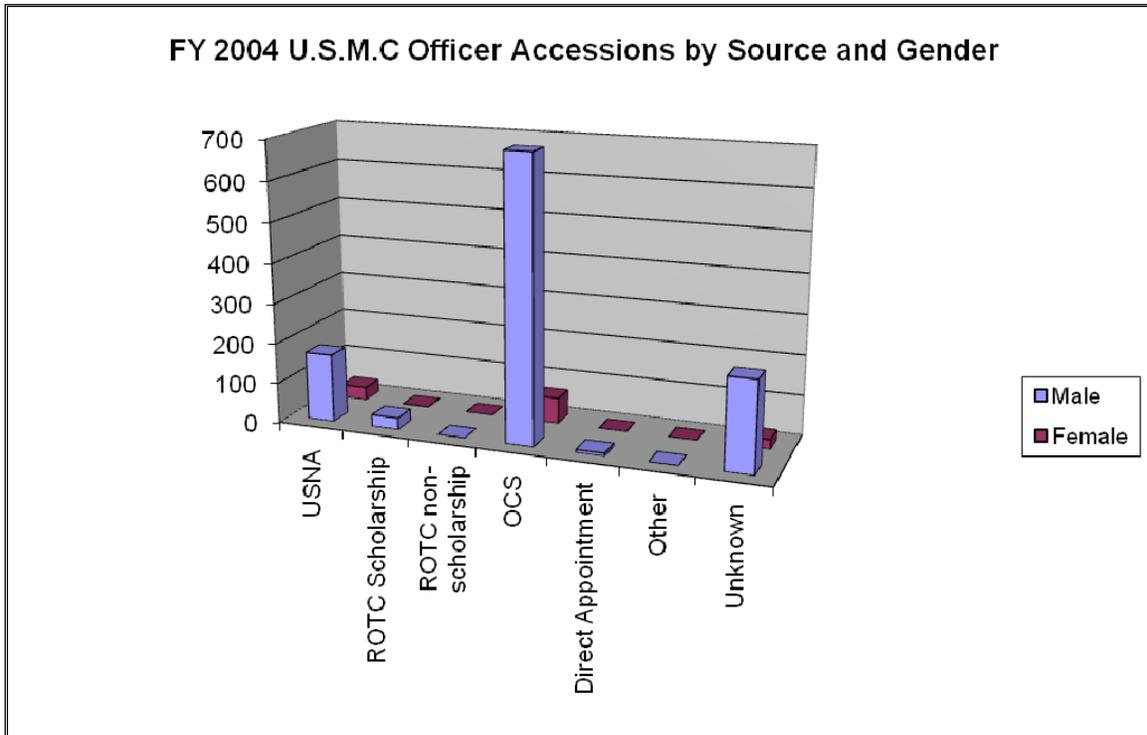


Figure 4. Marine Corps Officer Accessions by Source and Gender FY 2004

According to the study conducted by the Office of the Undersecretary of Defense (Population Representation in the Military Services, 2008), “*Unknown*” and “*Other*” sources of commissioning are sources that, together with the primary programs, ensure that the Services have access to a number of different pools of personnel with diverse skills.

Figure 5 below shows the breakdown of NROTC scholarship accessions by race/ethnicity.

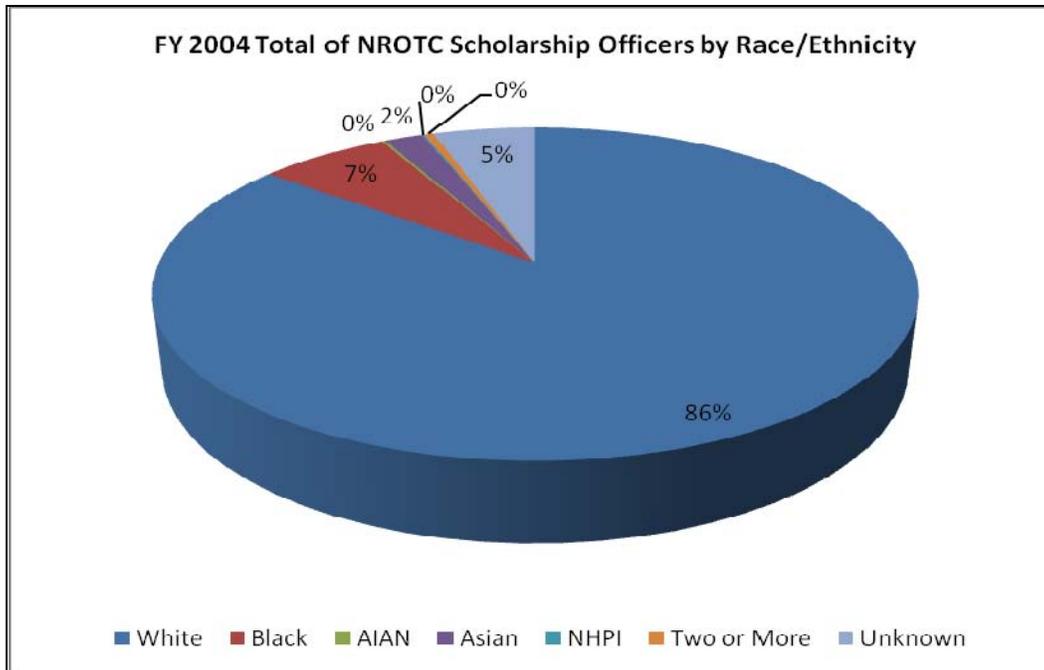


Figure 5. FY 2004 Total of NROTC Scholarship Officers by Race/Ethnicity

The majority of officers commissioned through the NROTC scholarship program are white (86%). Only 14% of those commissioned via NROTC are minorities. The 0% figures represent 18 American Indian or Alaskan Native (AIAN), 12 Native Hawaiian or Pacific Islander (NHPI), and 44 individuals of two or more ethnic backgrounds out of a total of 9,740 active duty officers. Of all the minorities, the most significant representations came from the black and unknown origins. This distribution is also seen at the U.S. Naval Academy and OCS for FY 2004 as shown in Figures 6 and 7 (Population Representation in the Military Services, 2008).

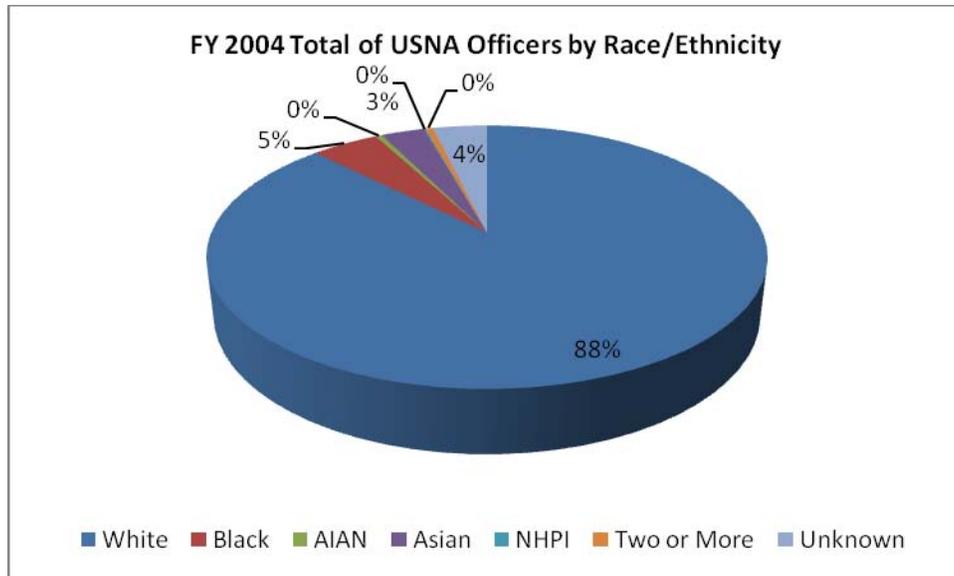


Figure 6. FY 2004 Total of USNA Officers by Race/Ethnicity

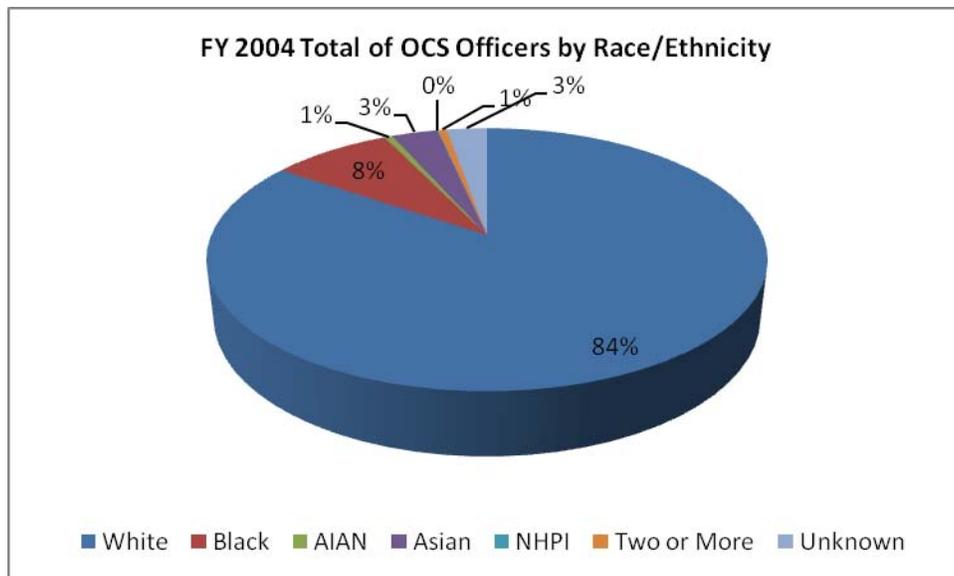


Figure 7. FY 2004 Total of OCS Officers by Race/Ethnicity

### 3. Cost Analysis

The pre-commissioning costs for the NROTC are more complicated than those for the Naval Academy and Officer Candidate School (OCS). Historically, the USNA and OCS have operated at full capacity and average pre-commissioning costs for these

programs have been based on this (Bernard, 2002). For NROTC, average pre-commissioning costs include both the cost of administering the program (as do USNA and OCS), but it also includes the costs associated with each specific college or university. These costs include tuition (which varies by institution), textbooks, instructional fees, and midshipmen pay during the year and during summer training (Cahill, 1993).

The pre-commissioning costs can be broken down into a primary and secondary cost (Parcell, 2006). For the USNA, primary costs include midshipman stipend and faculty and support compensation. Secondary costs for the USNA include “other support” costs and attrition costs. NROTC, on the other hand, only deals with tuition and fees for primary costs and midshipmen stipend for secondary costs. However, depending on the university attended, the cost of tuition and fees can far surpass the combined primary cost of the USNA. Post-commissioning costs can get even more complicated. However, the most significant factors in post-commissioning costs include compensation costs and early post-commissioning training costs. Compensation costs are determined by paygrade and by community.

The average annual costs for an NROTC graduate are significantly less than that of a USNA graduate. According to Parcell’s study, a weighted total average of the costs for all officer communities shows the program costs for the USNA at \$83 million and NROTC at \$81-\$82.7 million. Some reasons for the lower NROTC operating costs include, but are not limited to: many of the schools attended by NROTC students cost less to operate than USNA, and USNA incurs costs that other colleges and universities do not (Strano, 1990). Costs that USNA incurs include pay for students, mandatory summer training programs, room and board, clothing, and complete military instruction. Though some colleges and universities also incur these costs, the USNA devotes significantly more assets to these cost components.

It is unlikely that the pre-commissioning costs for training officers via NROTC will change if the MSR is increased to five years. However, it is possible that average annual NROTC costs will increase if it is necessary to increase monetary incentives to

attract the same number of highly qualified applicants. The remainder of this thesis will provide results and recommendations pertaining to this subject.

## **B. WOMEN AND MINORITIES IN THE NAVY**

Since the senior leaders of today were commissioned, career progression for female and minority officers has changed dramatically. As of 1997, 14 percent of all O-1's in the military were women and 20 percent of all entry grade officers were minorities. The driving forces behind why these individuals pursued careers in the military, specifically the Navy are highly variable, yet not so unpredictable. The challenges faced by these individuals during an era of dramatic change were no different from those of their civilian counterparts. When considering the progress and prospects for women and minorities in the Navy officer corps, it should be noted that these two groups face different issues. Minorities face the equal opportunity and treatment issues in the service (Young 1982). Not only do women have to face the issues that minorities have to face, but they are also up against the great debate of appropriate roles for women in the service (Devilbiss, 1990 and Achatz et al, 1999).

### **1. Motivations for Women and Minorities**

Since our nation was in its infancy, both minorities and women have served in some capacity in our military. The motivations for such service are as many as the personalities that served.

Despite the social challenges in the civilian world, minorities managed to succeed at great lengths in the military. Many found that due in part to the equal opportunity policies of the military they were all equal. They all faced the same fierce combat situations, death, loss of friends, and harsh living conditions. Many had a strong desire to fight, but were initially turned down, as the Blacks were in the Civil War. In this case fighting alongside their white counter parts would prove they were of equal status (Young, 1982).

During WWI and WWII, shortages of white soldiers and sailors brought about a recruiting drive that offered a better quality of life to most minorities living in the United

States (DiAntonio, Brinker, Daniel, & Northrup, 1979). Though many still experienced the discrimination found in civilian life, the money earned and food and shelter provided was enough for them to volunteer.

As the years went on, and society grew more diverse and accepting of minorities, the motivations for joining the military shifted from improving one's status in society to improving quality of life. For many minorities, growing up in poor, crime ridden areas hindered their ability to "rise above" their current situation and break out of the norm. Joining the military offered valuable training, opportunities for education, and a feeling of stability that was not offered them back home.

Women in the early stages of our military played many different roles. At first, women were used as nurses, and performed menial duties that allowed the men to go out and fight the wars (D'Amico & Weinstein, 1999). As time evolved, the woman's role in the military grew and they found themselves closer and closer to the shocking aspects of war that men were exposed to, yet manpower issues often necessitated the need for women to be in non-combat type roles in the military. In addition to the manpower issues, it was viewed by many that women were not capable of performing as well as men in these roles.

