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AN ANALYSIS OF PRIOR ENLISTED OFFICER RETENTION AT THE 20-YEAR POINT

**By: Randall Molloy, and
Graham Fletterich
December 2013**

**Advisors: Robert Eger,
Simona Tick**

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RETENTION AT THE 20-YEAR POINT**

Randall Molloy, Lieutenant, United States Navy Reserve
Graham Fletterich, Lieutenant, United States Navy

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Authors: Randall Molloy

Graham Fletterich

Approved by: Robert Eger, PhD., Lead Advisor

Simona Tick, PhD., Support Advisor

William R. Gates
Dean, Graduate School of Business and Public Policy

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This thesis compares the retention rates of prior and non-prior enlisted naval officers who have served 20 years and are eligible to retire, and it finds that prior enlisted officers leave the Navy after 20 years of service at a greater rate, 310 percent, than non-prior enlisted colleagues. Furthermore, this study tests whether expanding the existing talent pool through increased diversification can offset talent leakage among the officer corps. The primary source of data is the Defense Manpower Data Center.

The study uses a cost benefit analysis approach to quantify the opportunity cost for an officer leaving the Navy at 20 years of service in lieu of serving 30 years. Based off a wide range of financial variables considered, the cost benefit analysis in this study finds that prior enlisted naval officers are better off by \$211,000 to continue service through the 30-year point.

Several recommendations are made regarding future research and retaining prior enlisted officers.

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LIST OF ACRONYMS AND ABBREVIATIONS

1 st LT	1 st lieutenant
AVF	all volunteer force
BAH	basic allowance for housing
BAS	basic allowance for subsistence
BLS	Bureau of Labor Statistics
BM	boatswain's mate
CBA	cost benefit analysis
COLA	cost-of-living adjustment
DFAS	Defense Finance and Accounting Service
DMDC	Defense Manpower Data Center
DoD	Department of Defense
E Pay	enlisted pay (for prior enlisted officers)
F/A-18	fighter/attack aircraft a.k.a. Hornet
FITREP	fitness report
FY	fiscal year
ISO	initial service obligation
MILPERSMAN	Military Personnel Manual
MSO	minimum service obligation
NMI	non-monetary incentive
OSD	Office of Secretary of Defense
PV	present value
RAP	Recommendation for Accelerated Promotion
SEAL	sea air land
SIPP	Survey of Income and Program Participation
STA-21	Seaman to Admiral 21st Century (Officer Commissioning Program)
SWO	surface warfare officer
TSP	thrift savings plan
TVM	time value of money

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I. INTRODUCTION

The United States Navy Officer Corps faces a lack of diversity among the mid and senior ranks. This lack of diversity is a result of junior officers with prior enlisted experience opting to leave naval service at 20 years rather than serving for 30 years. Diversity in this thesis is defined as varied backgrounds, specifically prior-enlisted and non-prior enlisted experience. This thesis focuses on the Navy's ability to keep prior-enlisted officers in the Navy past 20 years of service compared to their non-prior enlisted colleagues.

It is commonly agreed that with diversity come gains in certain synergies. Being able to have many different people with diverse backgrounds produces the widest variety of possible solutions. One of the most brilliant military strategist realized the benefits associated with diversity over 2,500 years ago. Sun Tzu stated:

There are not more than five musical notes, yet the combinations of these five give rise to more melodies than can ever be heard. There are not more than five primary colours, yet in combination they produce more hues than can ever been seen. There are not more than five cardinal tastes, yet combinations of them yield more flavours than can ever be tasted. (The Art of War, n.d.).

Applying this same concept to military leaders one can say that five different people from five different backgrounds will produce more possible solutions to a problem than any leader can fully grasp. Even though the leader is not able to fully grasp every conceivable solution, it is imperative for him to be aware of all of the possible solutions, allowing him to make the best possible decision.

This thesis examines first the difference in the retention rates between prior-enlisted and non-prior enlisted officers. The second question is to determine if the prior-enlisted officers leave the Navy due to better financial compensation in the civilian sector. This thesis uses a cost benefit analysis using a personal financial model from the prior-enlisted officer viewpoint.

In the next chapters we will examine the existing literature that is related to this topic, analyze the data that was received from Defense Manpower Data Center (DMDC)

related to prior-enlisted and non-prior enlisted officers retention, take an in-depth look at the financial planning model that was developed to determine whether the prior-enlisted officer is better off financially to stay in the Navy past 20 years, and, based on the results of our analysis, formulate recommendations for the Navy to address the lack of diversity in the ranks of seniors officers.