In the twentieth century, women have consistently shattered the glass ceiling that has been in place for them for centuries. After the nurse corps was established, women began joining the military and establishing themselves as equals. When the All-Volunteer Force was established, women began to branch out of the medical field and find themselves in more and diverse roles. The desire to be represented as equals in society, as in the minority case, was a prime factor for service.

Today, the need for equality still exists but is a very small factor in why women join. Women have many of the same propensities as men when it comes to the military of today. For many women, military has been a way of life. Parents and other relatives having served in the military have shaped their opinions and for them the military has been the only life they have known, so they join (Achatz, Westat, & Berkowitz, 1999).

Another reason for joining the service is that many women come from families that are not financially secure. As in the case of the minorities, many of these women aspire to further their education, and due to a concern for the financial responsibility of this endeavor turn to military service for help viewing the military as a stable and steady job with college tuition benefits (Achatz, Westat, & Berkowitz, 1999).

## **2. The Present and Beyond**

Both women and minorities of all types have served in the U.S. military for many years. The motives for each have not changed much over the past hundred years. However, in today's society, women and minorities have become more accepted as equals with regards to the common white male. Society is seeing more female and minority CEO's, more politicians, and the military is finding itself a more diverse force with increasing numbers of female and minority flag rank officers. So now that equality seems to have been achieved, what will motivate these individuals in the near and distant future to serve in the military will certainly change. With the competition between the military service and the private sector becoming fierce, it seems that money and the ability to define one's own future is becoming the driving force behind the decision to join or not to join.

Minorities, women, and white males alike all compete in today's society to achieve. Each is looking for the opportunity to succeed beyond their own history and make their mark on society. Tuition for college, bonuses, and the experience associated with being a military officer offer young women and minorities a stepping-stone toward the life their parents did not have. In the case of the rich, the military offers a chance to make a statement of individuality, and independence.

Now that the military has become the first stop on the road towards success, many might be affected by the increase in the MSR. Surface Warfare Officers and Supply Officers spend nearly half of their four-year commitment in training and qualification. Many women and minorities are eager to get out into the fleet and perform according to their job specifications, and women are looking for more opportunities in the Navy as a whole. Some find the qualification process grueling and distasteful, therefore these

individuals look for the chance to re-enter the civilian world. How an additional year will affect the decision to join the Navy will be determined by the results of the survey presented in this thesis.

## **C. CASE STUDIES OF LONGER OBLIGATIONS**

### **1. Medical Service**

Commensurate with the high levels of discipline required by the Department of Defense (DoD) for all the services, the Medical Service of the military is charged with maintaining an active duty force of healthy soldiers and sailors. For this to occur, the Medical Service must attract a sufficient number of high-quality individuals, and find a way to retain those that choose to serve. Some of the problems faced by all the services are that developing and retaining highly qualified military physician specialists is increasingly expensive, and the DoD found itself needing to improve the return on its investment by increasing physician retention. One of the significant causes for the increasing expense or physician retention is the unresponsiveness to increases in special pays. Studies show that it takes a rather large increase in special pay to induce a modest increase in retention (Brannmann et al, 2003).

Based on previous CNA studies (Brannmann et al., 2001 and Christiansen et al., 2003), the Office of the Undersecretary of Defense for Personnel and Readiness (P&R) requested an evaluation on the effects of increasing the MSR for Medical Service officers accessed through the Armed Forces Health Professions Scholarship Program (AFHPSP). A recent study answered two major questions regarding the retention of qualified military physicians: “*How will accession requirements and cost change?*” and “*What will happen to the applicant pool in terms of quality and quantity?*” (Brannman, Christiansen, LeFavour & Rattleman, 2003). The study found that increasing the MSR from four to five years while maintaining the same annual medical school student startup numbers would save the DoD money, but increasing the MSR to six or seven years would increase costs. The Brannmann et al., study drew on a large body of research on accessing, training, compensating, and retaining physicians. Included in this pool of research was

the Health Professions' Retention-Accession Incentives Study (HPRAIS), and a questionnaire consisting of 14 multiple choice questions administered to current Armed Forces Health Professions Scholarship Program (AFHPSP) medical students. There were three versions of the questionnaire administered. All versions of the questionnaire were identical with the exception of question 13, which dealt with the length of the active duty obligation. The questionnaire was prefaced with the following information about why the questionnaire was being administered and its impact on the students:

This questionnaire is part of a study that is being conducted for the Office of the Under Secretary of Defense for Personnel and Readiness. We are seeking your opinion about the active duty obligation associated with the Armed Forces Health Professionals Scholarship Program. This questionnaire provides an important source of information for decision-makers at all levels within the Department of Defense. We respectfully request that you respond to this questionnaire in a timely fashion.

Your answers will not be shared with anyone, and your name will not be associated with your answers. All information that would identify you will be kept private, and your responses will in no way affect your current active duty obligation.

The questionnaire allowed Brannman et al., to effectively determine the effects of an increased service obligation on the retention and accessions of medical students.

The study also concludes that raising the MSR to five years would not reduce the quality or quantity of newly accessed medical students. The bottom line is that the Brannman et al., study recommends increasing the MSR from four to five years. Recruiting goals for both numbers and quality of recruits would be maintained.

## **2. Aviation**

Of all the service requirements within the Navy, Aviation is among the longest. Ranging from six to eight years, depending on designator, potential candidates are being redirected towards communities with smaller, more manageable service obligations, or obligations that can be accomplished with little impact on one's life goals. And, while most service obligations have remained fixed over the years, Aviation obligations have increased (Moore, 2000). Over the last 30 years, Aviation obligations have increased

from five years to six for Naval Flight Officer's, (NFO's) and from five years to eight years for Pilots. Additionally, the actual "clock" for this service obligation begins *after* completion of flight school, making the total active service obligation between 8 and 10 years for NFO's and Pilots, respectively.

A question asked by Moore in her 2000 study was "*Are aviation obligations driving students away?*" If the service obligation were driving students away, according to Moore, pilot accessions would be expected to concentrate among the medium and lower quality students. Top students, given another choice, would choose to enter another URL community. The results of her study determined that although the service obligation remains much higher than that of other Navy Officer communities, the U.S. Naval Academy and NROTC continue to attract top students for Aviation. Moore used the Officer Master File along with the Academic Profile Codes (APCs) to develop the database of USNA graduates for this study.

Aviation has continued to increase its share of newly commissioned officers from these programs. According to Moore, an average of 37% of year groups from FY85 through FY91 entered the aviation community and 42% chose aviation between FY95 through FY97. This study found no evidence that top students were opting for other URL communities or placing great weight on the service obligation. Moore made no recommendation either way regarding increasing the MSR, but her study concluded that the service obligation was not a significant factor in whether or not a student chose the aviation community. Although Moore concluded that the proposed increase in MSR probably would not affect aviation recruitment, she did not explicitly recommend the MSR increase.

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### III. SURVEY METHODOLOGY

#### A. SURVEY DESIGN

The analysis reported here was based on a survey of NROTC midshipmen distributed through the SurveyMonkey instrument designed from SurveyMonkey.com. Questions for the NROTC survey were developed by the author. These questions were further refined with the assistance of Dr. Stephen Mehay (primary advisor), Professor Alice Crawford (experienced survey analyst at NPS), Dr. Ronald Fricker (“Survey Methods” course instructor), and Ms. Marjorie Strobel from Naval Service Training Command (NSTC). Each question was thoroughly reviewed to ensure it had analytical significance, alone or combined, to the possible impact of a one-year MSR extension. The full survey is displayed in the Appendix.

Section 1 of the NROTC survey is the Introduction to the survey, which explains the purpose, routine uses, anonymity, participation, instructions for completing the survey and provided point of contact information in case there were any problems or if respondents had any questions regarding the survey.

The participation of the survey was completely anonymous. There were no links to the identity and the information provided by each respondent. The participation of each midshipman was strictly voluntary and each was free to withdraw at any time without prejudice. The intent was to get a census and survey every midshipman at all 70 NROTC units.

Question 3 of the NROTC survey asked, “*Have you been prior enlisted in any military service?*” Midshipmen who responded “*Yes*” to this question were automatically directed to Question 22, the comment/conclusion section of the survey. Prior enlisted midshipmen were not given the opportunity to respond to Questions 4 through 21. The purpose of this design was based on the assumption that an extra year of commitment would not affect a prior enlisted midshipman’s decision to accept the ROTC scholarship.

## **B. PARTICIPANTS**

NROTC midshipmen are qualified young men and women who have accepted the NROTC Program in which they receive education and training in return for service as commissioned officers in the unrestricted line Naval Reserve or Marine Corps Reserve. Question 2 of the NROTC survey, “*At what college/university is your ROTC unit based?*” showed that out of the 70 existing NROTC units, 41 participated. Of the 70 NROTC units, there are approximately 5,812 midshipmen currently enrolled (as per correspondence with Ms. Marjorie Strobel of Naval Service Training Command).

## **C. PROCEDURES**

Navy surveys have several levels of approval before they can be administered to the intended participants. Since this research involves human participants, the NROTC survey had to first be approved by the Institutional Review Board (IRB) at Naval Postgraduate School. The board assessed the risks and benefits of the proposed research and determined that there was no risk. Once the research received official permission to proceed from the IRB, the NROTC Survey must get clearance from the Office of Management and Budget (OMB) before collecting information from the midshipmen. This survey qualified for OMB clearance exemption since it was considered a market research tool that can be used for recruiting purposes. The final approval level was with Navy Personnel Research, Studies, and Technology (NPRST) Department of the Navy Personnel Command (NPC) in Millington, Tennessee. This survey also received approval exemption from NPRST based on the fact that this is not an official Navy survey of Navy personnel.

A notification letter was sent to the Commanding Officers of each NROTC unit approximately one week prior to the survey distribution. With the assistance of the staff at Naval Service Training Command (NSTC) in Great Lakes, Illinois, the survey was forwarded via web link to all 70 NROTC units. A specific link of the same NROTC survey was sent to each individual school so that responses could be identified by school. The survey was available to the midshipmen from 31 October 2008 to 14 November 2008.

## IV. SURVEY RESULTS

### A. DEMOGRAPHICS

Among all of the respondents, 152 were prior enlisted. As stated earlier, prior enlisted responses for questions 4 through 21 were left blank. Section seven, containing questions 18 through 21, was used to determine general demographic information. Thirty-three participants did not respond to question 18, “*What is your gender?*” Of 2,441 responses, 1,999 (82%) are male and 442 (18%) are female.

For question 19, “*What is your current marital status?*” and question 21, “*Do you have any children?*” 2,443 and 2,438 midshipmen answered, respectively. Ninety-nine percent of these respondents answered “*single/never married*” and “*do not have any children.*”

The list of possible responses for question 20, “*What is your race/ethnicity,*” were “*White,*” “*Black or African American,*” “*American Indian or Alaskan Native,*” “*Asian,*” “*Hispanic*” or “*Other.*” For analysis purposes, all individual responses were merged into two categories “*Minority*” or “*White.*” Of the 2,410 surveyed midshipmen, 64 did not respond. Three hundred and eighty-six (16%) of respondents were minorities and 2,024 (84%) were white.

### B. SURVEY DATA

All survey data were collected and stored using the SurveyMonkey instrument at SurveyMonkey.com under Dr. Ronald Fricker’s NPS licensed account. Access to this account is strictly limited to Dr. Fricker and a few survey designers taking his course.

With the use of SurveyMonkey.com, data was easily transferred from the website and converted to Excel™ spreadsheets. An Excel™ spreadsheet of responses was created for each individual college, then combined into a master Excel™ spreadsheet. The data from the master Excel™ spreadsheet was then uploaded into John’s Macintosh Project, version 7 (JMP7). JMP7 is a computer program that performs statistical analyses,

developed by John Sall, cofounder of the Statistical Analysis System (SAS). Comparative analysis was done on the data set of 2,626 surveys that were used in this study.

### C. ANALYSES

The “Distribution” and “Fit Y by X” platforms from the JMP7 program were used for all analyses. The Distribution platform describes a distribution of values with histograms and other graphical and textual reports. The Y by X platform studies the relationship of two variables. This platform shows plots with accompanying analyses for each pair of x and y variables.

Section 2, “*School and Prior Service*,” contains questions 1 through 4. All schools that participated in the survey were identified in responses to question one, “*What college/university are you currently attending?*” These responses were recoded as *Public* or *Private* to examine any differences in responses according to the type of school they attended. All 2,626 respondents answered this question. Nine hundred and ninety-one (37%) respondents are enrolled in private colleges and 1,635 (62%) are enrolled in public schools.

Question 3, “*Have you been prior enlisted in any military service?*” indicated 152 (6%) prior enlisted midshipmen. Question 4 asked, “*Are you currently on a scholarship?*” Out of 2,474 responses, 2,099 (85%) are on scholarship and 375 (15%) are not on scholarship.

Section 3, “*Midshipman Status*,” contained questions 5 through 8. Eleven participants did not respond to question 5, “*What is your current class status?*” The 2,463 surveys identified for analysis produced 785 (32%) freshmen, 607 (25%) sophomores, 486 (20%) juniors, and 585 (24%) seniors. NSTC provided the previously stated figure of 5,812 midshipmen currently enrolled in NROTC, of which 2,095 (36%) are freshmen, 1463 (25%) are sophomores, 1082 (19%) are juniors, and 1172 (20%) are seniors. Figure 8 displays the histogram and Table 1 displays the corresponding table, of the class status breakouts of survey respondents.

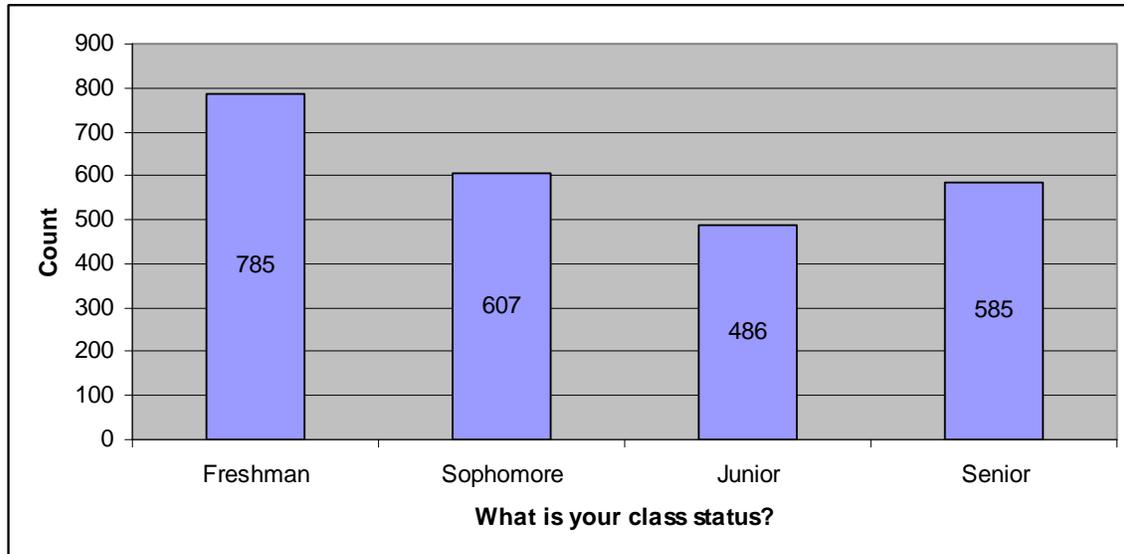


Figure 8. Question 5 – Class Status

Level	Count	Prob
Freshman	785	0.31872
Sophomore	607	0.24645
Junior	486	0.19732
Senior	585	0.23752
Total	2463	1.00000

Table 1. Question 5 – Class Status

Eleven participants did not respond to question 6, “*What option Midshipman are you?*” Of the 2,463 that did respond, 1718 (70%) are “*Navy*,” 639 (26%) are “*Marine*,” 103 (4%) are “*Navy Nurse*” and 3 responded as “*Other*.” Figure 9 and Table 2 display the histogram and corresponding table of the midshipmen option breakouts of survey respondents.

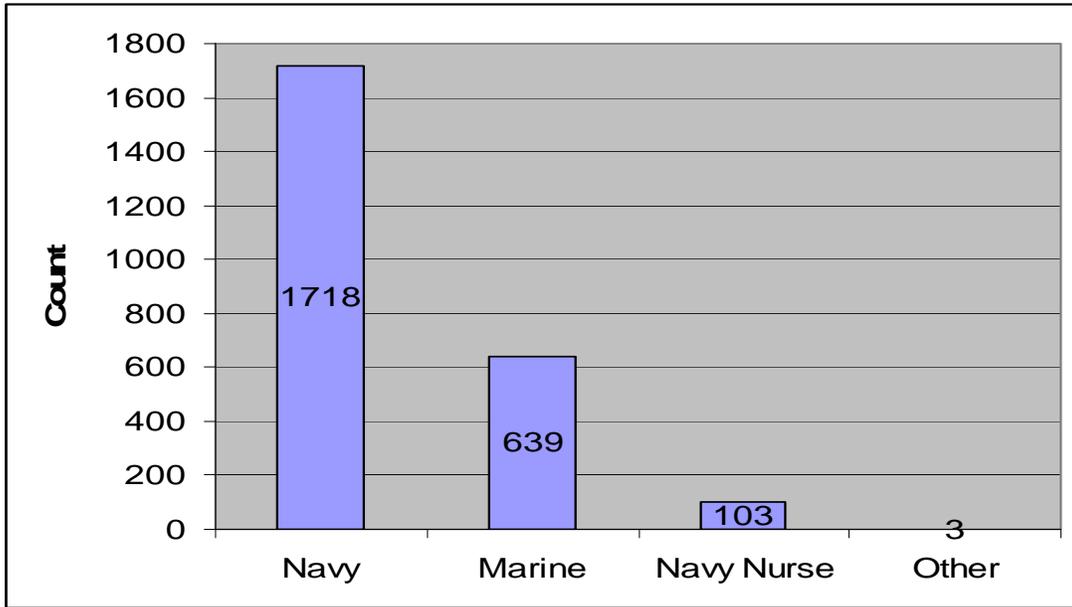


Figure 9. Question 6 – What option Midshipman are you?

Level	Count	Prob
Navy	1718	0.69752
Marine	639	0.25944
Navy Nurse	103	0.04182
Other	3	0.00122
Total	2463	1.00000

Table 2. Question 6 – What option Midshipman are you?

Twelve participants did not respond to question 7, “Which field/designator would you expect to select at graduation?” Of the 2,462 that did respond, 707 (28.7%) answered “Aviation,” 617 (25.0%) answered “Marine Corps,” 351 (14.3%) answered “Surface,” 208 (8.4%) answered “Submarine,” 168 (6.8%) answered “Special Operations/Special Warfare,” 139 (5.6%) answered “Do not know,” 103 (4.2%) answered “Nursing,” 78 (3.2%) answered “Surface (Nuclear Option),” 58 (2.4%) answered “Medical,” and 33 (1.3%) answered “Restricted line.” Figure 10 and Table 3 summarize the responses for question 7.

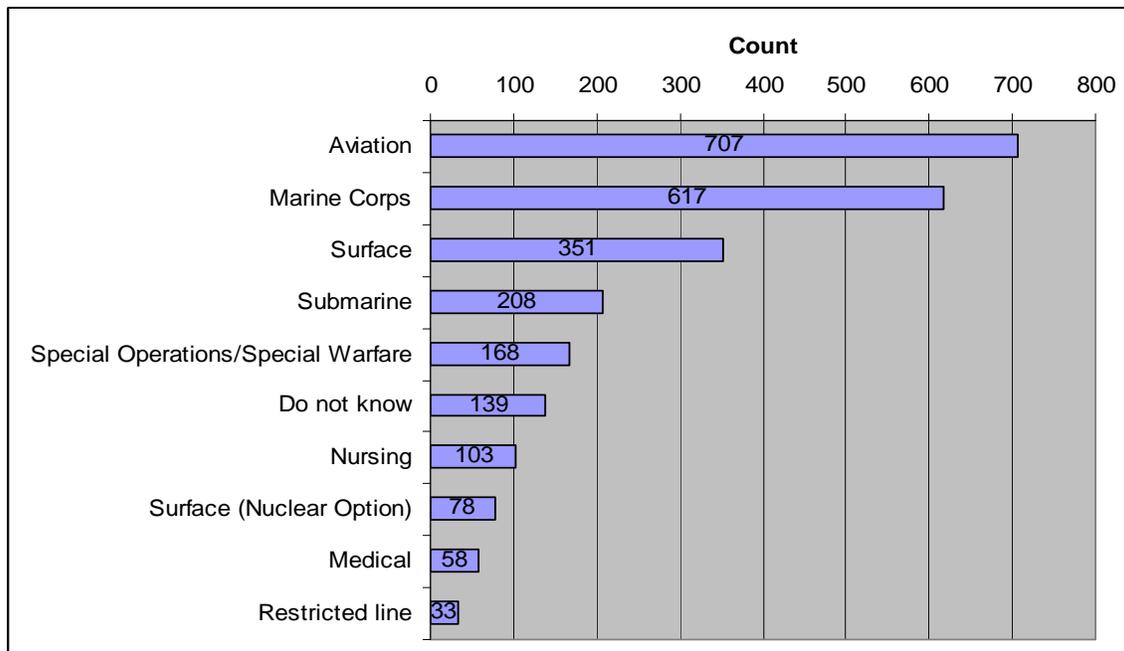


Figure 10. Field/Designator expected to select at graduation

Level	Count	Prob
Aviation	707	0.28716
Marine Corps	617	0.25061
Surface	351	0.14257
Submarine	208	0.08448
Special Operations/Special Warfare	168	0.06824
Do not know	139	0.05646
Nursing	103	0.04184
Surface (Nuclear Option)	78	0.03168
Medical	58	0.02356
Restricted line	33	0.01340
Total	2462	1.00000

Table 3. Field/Designator expected to select at graduation

Fourteen participants did not respond either “yes” or “no” to question 8, “*My parents are providing me financial support to attend college.*” Of the 2,460 that did respond, 1,502 answered “yes” and 958 answered “no.” Sixty-one percent of the midshipmen are financially supported by their parents.

Section 4, “*Military Association,*” contains questions 9 through 12. For questions 9 through 12, responses were based on rating different attributes that related to their present and future association with the military. All survey responses, based on a four-point Likert scale, were merged into two categories that combined the top two and bottom two ratings of the scale. Original responses for questions 9 through 12 were, “*Strongly Agree,*” “*Agree,*” “*Disagree,*” and “*Strongly Disagree.*” These responses were merged into two categories, “*Strongly Agree/Agree*” and “*Strongly Disagree/Disagree.*” Twenty-eight participants did not respond to question 9, “*The military will pay me well.*” Two thousand two hundred and twenty-six midshipmen responded, of which 2,098 (86%) answered “*Strongly Agree/Agree*” and 348 (14%) answered “*Strongly Disagree/Disagree.*”

Twenty-seven participants did not respond to question 10, “*The military offers me opportunities that are better than what I could expect in the civilian sector.*” Two thousand four hundred and forty-seven midshipmen responded, of which 2,228 (91%) answered “*Strongly Agree/Agree*” and 219 (9%) answered “*Strongly Disagree/Disagree.*”

Thirty-four participants did not respond to question 11, “*My preference is to remain in the military until I am eligible to retire.*” Two thousand four hundred and forty midshipmen responded, of which 1,503 (62%) answered “*Strongly Agree/Agree*” and 937 (38%) answered “*Strongly Disagree/Disagree.*”

Twenty-six participants did not respond to question 12, “*I am enjoying my current NROTC experience.*” Two thousand four hundred and forty-eight midshipmen responded, of which 2,075 (85%) answered “*Strongly Agree/Agree*” and 373 (15%) answered “*Strongly Disagree/Disagree.*”

Section 5, “*Influences,*” contains questions 13 and 14. The responses to these questions were based on rating different factors that influenced their decision to join

NROTC. For question 13, original responses for each factor were, “*Very Important,*” “*Important,*” “*Unimportant,*” and “*Very Unimportant.*” These responses were merged into two categories, “*Very Important/Important*” and “*Very Unimportant/Unimportant.*” The 6 factors that were rated are “*Money for College,*” “*Travel/Adventure,*” “*Financial stability to support my family,*” “*Patriotism,*” “*Future Navy Benefits,*” and “*My Navy Recruiter.*” Thirty-two participants did not respond to, “*Money for College.*” Two thousand four hundred and forty-two midshipmen responded, of which 2,056 (84%) answered “*Very Important/Important*” and 386 (16%) answered “*Very Unimportant/Unimportant.*”

Thirty-two participants did not respond to, “*Travel/Adventure.*” Two thousand four hundred and forty-two midshipmen responded, of which 2,085 (85%) answered “*Very Important/Important*” and 357 (15%) answered “*Very Unimportant/Unimportant.*”

Thirty-nine participants did not respond to, “*Financial stability to support my family.*” Two thousand four hundred and thirty-five midshipmen responded, of which 1,695 (70%) answered “*Very Important/Important*” and 740 (30%) answered “*Very Unimportant/Unimportant.*”

Thirty-three participants did not respond to, “*Patriotism.*” Two thousand four hundred and forty-one midshipmen responded, of which 2,344 (96%) answered “*Very Important/Important*” and 97 (4%) answered “*Very Unimportant/Unimportant.*”

Thirty-seven participants did not respond to, “*Future Navy Benefits.*” One thousand nine hundred and nine (78%) answered “*Very Important/Important*” and 528 (22%) answered “*Very Unimportant/Unimportant.*”

Thirty-nine participants did not respond to, “*My Navy Recruiter.*” Two thousand four hundred and thirty-five midshipmen responded, of which 280 (11%) answered “*Very Important/Important*” and 2155 (89%) answered “*Very Unimportant/Unimportant.*”

Thirty-two participants did not respond to question 14, “*Of the factors you just rated above, which was the most important.*” Participants were only able to choose one of the six factors or list “*Other.*” Of the 2,442 that did respond, 1043 (43%) answered “*Patriotism,*” 597 (24%) answered “*Money for College,*” 353 (14%) answered

“Travel/Adventure,” 214 (9%) answered “Financial stability to support my family,” 158 (6%) answered “Other,” 75 (3%) answered “Benefits,” and 2 answered “Recruiter.” Figure 11 and Table 4 summarize the responses for question 14.

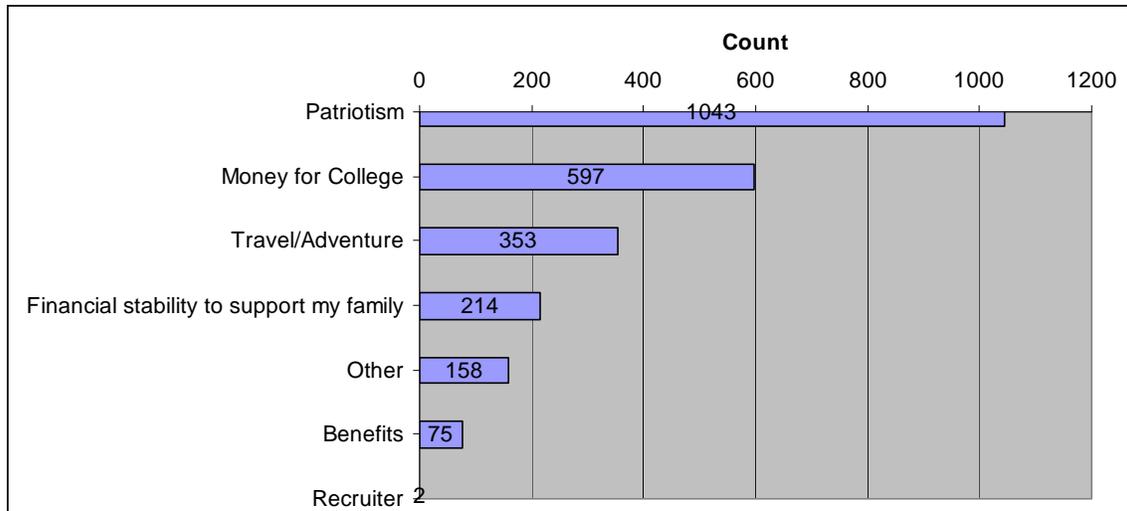


Figure 11. Which is the most important factor that influenced your decision to join NROTC

Level	Count	Prob
Patriotism	1043	0.42711
Money for College	597	0.24447
Travel/Adventure	353	0.14455
Financial stability to support my family	214	0.08763
Other	158	0.06470
Benefits	75	0.03071
Recruiter	2	0.00082
Total	2442	1.00000

Table 4. Which is the most important factor that influenced your decision to join NROTC

The results for section 6, “*Minimum Service Requirement*,” containing questions 15 through 17, were used to determine if the midshipmen would accept a NROTC scholarship if the active duty commitment was increased to 5 years vice the current four-year Minimum Service Requirement (MSR). Figure 12 shows how questions 15 through 17 appeared in the survey.