II. BACKGROUND

The aim of this paper is to analyze retention differences at the 20-year point between prior-enlisted officer and non-prior enlisted officers. To determine the effect of the retention differences, a few terms and Navy specific idiosyncrasies need to be understood. This chapter covers these terms, specifically, diversity, the two different types of officers, mustangs, the culture of the mustang, the problem, the decision to leave, the Navy's perspective, talent pools, and talent leakage.

A. DIVERSITY

In common vernacular, diversity is generally related to race, ethnic background, and gender, but diversity can take on many forms. Diversity and its associated benefits in this thesis refer to the latter definition found in a dictionary. According to the Merriam-Webster dictionary, the word diversity has two definitions:

1: the condition of having or being composed of differing elements: variety; especially: the inclusion of different types of people (as people of different races or cultures) in a group or organization <programs intended to promote diversity in schools>

2: an instance of being composed of differing elements or qualities: an instance of being diverse <a diversity of opinion> (Merriam-Webster, n.d.)

Race and ethnicity themselves do not exhaust the meaning of diversity. Among naval officers, diversity could be categorized in numerous ways, such as by warfare community (e.g., surface warfare, naval flight officer, submariner). Two officers who attended the same high school and college who serve within the same warfare community are likely to have shared experiences. The diversity between these two officers would be minimal, which is true for any homogenous group. The result is like thinking and a common perspective. To gain the benefits of diversity, people of varying backgrounds and experiences are needed (e.g., a heterogeneous group). Enter the case of the Navy Mustangs.

B. TWO TYPES OF OFFICERS

Naval Officers can be divided into two categories, those with prior enlisted experience, also referred to as Mustangs, and those without (the young 22-year-old fresh out of college). The former have a minimum of four years in the enlisted ranks, and often upwards of 10 years. Prior enlisted officers bring fleet experience to the table unlike their counterparts. The Navy compensates the prior enlisted officers with what is referred to as enlisted pay, or “E” pay, for their valuable fleet experience, which can be in excess of \$700 a month in base pay for a newly minted ensign, according to 2013 pay charts (Defense Finance and Accounting Services, n.d.). Prior enlisted officers tend to be focused on the Navy as a career, given they have more vested in the Navy and seek to fulfill the 20 years of service required to retire.

Prior enlisted officers differ from non-prior enlisted officers significantly over the first several years of service in terms of the value added to their command. Whereas the non-prior enlisted officer is figuring out the Navy, which way is fore and which is aft, the prior enlisted officer is solving more difficult problems. This difference diminishes around the lieutenant commander rank and is reflected in the cessation of “E” pay starting at the O-4 pay grade. Despite the absence of “E” pay, the prior enlisted officers’ experience remains invaluable. By removing the “E” pay, the Navy disincentivizes their continued service; thereby, shrinking the pool from which it can draw talent, which is an overall loss for the Navy.

C. MUSTANG

Mustang is a term that refers to an officer who has enlisted experience. These officers have their own sub-culture within the officer community. Their enlisted experiences and the respect they receive from all ranks set them apart from the more traditional naval officer, one who graduated high school followed immediately by college and officer commissioning. These select officers bring a unique perspective to wardrooms that cannot be replicated. Their experiences are potentially lifesaving. Imagine a 1st class boatswain’s mate (BM1), with 10 years of service that earns a commission. The former BM1 reports to the ship as a newly commissioned officer, an

ensign, and surface warfare officer (SWO) in training. The commanding officer learns that this officer is a prior BM1, and is thusly assigned as the ship's 1st lieutenant (1st LT), who is responsible for all deck hands. Being an engaged 1st LT, the officer goes out on deck to be a safety observer for the upcoming deck evolution and notices that something in the deck operation is not quite right, stops the evolution, and corrects the issue. If this officer were a traditional officer with no prior-enlisted experience, it is possible the flaw would have been missed; not for a lack of competence, but simply because of a lack of experience, the evolution would have continued that could have resulted in either a material or personnel causality. The officer was able to use years of experience in the deck department as an enlisted sailor and apply that knowledge to correct the problem. The officer who does not have enlisted experience would likely not notice the issue and take action.

D. THE CULTURE OF THE MUSTANG

The culture among Mustangs is different from their non-prior enlisted counterparts. These prior-enlisted officers have been through many of the same training and had many of the same experiences as their sailors, from boot camp to mess duty. The language and Navy culture learned through this training process is engrained in the prior-enlisted officer, which creates a group of officers to which the enlisted community believes it can relate.

E. DOES A PROBLEM EXIST?

The prior-enlisted officers are leaving at a higher rate than their non-prior enlisted counterparts are after 20 years of service. This exodus of specific officer demographic leaves a homogenous group of officers in its wake, and thereby, shrinking the Navy's talent pool from which it can promote. In a homogenous group of people, no benefit, or synergy, that derives from being diverse, occurs. The resulting group thinks and acts too much alike. This phenomenon is disadvantageous in solving complex problems.

F. TO STAY OR TO GO

Whether an officer is prior enlisted or not, the decision needs be made at some point whether to stay in or leave military service, and the question of what to do is asked multiple times throughout the career. Generally speaking, departure points that are specific milestones in a career arise where the option to exit is available. The first departure point occurs at the four- to five--year point, and as late as seven years for aviators, as the minimum service obligation (MSO) has been met as seen in the *Military Personnel Manual* (MILPERSMAN) 1301–108 (Navy Personnel Command, 2003). Following the initial departure point, several others occur in a given 20-year career that follow a successful execution of orders to a command, which range from 18–36 months tours. The decision to stay in or get out is personal and rife with pros and cons. A constant on the pro side is that 20 years of service guarantees retirement, as well as the accompanying pension and benefits.

For those who stay for 20 years, they must revisit the question of to stay or to go, as the military is likely to have additional assignments for them, provided they are not forced out due to a lack of performance. This decision point is complicated as one of the key “pros,” the pension, is off the table as it is already “locked in.” The only marginal benefit at this point is continued employment and an additional 2.5 percent of base pay added to the pension for every additional year served. For some, particularly the prior enlisted officer, the prospect of retiring from the Navy at 38 years old to start a second career is exciting and promising. Ultimately, each service member must weigh the situation and determine if a net positive benefit is gained by staying in.

1. Why Are the Prior-Enlisted Officers Leaving?

People leave the Navy for a multitude of reasons. Perhaps they are leaving because they are better off financially in the civilian sector. Perhaps they are leaving for other, non-monetary reason. Perhaps they are leaving because they are actually disincentivized to stay in the Navy. To solve the problem of the fleeing prior-enlisted officer, the Navy needs to understand the reasons for flight fully.

a. *Are They Better Off Financially?*

The first of these reasons is that the prior-enlisted officers are better off financially to collect their pensions and start a second career. Answering this question is complicated by differing opinions. Asking 10 different officers how much better or worse off financially they would be if they decided to stay in the Navy past 20 years of service, would yield 10 different answers. Some would advocate that they would be better off by staying in, while others would say the opposite. The problem is that a well-known tool is not available to aid in the decision-making process to determine whether continued service is monetarily beneficial. The model developed in this thesis does provide this tool. By taking a set of assumptions and applying those figures to information already known, a personal financial planning model was designed that determined that the prior-enlisted officers are better off financially by \$211,018, on average, to stay in the Navy for 30 years versus leaving the Navy after 20 years of service, given a fixed set of variables.

b. *Is It Because of Non-Monetary Reason?*

The second suspected reason for leaving is non-monetary factors. The Navy lifestyle, by any measure, is challenging and it takes dedicated men, women, and their respective families, to be able to persist. Deployments and household moves, among other hardships, wear on service members and their families. One way to eliminate such hardships is to leave the Navy and seek alternate employment that meets their personal needs. It is difficult for the Navy to compete with the employment alternatives; given these hardships are parts of the job. To make any changes in this aspect would require a paradigm shift of retention policies and operation tempos, at a risk of mission failure.

c. *Does the Navy Disincentivize Them from Continued Service?*

The last of these reasons for departure is that the Navy inadvertently disincentivizes the continued service past 20 years for prior enlisted officers. The Navy pay scale has longevity pay raises included in the service member's pay every two years, with some exceptions. These exceptions are called longevity caps and are controls that were originally intended to promote an up or out behavior of the service member. An O-3 does not receive a longevity raise after the sixteenth year of service, as seen in Table 1,

which incentivizes the O-3 to either improve, which increases chances of selection for O-4, or move on to the civilian sector. What this situation does not fully consider is any prior enlisted service time, with one exception. If the service member has four years or more of enlisted service, then this member is designated an O-1E when commissioned. This “E” designation prevents the newly commissioned officer from being penalized for enlisted service time and makes it possible to still receive the longevity pay raises. If this were not the case, the longevity cap would already cap a sailor with 10 years of enlisted service who is selected as a commissioned officer. Since the “E” designation exists, this newly commissioned officer receives the longevity pay raises. However, the “E” designation disappears after the O-3 rank. The argument is that the more traditional commissioned officer and the prior-enlisted officer are equivalents by the O-4 rank, and any advantage that the prior-enlisted officer had prior to this point, is gone. In other words, the non-prior enlisted officer now has enough experience and time in the Navy to become indistinguishable from the prior-enlisted officer.