**15. How likely is it that you would have accepted an NROTC scholarship if the active duty commitment was 5-year vice a 4-year Minimum Service Requirement?**

- Very Likely
- Likely
- Unlikely
- Very Unlikely

**16. If the Minimum Service Requirement was extended to a 5-year Minimum Service Requirement, would you be more likely to join if the current monthly stipend is increased.**

- Very Likely
- Likely
- Unlikely
- Very Unlikely

**17. If the NROTC Minimum Service Requirement was 5 years, which of the following would you have been likely to do?**

- Still chosen to join NROTC
- Join the Navy Nurse Program (will maintain a 4-year MSR)
- Join Army ROTC (will maintain a 4-year MSR)
- Join Air Force ROTC (will maintain a 4-year MSR)
- Join NROTC as a Marine Option Midshipman (will maintain a 4-year MSR)
- Attend one of the Service Academies (e.g., Naval Academy, West Point, Air Force Academy)
- Enlist in the military
- Not join the military at all

Figure 12. Questions 15 Through 17 of Distributed NROTC Survey

Of the 2,626 survey respondents, 33 did not respond to question 15, “*How likely is it that you would have accepted an NROTC scholarship if the active duty commitment was five-year vice a four-year Minimum Service Requirement?*” Original responses were “*Very Likely,*” “*Likely,*” “*Unlikely,*” and “*Very Unlikely.*” These responses were merged into two categories, “*Very Likely/Likely*” and “*Very Unlikely/Unlikely.*” From the 2,441 that did respond to Question 15, 2285 (94%) were categorized as “*Very Likely/Likely*” and 156 (4%) were categorized as “*Very Unlikely/Unlikely.*”

Thirty-five participants did not respond to question 16, “*If the Minimum Service Requirement was extended to a five-year Minimum Service Requirement, would you be more likely to join if the current monthly stipend is increased?*” Two thousand four hundred and thirty-nine midshipmen responded, of which 2,227 (91%) answered “*Very Likely/Likely*” and 212 (9%) answered “*Very Unlikely/Unlikely.*”

Thirty-three participants did not respond to question 17, “*If the NROTC Minimum Service Requirement was five years, which of the following would you have been likely to do?*” Of the 2,441 that did respond, 1719 (70.4%) answered, “*Still chosen to join NROTC,*” 439 (18.0%) answered, “*Join NROTC as a Marine Option Midshipman,*” 80 (3.3%) answered, “*Join the Navy Nurse Program,*” 61 (2.5%) answered, “*Not join the military at all,*” 53 (2.1%) answered, “*Join Air Force ROTC,*” 45 (2.2%) answered, “*Attend one of the Service Academies,*” and 15 (1.0%) answered, “*Enlist in the military.*” Figure 13 and Table 5 summarize the responses for question 17.

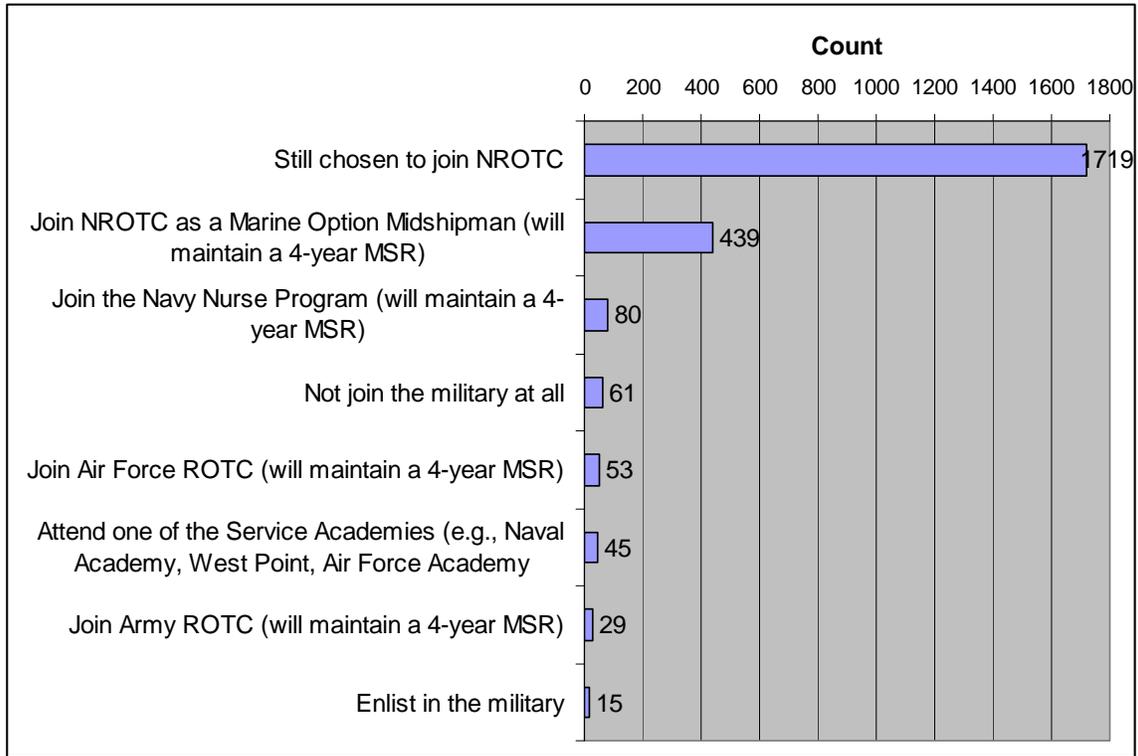


Figure 13. Question 17 – If the NROTC Minimum Service Requirement was five years, which of the following would you have been likely to do?

Level	Count	Prob
Still chosen to join NROTC	1719	0.70422
Join NROTC as a Marine Option Midshipman (will maintain a 4-year MSR)	439	0.17984
Join the Navy Nurse Program (will maintain a 4-year MSR)	80	0.03277
Not join the military at all	61	0.02499
Join Air Force ROTC (will maintain a 4-year MSR)	53	0.02171
Attend one of the Service Academies (e.g., Naval Academy, West Point, Air Force Academy)	45	0.01844
Join Army ROTC (will maintain a 4-year MSR)	29	0.01188
Enlist in the military	15	0.00615
Total	2441	1.00000

Table 5. Question 17 – If the NROTC Minimum Service Requirement was 5 years, which of the following would you have been likely to do?

The “Fit Y by X” function was specifically utilized to see if the response to question 15, “*How likely is it that you would have accepted an NROTC scholarship if the active duty commitment was five-year vice a four-year Minimum Service Requirement?*” was associated with type of school, gender, race/ethnicity, class year, financial support from parents, and answering “*Money for College*” as the most important factor influencing their decision to join NROTC. All of the following figures use a Mosaic Plot, which is a graphical display that allows the examination of the relationship among two or more categorical variables. Figure 14 shows a plot of private and public schools versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows that, out of a total of 2,441 responses, 38.71% of the responses were from private schools, which are indicated in yellow. Public school responses are indicated in blue and cover 61.29% of the plot. Ninety-three percent of responses from private schools and 94% of responses from public schools answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR.

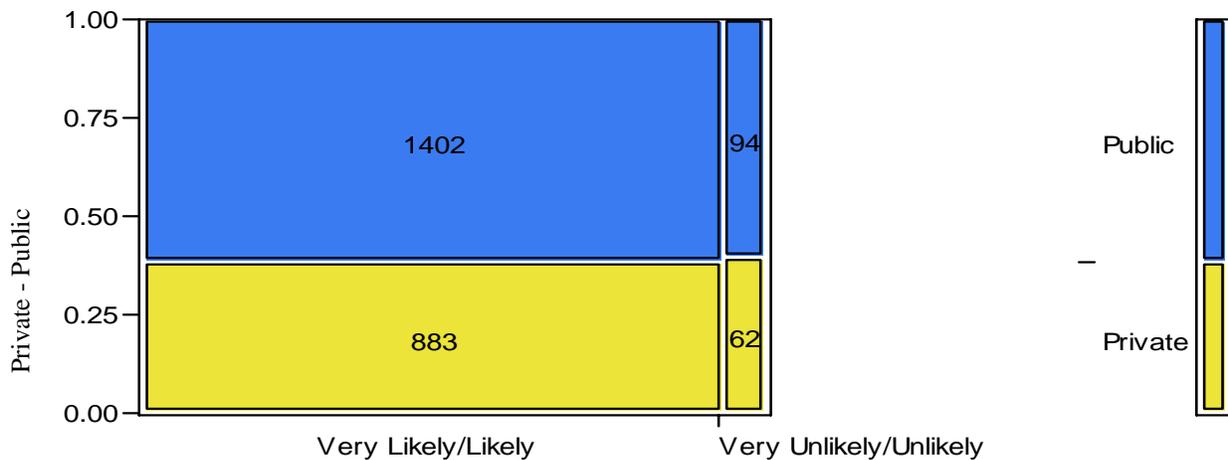


Figure 14. Accepting five-year MSR vs. Public or Private School

Schools	Total Count Responded	Percent of respondents from 2,441 total (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
<b>Public</b>	1402+94 = <b>1496</b>	1496/2441 = <b>61.29%</b>	1402/1496 = <b>93.72%</b>	94/1496 = <b>6.28%</b>
<b>Private</b>	883+62 = <b>945</b>	945/2441 = <b>38.71%</b>	883/945 = <b>93.44%</b>	62/945 = <b>6.56%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	0.075	0.7849

Table 6. Accepting five-year MSR vs. Public or Private School

The Pearson's chi-square test was used to assess the independence of paired variables on midshipmen responses of "Very Likely/Likely" or "Very Unlikely/Unlikely" to accept the five-year MSR. If the chi-square probability (p-value) is less than or equal to 0.05, then the null hypothesis, there is no difference between the two variable's responses of "VeryLikely/Likely" or "Very Unlikely/Unlikely," is rejected. The Pearson's chi-square test is used in Tables 6 through 18. For Table 6, the Pearson's chi-square test found a p-value of 0.7849. Since the p-value is greater than 0.05, there is no significant difference between public and private schools in the percentage of those who said they were "Very Likely" or "Likely" to accept a five-year MSR.

Figure 15 shows a plot of gender versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows that, out of a total of 2,438 responses, 18.13% of the responses were females, which is indicated in yellow. Males are indicated in blue and cover 81.87% of the plot. Ninety-two percent of responses from females and 94% of responses from males answered "Very Likely" or "Likely" to accepting the five-year MSR.

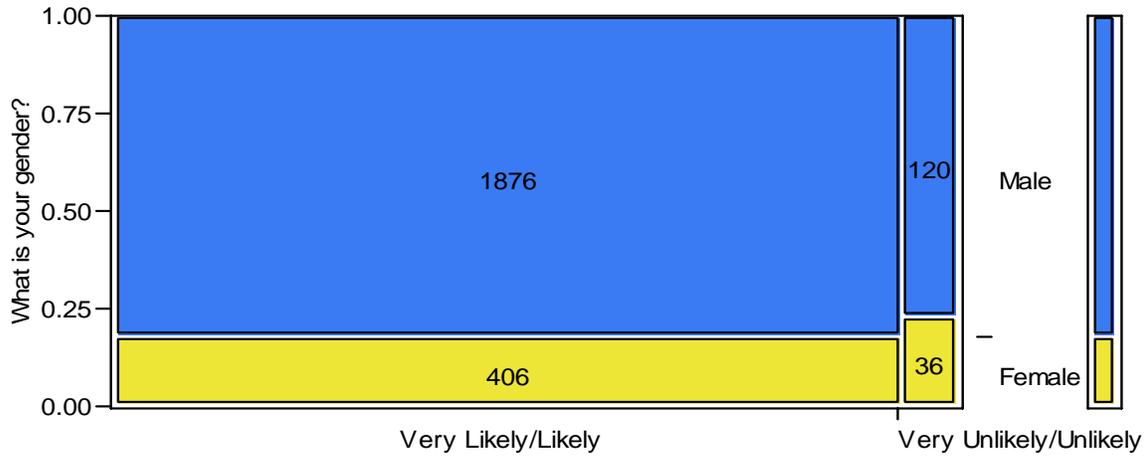


Figure 15. Accepting five-year MSR vs. Male or Female

Gender	Total Count Responded	Percent from total 2,438 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
<b>Male</b>	1876+120 = <b>1996</b>	1996/2438 = <b>81.87%</b>	1876/1996 = <b>93.99%</b>	120/1996 = <b>6.01%</b>
<b>Female</b>	406+36 = <b>442</b>	442/2438 = <b>18.13%</b>	406/442 = <b>91.86%</b>	36/442 = <b>8.14%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	2.748	0.0974

Table 7. Accepting five-year MSR vs. Male or Female

In Table 7, the Pearson's chi-square test found a p-value of 0.0974. Since the p-value is greater than 0.05, the test indicates that there is no significant difference between males and females in the percentage of those who said they were "Very Likely" or "Likely" to accept a five-year MSR.

Figure 16 shows a plot of Race/Ethnicity versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows that, out of a total of 2,407 responses, 16.00% of the responses were minority, which is indicated in yellow.

Whites are indicated in blue and cover 84.00% of the plot. Ninety-one percent of responses from minorities and 94% of responses from whites answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR.