Pay Grade	Years of Service					Years of Service				
	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18	Over 20	Over 22	Over 24	Over 26
O-8	10971	11073	11490	11609	11968	12488	12967	13286	13286	13286
O-7	9225	9509	9793	10077	10971	11726	11726	11726	11726	11785
O-6	7309	7348	7348	7766	8504	8938	9371	9617	9867	10251
O-5	6448	6766	6999	7301	7763	7982	8199	8446	8446	8446
O-4	6008	6419	6738	6961	7088	7162	7162	7162	7162	7162
O-3	5537	5708	5989	6136	6136	6136	6136	6136	6136	6136
O-2	4510	4510	4510	4510	4510	4510	4510	4510	4510	4510
O-1	3559	3559	3559	3559	3559	3559	3559	3559	3559	3559
Commissioned Officer With Over 4 Years of Active Service as an Enlisted Member or Warrant Officer										
See Note 2	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18	Over 20	Over 22	Over 24	Over 26
O-3E	5537	5708	5989	6226	6362	6548	6548	6548	6548	6548
O-2E	4653	4896	5083	5222	5222	5222	5222	5222	5222	5222
O-1E	3941	4085	4226	4419	4419	4419	4419	4419	4419	4419

No longevity pay raises

Table 1 Officer base pay chart (after Defense Finance and Accounting Services, n.d.)

With the disappearance of the “E” designation, the prior-enlisted officer is no longer shielded from these longevity caps. To understand the effect of these longevity

caps fully, consider two officers, a traditional academy graduate and compare this officer to a prior-enlisted officer who has 10 years of enlisted service. The typical career progression of these two officers can be determined by using from the average promotion opportunity from Navy Personnel Command found in Table 2.

Average Promotion Opportunity		
To Grade	Percent Opportunity (+/-10%)	Flow Point (Avg) (Yrs Comm Svc)
O-6	50%	21-23
O-5	70%	15-17
O-4	80%	9 -11
O-3	AFQ	4
O-2	AFQ	2
CWO5	40%	*12-13
CWO4	80%	*4
CWO3	AFQ	*3

(NPC, 2012)

Table 2 Average promotion opportunity (from Navy Personnel Command, 2012)

As a result, the non-prior enlisted officers' promotion path and the prior-enlisted officers' path are found Tables 3 and 4, respectively.

Not Prior Enlisted	
To Grade	Flow Point (Avg) (Yrs Comm Svc)
O-6	22
O-5	16
O-4	10
O-3	4
O-2	2

Table 3 Non-prior enlisted expected promotion time table

Prior Enlisted

To Grade	Flow Point (Avg) (Yrs in Svc)
O-6	32
O-5	26
O-4	19
O-3	14
O-2	12

Table 4 Prior-enlisted expected promotion time table

Both cases are also outlined in Table 1. The dark grey highlighted figures are the expected monthly pays for the academy graduate while the yellow highlighted figures are for the prior-enlisted officer. Notice that the longevity caps affect the prior-enlisted officer three times while the traditional academy graduate is never affected. The problem presented is that the prior-enlisted officer is no longer receiving the longevity pay raises that a traditional academy graduate counterpart is still receiving. Doctor Robbins, a specialist in the organizational behavior realm, stated in his book, “you can’t divorce emotions from the workplace” (Robbins & Judge, 2012). The prior-enlisted officer might feel that the Navy values the non-prior enlisted officer more as evident by longevity pay caps. This feeling might cause the prior-enlisted officer to look for a job in the civilian sector after reaching 20 years of service to be able to collect base retirement benefits and seek employment in a company that will appreciate the skills obtained in the Navy.

Issuing a salary increase is seen as a reward, whereas the absence of a raise is seen as a punishment in an incentive system; therefore, the prior-enlisted officer feels punished for having enlisted experience simply because such enlisted time causes ineligibility for the longevity pay raises regardless of performance. This ineligibility could result in the prior-enlisted officer perceiving that an issue exists with distributive justice, “an employees perceived fairness of the amount and allocation of rewards among

individuals” (Robbins & Judge, 2012), which causes animosity towards the non-prior enlisted counterpart and discontent towards the bureaucracy of the Navy pay system itself.

d. Part of the Navy Manning Plan?