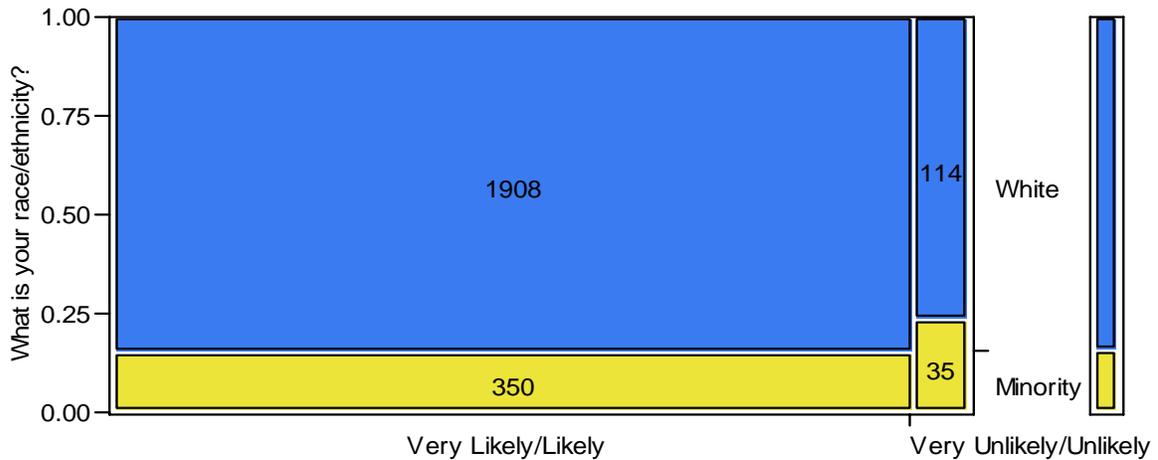


Figure 16. Accepting five-year MSR vs. Race/Ethnicity

Race/Ethnicity	Total Count Responded	Percent from total 2,407 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
White	1908+114 = <b>2022</b>	2022/2407 = <b>84.00%</b>	1908/2022 = <b>94.36%</b>	114/2022 = <b>5.64%</b>
Minority	350+35 = <b>385</b>	385/2407 = <b>16.00%</b>	350/385 = <b>90.91%</b>	35/385 = <b>9.09%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	6.640	0.0100

Table 8. Accepting five-year MSR vs. Race/Ethnicity

In Table 8, the Pearson’s chi-square test found a p-value of 0.010. Since the p-value is less than 0.05, there is a significant difference between minorities and whites in the percentage of those who said they were “*Very Likely*” or “*Likely*” to accept a five-year MSR. That is, minorities were significantly less likely than whites to support the MSR extension.

Figure 17 shows a plot of Class Status versus their response on how likely or unlikely they are to accept a five-year MSR. Out of a total of 2,441 responses, 31.91% of the responses are freshman, 24.62% are sophomores, 19.66% are juniors, and 23.80% are seniors. Ninety-four percent of responses from freshman, 92% of responses from sophomores and juniors, and 96% of responses from seniors answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR.

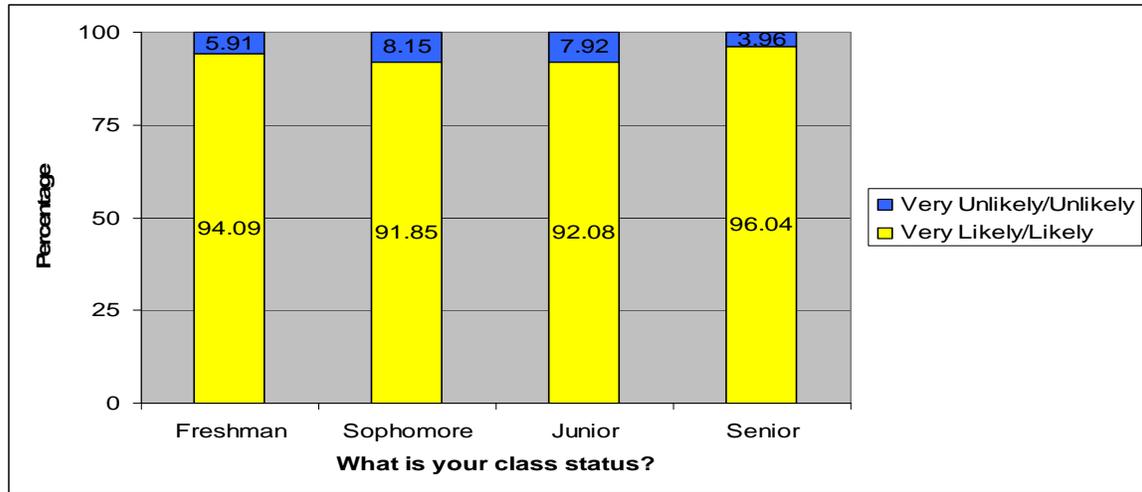


Figure 17. Accepting five-year MSR vs. Class Status

Class Status	Total Count Responded	Percent from total 2,441 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
<b>Freshman</b>	733+46 = <b>779</b>	779/2441 = <b>31.91%</b>	733/779 = <b>94.09%</b>	46/779 = <b>5.91%</b>
<b>Sophomore</b>	552+49 = <b>601</b>	601/2441 = <b>24.62%</b>	552/601 = <b>91.85%</b>	49/601 = <b>8.15%</b>
<b>Junior</b>	442+38 + <b>480</b>	480/2441 = <b>19.66%</b>	442/480 = <b>92.08%</b>	38/480 = <b>7.92%</b>
<b>Senior</b>	558+23 = <b>581</b>	581/2441 = <b>23.80%</b>	558/581 = <b>96.04%</b>	23/581 = <b>3.96%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	11.040	0.0115

Table 9. Accepting five-year MSR vs. Class Status

For Table 9, the Pearson's chi-square test found a p-value of 0.0115. Since the p-value is less than 0.05, there is a significant difference between each class in the percentage of those who said they were "*Very Likely*" or "*Likely*" to accept a five-year MSR. Thus, sophomores and juniors were significantly less likely than freshmen and seniors to support the MSR extension.

The Pearson's chi-square test assesses whether there are statistically significant differences in the distribution of responses between freshmen, sophomores, juniors, and seniors compared to the results for the combined set of respondents. In this case, 93.6% of all the students said they were "*Very Likely*" or "*Likely*" to accept a five-year MSR. In comparison to this overall percentage, sophomores and juniors were less likely to accept a five-year MSR while seniors and freshmen were more likely. Now, even though these differences are statistically significant, it is important to note that the greatest difference between groups was only slightly more than 4% (sophomores versus seniors) and in all groups more than 90% of the students said they were "*Very Likely*" or "*Likely*" to accept a five-year MSR.

Figure 18 shows a plot of "*My parents are providing me financial support to attend college*" versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows out of a total of 2,437 responses, 38.94% of the responses said "*No*," which is indicated in yellow. Midshipmen who responded "*Yes*" are indicated in blue and cover 61.06% of the plot. Ninety-two percent of "*No*" responses and 94% of "*Yes*" responses answered "*Very Likely*" or "*Likely*" to accepting the five-year MSR.

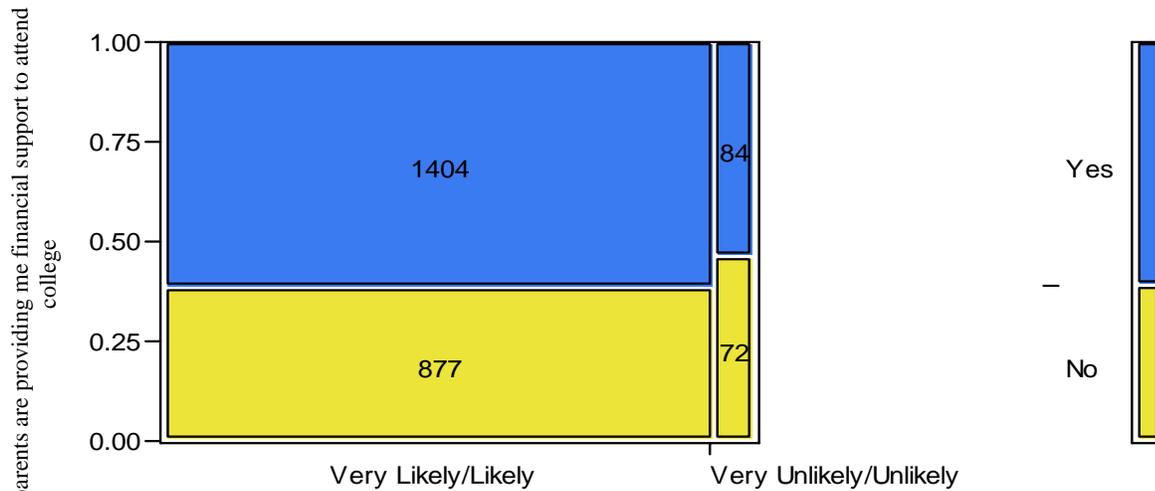


Figure 18. Accepting five-year MSR vs. Financial support from parents

Financial support from parents	Total Count Responded	Percent from total 2,437 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage Very Unlikely/Unlikely (x-axis)
Yes	1404+84 = <b>1488</b>	1488/2437 = <b>61.06%</b>	1404/1488 = <b>94.35%</b>	84/1488 = <b>5.65%</b>
No	877+72 = <b>949</b>	949/2437 = <b>38.94%</b>	877/949 = <b>92.41%</b>	72/949 = <b>7.59%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	3.646	0.0562

Table 10. Accepting five-year MSR vs. Financial support from parents

For Table 10, the Pearson's chi-square test found a p-value of 0.0562. Since the p-value is close to 0.05, there is inconclusive evidence that midshipmen who are not financially supported by their parents are less likely to say yes to a five-year MSR than midshipmen who are financially supported by their parents.

Figure 19 shows a plot of the importance of "Money for College" as a factor influencing their decision to join NROTC versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows that, out of a total of

2,438 responses, 84.21% of the responses answered “*Money for College*” as a *Very Important* or *Important* factor influencing their decision to join NROTC (indicated in yellow). Those that answered *Very Unimportant* or *Unimportant* are indicated in blue and cover 15.79% of the plot. Ninety-four percent of responses from *Very Important/Important* and from *Very Unimportant/Unimportant* answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR.

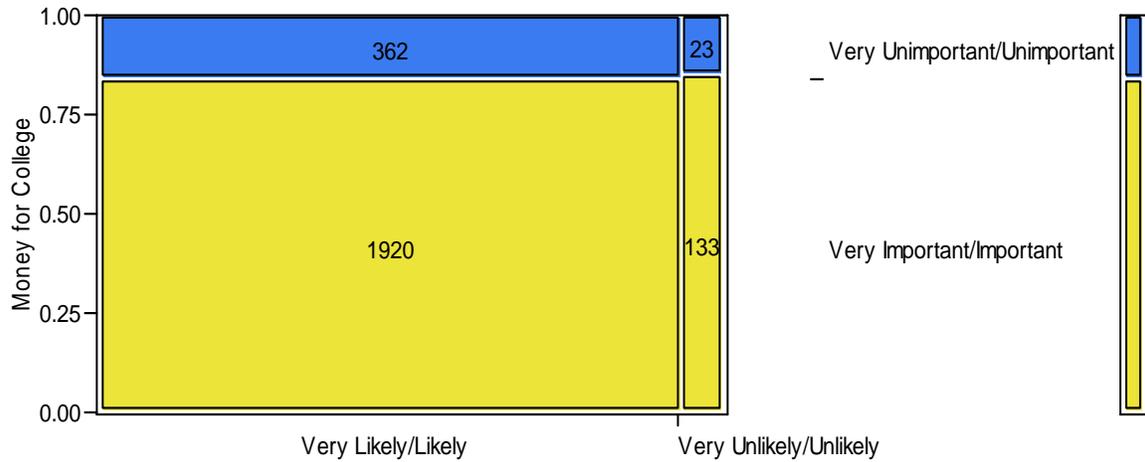


Figure 19. Accepting five-year MSR vs. Importance of “*Money for College*” as a factor influencing decision to join NROTC

Money for College	Total Count Responded	Percent from total 2438 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
<b>Very Unimportant/Unimportant</b>	362+23 = <b>385</b>	385/2438 = <b>15.79%</b>	362/385 = <b>94.03%</b>	23/385 = <b>5.97%</b>
<b>Very Important/Important</b>	1920+133 = <b>2053</b>	2053/2438 = <b>84.21%</b>	1920/2053 = <b>93.52%</b>	133/2053 = <b>6.48%</b>

Test	ChiSquare	Prob>ChiSq
Pearson	0.138	0.7106

Table 11. Accepting five-year MSR vs. Importance of “*Money for College*” as a factor influencing decision to join NROTC

For Table 11, the Pearson’s chi-square test found a p-value of 0.7106. Since the p-value is greater than 0.05, there is no significant difference between the percentages of

those who were “*Very Likely*” or “*Likely*” to accept a five-year MSR to those that answered “*Money for College*” as a *Very Important/Important* or *Very Unimportant/Unimportant* factor influencing their decision to join NROTC.

The United States Marine Corps Manpower Plans and Policy (USMC MPP) Division does not support the proposed change in NROTC MSR. The recommendation sent on 3 July 2008 to CNP from Commander Don Wilkinson, Head of Officer Force Shaping (CNO N131/N132D), was to increase MSR to five years for NROTC Scholarship Midshipmen with the exception of Nurse Program graduates. All other communities, with the exception of Surface Warfare Officers (SWOs), would not be affected by a five-year MSR due to their fields already requiring more than five years of training and obligation.

Figure 20 shows a plot of public and private schools versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows out of a total of 348 responses, 39.66% of the responses were private schools, which is indicated in yellow. Public schools are indicated in blue and cover 60.34% of the plot. Ninety percent of responses from public schools and 88% of responses from private schools answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR.

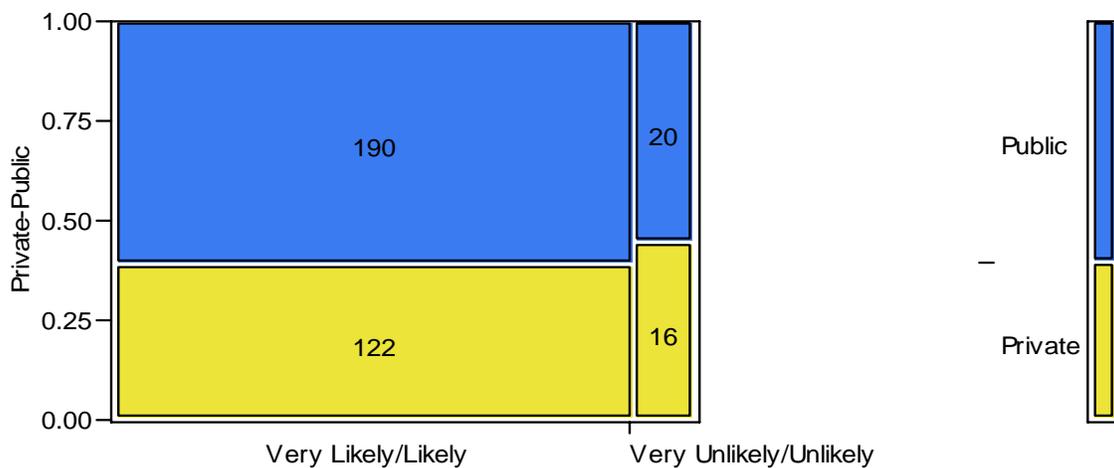


Figure 20. SWO response to accepting five-year MSR vs. Public or Private School

Schools	Total Count Responded	Percent from total 348 respondents	Percentage - Very Likely/Likely	Percentage - Very Unlikely/Unlikely
Public	190+20 = <b>210</b>	210/348 = <b>60.34%</b>	190/210 = <b>90.48%</b>	20/210 = <b>9.52%</b>
Private	122+16 = <b>138</b>	138/348 = <b>39.66%</b>	122/138 = <b>88.41%</b>	16/138 = <b>11.59%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	0.385	0.5350

Table 12. SWO response to accepting five-year MSR vs. Public or Private School

For Table 12, the Pearson's chi-square test found a p-value of 0.5350. Since the p-value is greater than 0.05, there is no significant difference between SWO's in private colleges and SWO's in public colleges in the percentage of those who said they were "Very Likely" or "Likely" to accept a five-year MSR.

Figure 21 shows a plot of gender versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows out of a total of 348 responses, 28.74% of the responses were females, which is indicated in yellow. Males are indicated in blue and cover 71.26% of the plot. Eighty-seven percent of responses from females and 91% of responses from males answered "Very Likely" or "Likely" to accepting the five-year MSR.

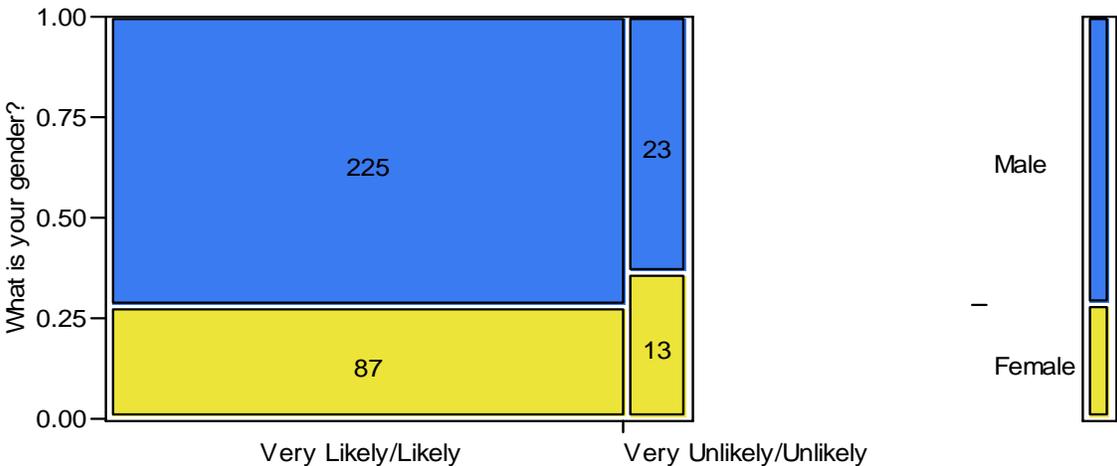


Figure 21. SWOs accepting five-year MSR vs. Male or Female

Gender	Total Count Responded	Percent from total 348 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
Male	225+23 = <b>248</b>	248/348 = <b>71.26%</b>	225/248 = <b>90.73%</b>	23/248 = <b>9.27%</b>
Female	87+13 = <b>100</b>	100/348 = <b>28.74%</b>	87/100 = <b>87.00%</b>	13/100 = <b>13.00%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	1.067	0.3017

Table 13. SWOs accepting five-year MSR vs. Male or Female

For Table 13, the Pearson's chi-square test found a p-value of 0.3017. Since the p-value is greater than 0.05, there is no significant difference between male SWOs and female SWOs in the percentage of those who said they were "Very Likely" or "Likely" to accept a five-year MSR.

Figure 22 shows a plot of Race/Ethnicity versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows out of a total of 342 responses, 17.84% of the responses were minority, which is indicated in yellow. Whites are indicated in blue and cover 82.16% of the plot. Eighty-four percent of responses from minorities and 91% of responses from whites answered "Very Likely" or "Likely" to accepting the five-year MSR.

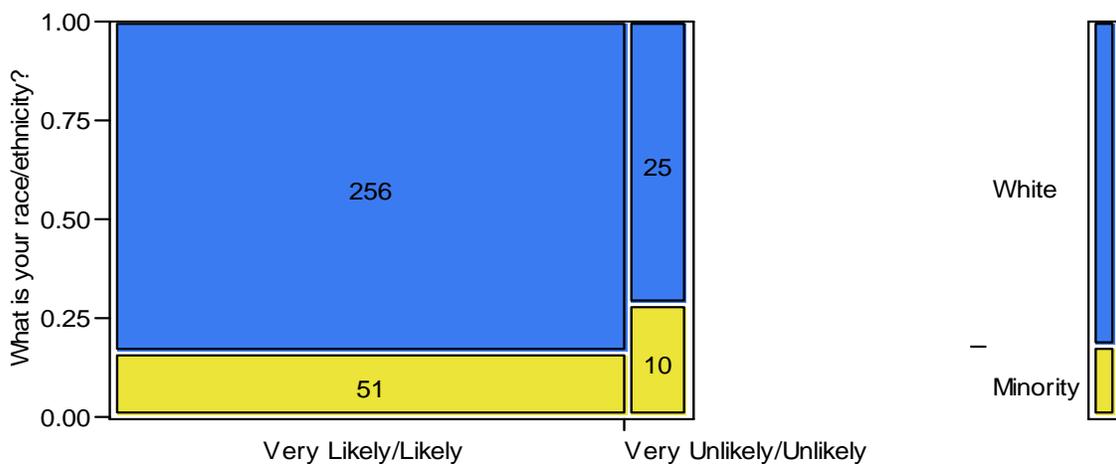


Figure 22. SWOs accepting five-year MSR vs. Race/Ethnicity

Race/Ethnicity	Total Count Responded	Percent from total 342 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
White	256+25 = <b>281</b>	281/342 = <b>82.16%</b>	256/281 = <b>91.10%</b>	25/281 = <b>8.90%</b>
Minority	51+10 = <b>61</b>	61/342 = <b>17.84%</b>	51/61 = <b>83.61%</b>	10/61 = <b>16.39%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	3.066	0.0799

Table 14. SWOs accepting five-year MSR vs. Race/Ethnicity

For Table 14, the Pearson's chi-square test found a p-value of 0.0799. Since the p-value is greater than 0.05, there is no significant difference between minority SWOs and white SWOs in the percentage of those who said they were "Very Likely" or "Likely" to accept a five-year MSR.

Figure 23 shows a plot of Class Status versus their response on how likely or unlikely they are to accept a five-year MSR. Out of a total of 348 responses, 29.60% of the responses are freshman, 19.25% are sophomores, 22.13% are juniors, and 29.02% are seniors. Eighty-nine percent of responses from freshman, 84% of responses from sophomores, 90% of responses from juniors, and 94% of responses from seniors answered "Very Likely" or "Likely" to accepting the five-year MSR.

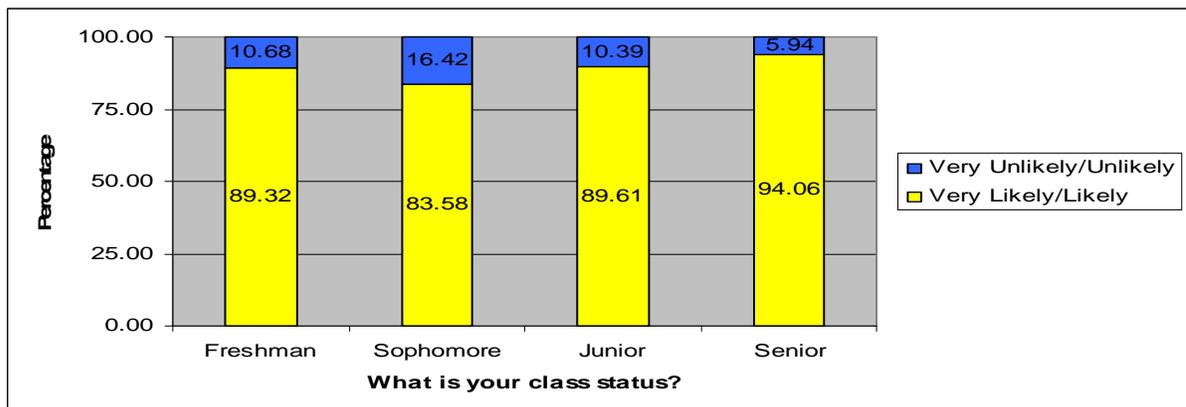


Figure 23. SWOs accepting five-year MSR vs. Class Status

Class Status	Total Count Responded	Percent from total 348 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Unlikely/Unlikely (x-axis)
Freshman	92+11 = <b>103</b>	103/348 = <b>29.60%</b>	92/103 = <b>89.32%</b>	11/103 = <b>10.68%</b>
Sophomore	56+11 = <b>67</b>	67/348 = <b>19.25%</b>	56/67 = <b>83.58%</b>	11/67 = <b>16.42%</b>
Junior	69+8 = <b>77</b>	77/348 = <b>22.13%</b>	69/77 = <b>89.61%</b>	8/77 = <b>10.39%</b>
Senior	95+6 = <b>101</b>	101/348 = <b>29.02%</b>	95/101 = <b>94.06%</b>	6/101 = <b>5.94%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	4.789	0.1879

Table 15. SWOs accepting five-year MSR vs. Class Status

For Table 15, the Pearson's chi-square test found a p-value of 0.1879. Since the p-value is greater than 0.05, there is no significant difference between all SWOs for each class in the percentage of those who said they were "Very Likely" or "Likely" to accept a five-year MSR.

Figure 24 shows a plot of "My parents are providing me financial support to attend college" versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows out of a total of 347 responses, 42.94% of the responses answered "No," which is indicated in yellow. Midshipmen who responded "Yes" are indicated in blue and cover 57.06% of the plot. Eighty-five percent of SWOs that are not financially supported and 93% of SWOs that are financially supported answered "Very Likely" or "Likely" to accepting the five-year MSR.

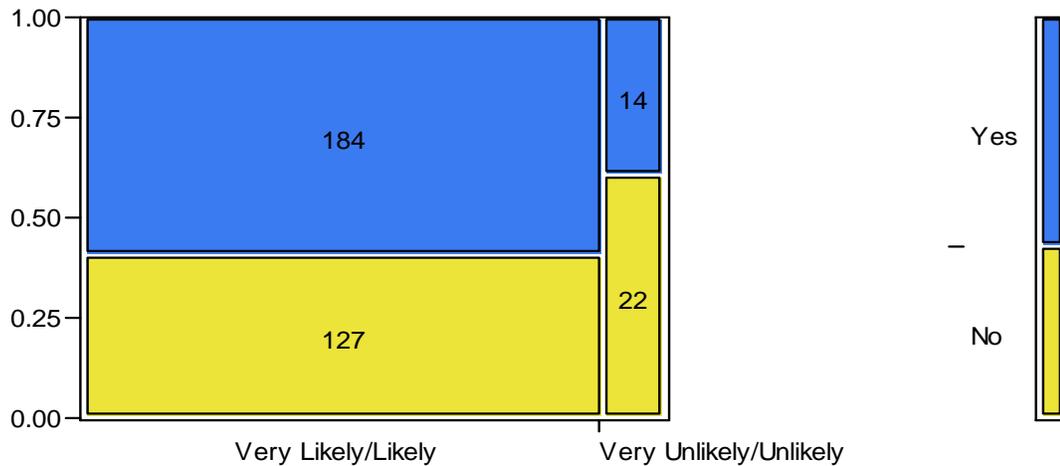


Figure 24. SWOs accepting five-year MSR vs. Financial support from parents

Financial support from parents	Total Count Responded	Percent from total 347 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
Yes	184+14 = <b>198</b>	198/347 = <b>57.06%</b>	184/198 = <b>92.93%</b>	14/198 = <b>7.07%</b>
No	127+22 = <b>149</b>	149/347 = <b>42.94%</b>	127/149 = <b>85.23%</b>	22/149 = <b>14.77%</b>

Test	ChiSquare	Prob>ChiSq
Pearson's	5.413	0.0200

Table 16. SWOs accepting five-year MSR vs. Financial support from parents

For Table 16, the Pearson's chi-square test found a p-value of 0.0200. Since the p-value is less than 0.05, there is a significant difference between SWOs that are financially supported by parents and SWOs that are not financially supported by parents in the percentage of those who said they were "Very Likely" or "Likely" to accept a five-year MSR. In particular, those who do not receive support from their parents are less likely to support the MSR extension.

Figure 25 shows a plot of the importance of "Money for College" as a factor influencing a SWO's decision to join NROTC versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows that, out of a total of 347 responses, 87.03% of the responses answered "Money for College" as a Very

*Important* or *Important* factor influencing their decision to join NROTC (indicated in yellow). Those that answered *Very Unimportant* or *Unimportant* are indicated in blue and cover 12.97% of the plot. Eighty-eight percent of responses from *Very Important/Important* and 98% of responses from *Very Unimportant/Unimportant* answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR.

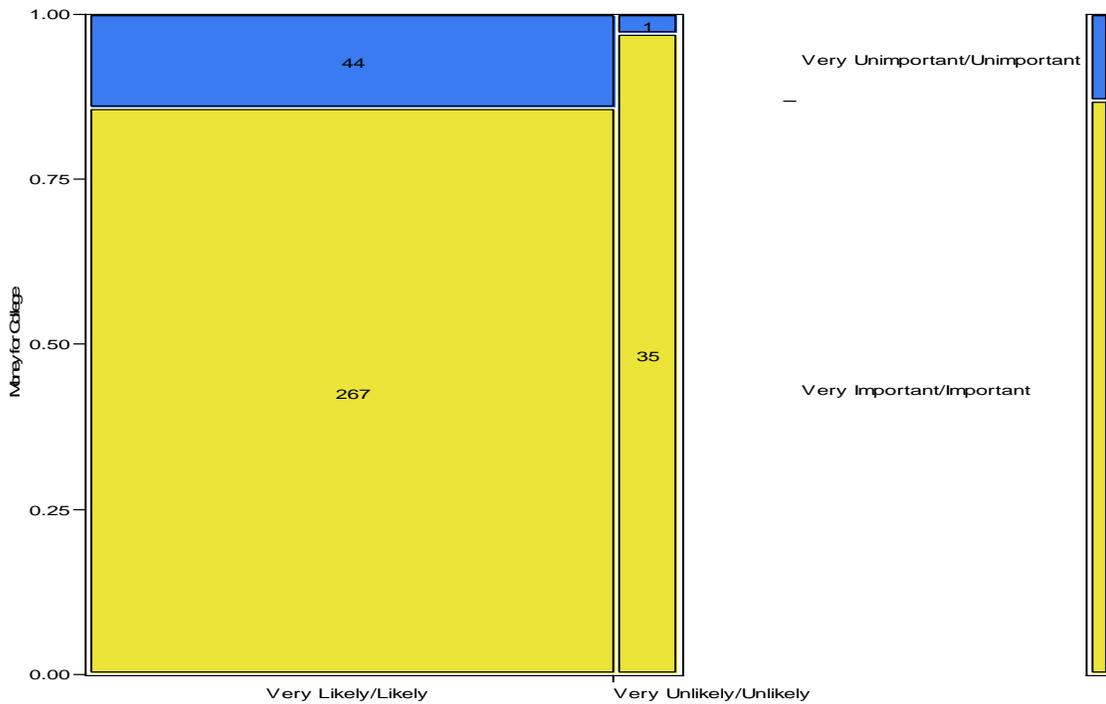


Figure 25. SWOs accepting five-year MSR vs. Importance of “*Money for College*” as a factor influencing decision to join NROTC

Money for College as most important factor	Total Count Responded	Percent from total 347 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
Very Unimportant/Unimportant	44+1 = <b>45</b>	45/347 = <b>12.97%</b>	44/45 = <b>97.78%</b>	1/45 = <b>2.22%</b>
Very Important/Important	267+35 = <b>302</b>	302/347 = <b>87.03%</b>	267/302 = <b>88.41%</b>	35/302 = <b>11.59%</b>

Test	ChiSquare	Prob>ChiSq
Pearson	3.696	0.0546

Table 17. SWOs accepting five-year MSR vs. Importance of “*Money for College*” as a factor influencing decision to join NROTC

For Table 17, the Pearson's chi-square test found a p-value of 0.0546. Since the p-value is close to 0.05, there is inconclusive evidence that SWO's who answered "*Money for College*" as a *Very Important* or *Important* are less likely to say yes to a five-year MSR than SWOs that answered *Very Unimportant* or *Unimportant*.

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## V. DISCUSSION

This research does not support the hypothesis that extending the service obligation of commissioned officers from NROTC sources from four to five years will adversely impact recruiting goals. There are approximately 5,812 midshipmen currently enrolled in NROTC. Forty-five percent (2,626) of these enrolled midshipmen participated in the NROTC survey. Question 15, “*How likely is it that you would have accepted an NROTC scholarship if the active duty commitment was five-year vice a four-year Minimum Service Requirement?*” was used as the main variable to determine whether certain midshipmen’s decisions would be affected by a one-year MSR extension. Ninety-four percent of the total participants responded “*Very Likely*” or “*Likely*” for question 15.

Only 2,463 participants responded to question 5, “*What is your class status?*” The class breakout of participants were 32% freshman, 25% sophomores, 20% juniors, and 24% seniors. Responses for question 15 show that 94% of freshmen, 92% of sophomores and juniors, and 96% of seniors responded “*Very Likely*” or “*Likely*” to accept a 5 year MSR. Only a small percentage (6%) of the total number of participants answered that they would be “*Very Unlikely*” or “*Unlikely*” to accept an NROTC scholarship if the MSR were extended by a year.

There are 70 NROTC units, of which 41 units (containing 66 schools) participated. All 2,626 respondents answered question 1: “*What college/university are you currently attending?*” Sixty-two percent of respondents are enrolled in public schools and 38% are enrolled in private schools. Of all respondents, 94% of public schools and 93% of private schools responded, “*Very Likely*” or “*Likely*” to accepting a five-year MSR.

The Pearson’s chi-square test proved there was no difference in gender responses to accepting a five-year MSR. Out of 2,441 respondents, 82% are male and 18% are female. Ninety-two percent of females and 94% of males answered “*Very Likely*” or “*Likely*” to accepting a five-year MSR.

Only 2,410 responded to question 20, “*What is your race/ethnicity?*” Sixteen percent are minorities and 84% are white. Out of 2,410 responses, 91% of minorities and 94% of whites responded “*Very Likely*” and “*Likely*” to question 15. The Pearson’s chi-square test found minorities were significantly less likely than whites to support the MSR extension. This would be a concern, as recruiting minorities is a current struggle for recruiters today.

Receiving financial support from parents also did not affect the decision of accepting the NROTC scholarship with a five-year MSR, as proven by the Pearson’s chi-square test. Of 2,460 responses, 61% are financially supported by parents. Ninety-four percent of financially supported midshipmen and ninety-two percent of midshipmen that are not receiving financial help answered “*Very Likely*” or “*Likely*” to question 15.

Only 24% of respondents answered “*Money for College*” as the most important factor that influenced their decision to join NROTC. Of these respondents, 88% answered “*Very Likely*” or “*Likely*” to accepting the 5 year MSR. Again, this shows that money is not a factor in accepting the NROTC scholarship.

Of the six factors to choose affecting their decision to join NROTC, “*Patriotism*” saw the majority (43%) of the responses. Ninety-six percent of these midshipmen would still accept NROTC scholarship with a one-year extension. Figure 26 shows a plot of the importance of “*Patriotism*” as a factor influencing midshipmen’s decision to join NROTC versus their response on how likely or unlikely they are to accept a five-year MSR. The y-axis of the plot shows that, out of a total of 347 responses, 95.68% of the responses answered “*Patriotism*” as a *Very Important* or *Important* factor influencing their decision to join NROTC (indicated in yellow). Those that answered *Very Unimportant* or *Unimportant* are indicated in blue and cover 4.32% of the plot. Ninety-one percent of responses from *Very Important/Important* and 60% of responses from *Very Unimportant/Unimportant* answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR.

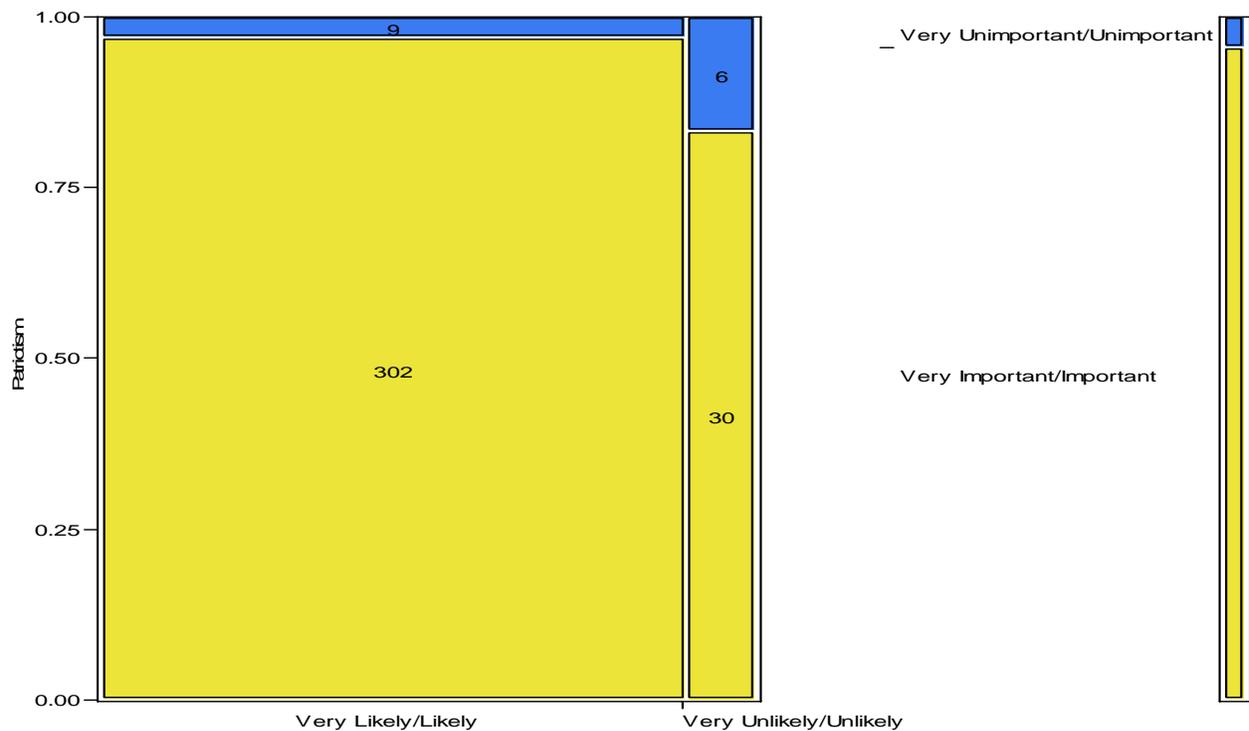


Figure 26. Accepting five-year MSR vs. Importance of “*Patriotism*” as a factor influencing decision to join NROTC

Patriotism	Total Count Responded	Percent from total 347 respondents (y-axis)	Percentage - Very Likely/Likely (x-axis)	Percentage - Very Unlikely/Unlikely (x-axis)
<b>Very Unimportant/Unimportant</b>	9+6 = <b>15</b>	15/347 = <b>4.32%</b>	9/15 = <b>60.00%</b>	6/15 = <b>40.00%</b>
<b>Very Important/Important</b>	302+30 = <b>332</b>	332/347 = <b>95.68%</b>	302/332 = <b>90.96%</b>	30/332 = <b>9.04%</b>

Test	ChiSquare	Prob>ChiSq
Pearson	14.798	0.0001

Table 18. Accepting five-year MSR vs. Importance of “*Patriotism*” as a factor influencing decision to join NROTC

For Table 18, the Pearson’s chi-square test found a p-value of 0.0001. Since the p-value is less than 0.05, there is a significant difference between the percentages of those that answered *Very Important/Important* to those that answered *Very Unimportant/Unimportant* to “*Patriotism*” as a factor influencing their decision to join

NROTC and who were “*Very Likely*” or “*Likely*” to accept a five-year MSR. In particular, those who do not think patriotism is an important factor are less likely to support the MSR extension.

The same analysis was conducted solely on Surface Warfare Officer candidates’ (SWO) responses. The Pearson’s chi-square tests did not show any significant differences between responses for any of the questions with the exception of the questions “*My parents are providing me financial support to attend college.*” Eighty-five percent of SWOs that are not financially supported and 93% of SWOs that are financially supported answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR. This was similar to the entire midshipmen population in that the higher percentage of midshipmen were those that were financially supported by their parents and said “*Very Likely*” or “*Likely*” to question 15.

The different entities within the Department of the Navy affected by this study cover three domains of Human Systems Integration (HSI): *Manpower*, *Training*, and *Personnel*. The life cycle cost of operations and support related to these three domains could be affected by an extension of the minimum service obligation for newly commissioned officers. The *Manpower* domain encompasses wartime requirements and the billets authorized, whereas the *Personnel* domain details the current number onboard and where they are assigned. The *Training* domain creates the requirements for filling a manpower billet and placing/assigning these personnel to a specific coded billet. With an increase of MSR, more time could be spent on training. It seems the current training system rushes newly commissioned officers out to the fleet in an attempt to earn a return on investment in pre-commissioning costs before the obligated MSR time expires. More time invested in training would produce more confident junior officers. In 2003, the SWO community’s training regime went from six months to three weeks in hopes of saving money and increasing personnel in the fleet. Putting unqualified and unconfident Ensigns on the fast-track to the fleet could possibly affect retention once their obligated time is up.

An increase in the MSR could “weed” out those midshipmen that accept the NROTC scholarship just for the money and increase the quality of officers by increasing

the share of those who join due to a higher propensity for military service. With the state of the current (2008) economy, the military faces little competition to recruit personnel, and therefore is able to fill manpower billets. With a five-year MSR, the military would be able to increase formal training and still fill billets with the right personnel who have the proper training. An increase in the MSR and training could possibly strengthen our military force and increase overall military readiness.

As seen in prior studies, such as Brannmann et al., and Moore, increasing the MSR from four to five years would have no impact on the accession of new officers. Although the Medical Service Corps and the Aviation Communities are unaffected by the increase, it is evident from studies done on these two communities that issues facing accessions are nearly identical to those faced by those that are affected by the MSR increase.

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## VI. CONCLUSIONS AND RECOMMENDATIONS

### A. CONCLUSION

The Chief of Naval Personnel requested more information on increasing the NROTC Minimum Service Requirement from four years to five years for newly commissioned officers. The research in this thesis only analyzes the decisions of midshipmen currently enrolled in the NROTC program. The results of the NROTC survey is based on the self-reported intentions of these midshipmen under the hypothetical situation of their going back and making the decision to accept the NROTC scholarship with a five-year MSR rather than a four-year MSR. This survey also gathers demographic information as well as information on whether they would still decide to join NROTC.

This research collected results via website from midshipmen who volunteered to take the survey. There is no way to tie the identity of a participant to any of the completed surveys. The Pearson's chi-square test was applied to responses to statistically assess the differences in responses across various demographic and other groups. Based on the high response rate, it is assumed that the responses would be typical of the responses of the entire population of NROTC midshipmen.

Of 2,626 participants, there were 152 prior enlisted midshipmen. Since these midshipmen had left the enlisted ranks to become an officer, it is assumed that they would not be affected by an extra year of active duty service in exchange for a college degree and commission and thus their responses were not analyzed.

Ninety-four percent of the non-prior-enlisted midshipmen responses answered "Very Likely" or "Likely" for question 15, "How likely is it that you would have accepted an NROTC scholarship if the active duty commitment was five-year vice a four-year Minimum Service Requirement?" Only 156 midshipmen responded "Very Unlikely" or "Unlikely." When asked, "If the Minimum Service Requirement was extended to a five-year Minimum Service Requirement, would you be more likely to join if the current

monthly stipend is increased?” only 91% answered “Very Likely/Likely.” The percentage of midshipmen joining NROTC with a five-year MSR without an increase in the monthly stipend was higher than the percentage of midshipmen joining NROTC with a five-year MSR with an increase in the monthly stipend, again suggesting that money is not a factor motivating applicants to NROTC.

One apparent reason that some midshipmen responded “Very Unlikely” or “Unlikely” is they believed one year of paid scholarship should coincide with one year of active service.

*I believe that by increasing the minimum service requirement the NROTC program would be less attractive to non-military members. Just the thought of being obligated for half a decade does not appeal to people the same as only 4 years. I also believe that one year of service for every year in school is a reasonable proposition. I don't believe the minimum obligation should be changed.*

*Not a good idea. The argument for NROTC has always been one for one i.e. that for every year of college we are provided we must pay the government back by service. I think that any changes to the MSR would decrease numbers in the program.*

A few of the midshipmen also feel that there would be an imbalance between NROTC and the United States Naval Academy (USNA). Although extending NROTC's MSR to five years would match the commitment of USNA, it would not match the benefits of midshipmen at the Naval Academy who have their room and board paid for while attending school.

*I think the stipend should be raised if the commitment is extended. USNA has a longer commitment, but they have room and board covered as well. I will still graduate with a good number of loans for room and board while attending university.*

*If the service commitment was extended to 5 years then the scholarship should cover room and board as well.*

*Well, If you paid for the housing of NROTC students attending public schools, I believe they would be more likely to accept the minimum 5 year requirement.*

Survey results showed that there were no significant differences in responses to Question 15 between midshipmen in public vs. private colleges, between males and females, and between those who did and did not stress the importance of “*Money for College*” as an influencing factor to join NROTC. There was inconclusive evidence that there is a difference between midshipmen who were financially supported vs. midshipmen who were not financially supported by their parents in answering “*Very Likely*” or “*Likely*” to question 15. An explanation may be that midshipmen who are financially supported by their parents feel they have more freedom to choose their future as compared to those who are not financially supported by their parents. Midshipmen who are not financially supported by their parents may feel more of an obligation and commitment to accept a five-year MSR as they do not have the freedom to back out: therefore, the proposed extension may not be appealing as it could be an extra constraint.

There was a significant difference between minorities vs. whites and also between each class year in their responses to Question 15. Minorities were significantly less likely to accept a five-year MSR, as were sophomores and juniors. There are current recruiting challenges with recruiting minority officers in the Navy, so an extra year of obligated service suggests that an extra year of service will make them even less likely to accept an NROTC scholarship. An explanation as to why sophomores and juniors are less likely to accept a five-year MSR might be because they are in their deciding years. Freshmen are still motivated and learning the process of NROTC, whereas seniors are experienced and should have no doubt as to what they want. Sophomores can still decide to leave the NROTC program without incurring any military obligation.

Since 43% of all midshipmen respondents stated “*Patriotism*” as the most important factor (of six possible choices) for influencing their decision to join NROTC, it can be assumed that it would not be difficult to recruit midshipmen to replace those that would not have accepted the scholarship with a five-year MSR. In addition, the current tough economy and fewer civilian jobs mean less competition for military recruits. The following are a few quotes directly taken from the survey:

*It would not affect me because I still want to go in the military anyways. I feel as if everyone should do some sort of service in the military, and I look forward to serving my country*

*For me, personally, the money and service commitment of 4 years has had nothing to do with my desire to be in the NROTC program. I grew up in a military family; every branch is represented, except the Coast Guard. From an early age, I've wanted to fly jets for the Navy, and after 9/11, it was clear to me that I wanted to be a Naval Officer. The pay and commitment time have nothing to do with my desire to serve and protect the country that I love.*

*I am proud to serve my country. I understand that conditions in the United States military are always subject to change, but I am still committed and will be loyal to the United State of America.*

The quality of applicants might be affected by the increase in MSR, based on experiences in other officer communities. However, comments received from section 22 of the survey suggests otherwise. Many of the midshipmen feel that an increase in the MSR would weed out those that are only in it for the money and keep those that are sincerely committed to a military career. They respondents feel that the quality of officers will increase under the new obligation. The following are a few quotes directly taken from the survey:

*I honestly think that many MIDN join the program to pay for college. While the program does a good job of weeding out those who did not join for the "right reasons," I think that a greater commitment would force students to seriously consider the reasons and benefits for joining NROTC. A revised commitment could also help to promote communities that lack the interest of MIDN (i.e. subs). It would be very interesting to see the effects of an increased service length on the natural rate of attrition for officers out of the Navy when their commitment is over....Personally, I think that an increase in service obligation would increase the quality of officer candidates. They may be less motivated by the money and more motivated by something else that cannot be measured quantitatively.*

*Extending the Minimum Service requirement would have had no effect on my decision to join ROTC. I feel that if it affects anything, it will help find midshipmen more motivated to being in the Navy.*

If the additional MSR weeds out those midshipmen that join specifically to pay for college leaves only those more committed to serve the Navy and their country, this could benefit the Navy in terms of a more dedicated and more productive officer corps that is more likely to make the Navy a career. If this change in officer composition were to increase retention, a monetary benefit would accrue to the Navy in terms of reduced accession numbers and reduced accession costs.

Surface Warfare Officers (SWOs) would be the only officers affected by a five-year MSR. The same analysis, (association of Question 15 to type of school, gender, race/ethnicity, class year, financial support from parents, and answering “*Money for College*” as the most important factor influencing their decision to join NROTC), was conducted solely on Surface Warfare Officer’s responses. The Pearson’s chi-square tests did not show any significant differences between responses to any of the questions with the exception of “*My parents are providing me financial support to attend college.*” Out of a total of 347 responses, 42.94% of the midshipmen answered “*No*” and 57.06% responded “*Yes.*” Eighty-five percent of SWOs who were not financially supported and 93% of SWOs who were financially supported answered “*Very Likely*” or “*Likely*” to accepting the five-year MSR. The Pearson’s chi-square test found a p-value of .0200. The 8 percentage point difference translates into about 36 fewer SWO applicants per year if the ‘unlikely’ responses were to result in a decision not to apply. However, with a poor economy and unstable jobs in the civilian sector, it can be assumed that replacing 36 SWO applicants should not be a problem in the current recruiting environment. This analysis also shows that this significant difference strengthens the argument that money is not a factor since the majority of the SWO midshipmen who responded are financially supported by their families and a large percentage of the financially supported SWO midshipmen would still accept the NROTC scholarship with a five-year MSR.

## **B. RECOMMENDATION**

Although this research surveyed current midshipmen, it can be assumed that the results are a good representation of the population of applicants for NROTC scholarships. Extending the MSR by one year appears to have no overall significant effect on current

midshipmen in terms of their decision to join NROTC. The recommendation based on this research is to extend the MSR to 5 years. However, the students' responses did indicate some areas of concern that may require some attention. One consideration would be to analyze the cost of covering NROTC midshipmen's room and board or to increase the monthly stipend as this was an apparent problem/concern in the comment section of the NROTC survey. It should be noted that these additional benefits would increase the annual per student cost of the NROTC program. Thus, an analysis of the differences in costs from these new monetary benefits versus the benefits of the additional year of service time for graduates would need to be conducted. In addition, of course, the additional recruiting cost of replacing applicants who turn down the scholarship offer must also be assessed. However, on balance, it is the opinion of the author that the additional service time would exceed the additional cost, and thus the Navy would earn a positive rate of return on the additional MSR. While the additional recruiting cost will be low in the current slack U.S. economy, the author's judgment is that even in a growing economy it would not be a serious enough factor to drive the rate of return to the negative range.

Midshipmen who will be commissioned and enter the SWO community are the only midshipmen who would be affected by a five-year MSR. Based on the Pearson's Chi-Squared test, results show that raising the MSR to five years would not affect accessions within the SWO community. However, based on the individual p-values, there is the possibility that accessions might be affected in the following groups: Midshipmen who do not receive financial support from their parents (p-value 0.0200), and midshipmen who answered "*Money for College*" as *Very Important* or *Important* (p-value .0546).

The following is a statement from a midshipman that would have probably changed his mind if he were to go back to being an applicant:

*With hindsight, I would say that I would do it all over again even with 5 years MSR. But honestly, I am not too sure I would have felt the same way while I was applying for the scholarship. One of the big sell points to my parents (and me) was "it's only 4 years." That doesn't matter to me now, but it did then.*

This statement suggests that this research only projects the potential effects of a five-year MSR based on current midshipmen responses. Future research should be conducted on actual applicants to accurately determine the effects of extending the MSR by one year. More research could also be done using the current NSTC databases to collect accurate demographics and background information on midshipmen to corroborate the results found in this study.

Finally, since the Navy is experiencing problems with the recruitment of minorities and women, it is suggested that a survey be targeted toward these groups using the NTSC databases to specifically question them about their intentions and motivations for serving. This will allow the Navy to offset any possible negative effects of the longer MSR on the recruiting of minorities and women.

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## APPENDIX – NROTC SURVEY

### NROTC Survey

#### 1. Introduction

**PURPOSE:**

The purpose of this survey is to obtain the views and opinions of Current NROTC Midshipmen regarding proposed changes to the NROTC program. Your views and opinions about NROTC are very important to Navy decision makers.

**ROUTINE USES:**

The results of this survey will be provided to the Naval Postgraduate School as part of a Student Thesis project on the subject above. Results of that Student Thesis will be provided to the Navy to assist in making management decisions regarding potential changes to the NROTC program. Naval Postgraduate School will maintain the raw data files.

**ANONYMITY:**

Your participation in this survey will be completely anonymous, there will be no link to your identity and the information you provide. Individual responses to questions will remain at Naval Postgraduate School. In addition, information you provide will be statistically summarized with the responses of others and can NOT be directly attributable to you.

**PARTICIPATION:**

Your participation in this survey is strictly voluntary. If you agree to participate, you are free to withdraw at any time without prejudice. Failure to respond to any of the questions will NOT result in any penalties toward you.

**INSTRUCTIONS FOR COMPLETING THE SURVEY:**

For each question, select the response, which is most appropriate to you.

Time to complete the survey should be less than 15 minutes.

If you have questions or problems with the survey, please call LT Karen Sankes at 831-324-0797, or email: [kjsankes@nps.edu](mailto:kjsankes@nps.edu).

## NROTC Survey

### 2. School and Prior Service

1. What college/university are you currently attending?

2. At what college/university is your ROTC unit based?

3. Have you been prior enlisted in any military service?

Yes

No

4. Are you currently on a scholarship?

Yes

No

## NROTC Survey

### 4. Military Association

Rate the following attributes listed below as they relate to your present and future association with the military.

**9. The military will pay me well**

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

**10. The military offers me opportunities that are better than what I could expect in the civilian sector**

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

**11. My preference is to remain in the military until I am eligible to retire**

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

**12. I am enjoying my current NROTC experience**

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

# NROTC Survey

## 5. Influences

13. Rate the following factors on their importance in influencing your decision to join NROTC?

	Very Important	Important	Unimportant	Very Unimportant
Money for College	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Travel/Adventure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial stability to support my family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patriotism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Future Navy Benefits (i.e., Health Insurance, Housing, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My Navy Recruiter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Of the factors you just rated above, which was the most important (You can only pick one).

- Money for College
- Travel/Adventure
- Financial stability to support my family
- Patriotism
- Benefits
- Recruiter
- Other factor not listed above (please specify)

## NROTC Survey

### 6. Minimum Service Requirement

**15. How likely is it that you would have accepted an NROTC scholarship if the active duty commitment was 5-year vice a 4-year Minimum Service Requirement?**

- Very Likely
- Likely
- Unlikely
- Very Unlikely

**16. If the Minimum Service Requirement was extended to a 5-year Minimum Service Requirement, would you be more likely to join if the current monthly stipend is increased.**

- Very Likely
- Likely
- Unlikely
- Very Unlikely

**17. If the NROTC Minimum Service Requirement was 5 years, which of the following would you have been likely to do?**

- Still chosen to join NROTC
- Join the Navy Nurse Program (will maintain a 4-year MSR)
- Join Army ROTC (will maintain a 4-year MSR)
- Join Air Force ROTC (will maintain a 4-year MSR)
- Join NROTC as a Marine Option Midshipman (will maintain a 4-year MSR)
- Attend one of the Service Academies (e.g., Naval Academy, West Point, Air Force Academy)
- Enlist in the military
- Not join the military at all

## NROTC Survey

### 7. Demographic Questions

**18. What is your gender?**

- Male  
 Female

**19. What is your current marital status?**

- Single, never married  
 Married  
 Legally separated  
 Divorced  
 Widowed

**20. What is your race/ethnicity? Pick all that apply.**

- White  
 Black or African American  
 American Indian or Alaskan Native  
 Asian (e.g. Asian Indian, Filipino, Chinese, Japanese, Korean, or Vietnamese) Native Hawaiian, or other Pacific Islander (e.g. Samoan, Guamanian, or Chamorro)  
 Hispanic (e.g. Puerto Rican, Mexican, Cuban, Latin American, other Hispanic)  
 Other (please specify)

**21. Do you have any children?**

- Yes  
 No

## NROTC Survey

### 8. Thank You

This completes the Survey. Thank you for your participation!

**22. Please feel free to make any additional comments on how you would feel about extending the Minimum Service Requirement from 4 years to 5 years. Needless to say, any possible MSR changes would not affect students currently in the NROTC program.**

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