Perhaps the fleeing prior-enlisted officers are part of the Navy’s manning plan. At some point, the Navy needs people to leave, as it is a hierarchical organization and not a flat one. As the officers progress to the higher ranks, fewer officers are needed to fill those billets. Maybe the Navy seizes the opportunity to have some natural attrition at the O-4 ranks by disincentivizing the prior-enlisted officers to stay. By having the “E” designation stop at the O-3 rank, some prior-enlisted officers might feel slighted that they will no longer receive the longevity pay raises that could create a negative/unjust feeling, which motivates them to take their pension and seek civilian employment. This natural attrition could prevent the Navy from having too many officers at the O-4 and O-5 ranks. If the Navy had over manning at these ranks, it would have to take drastic measures and force officers out who were planning on staying in longer.

G. NAVY’S PERSPECTIVE

The Navy’s mission in terms of manpower is to match talent to task. The task may change, and often does, as the number of ships and aircraft fluctuate, but billets must be filled. The requirement seems simple on a macro level; therefore, the Navy retains as many officers as required to fill the billets, known as the “needs of the Navy.” Surprisingly, this requirement is not always met. It is nearly impossible to know who will depart and when they will do it. Both the health of the economy and the relative peace in the world are inversely related to retention, both of which are hard to forecast. Evidence of the role of the economy in attrition was made evident in a study conducted by Cox (as cited in Thompson, 2011), which “analyzed the relationship between attrition and enlistment bonuses using 10 a discrete-time hazard model for first-term enlisted. This studied reported that cohort accessions for fiscal years 1993 to 1997 had very high attrition rates. In this study, the unemployment rate decreased from 6.9 percent in 1993 to

5.1 percent in 1997. The change in the economy specifically affected attrition of the Navy enlisted service members in the nuclear ratings with six year contracts.”

Adding to the challenge is trying to keep the right people, given the lack of control over compensation tools. As much as the Navy wishes to control its compensation packages, Congress legislatively dictates them. Keeping the right people depends largely on the talent pool from which they can draw.

The control the Navy does have comes in the way of bonuses offered to officers in specific communities (e.g., the surface warfare officer bonus). The bonuses range from \$75,000 to \$125,000 and are designed to encourage officers to extend their service for an additional three to five years. The bonuses are not tied to performance, and therefore, have questionable effectiveness in helping match talent to task. An underperforming officer who lacks the drive to seek civilian employment is bonus eligible. Without specifically targeting bonuses to top performers, it is unclear if the Navy is maximizing its investment.

H. TALENT POOLS

The Navy faces a unique manpower challenge in that its officers are 100 percent “homegrown” and irreplaceable in the civilian labor market. To replace a lieutenant commander, the Navy cannot simply hire a headhunter; rather, it must look within its own ranks. To maintain 100 percent manning, the pool of candidates must exceed the billet openings. For example, a ship’s wardroom numbers 30 officers or more depending on the class of ship. To fulfill all these jobs, the Navy requires at least 30 officers within the specific pay grades (e.g., one captain to serve as the commanding officer, and eight ensigns to serve as division officers). The larger the pool, the more flexibility the Navy has in detailing the right people to the right job. The appropriate experience and talent characterize the “right” people. This pool is referred to as a “talent pool.” The larger the talent pool, the better the Navy is, as more appropriate matches are made between talent and task.

Diversity within a talent pool is of equal importance to the size of the talent pool. Diversity means varying the background and experience of officers for the Navy. Prior-

enlisted officers contribute to this diversity by virtue of their experience. The Navy is a very hierarchical organization with a key distinction between officers and enlisted. By serving in the enlisted ranks, service members gain a perspective unlike that of a non-prior enlisted officer.

I. TALENT LEAKAGE

As the term implies, talent leakage is the loss of unique abilities within an organization for a multitude of reasons. The Navy is not unfamiliar with talent leakage. Naval officers are among the most talented professionals in the U.S. workforce who handle multiple tasks under stressful circumstances, which makes them extremely marketable in the civilian sector. Headhunters seek out their unique talents, which allow the former military members to be well compensated in the civilian market. This situation is attractive to the service members, and makes them more likely to take flight.

1. Preventing Talent Leakage

It is universally agreed upon that talent leakage needs to be stemmed. The adverse effects on the Navy are unsustainable. The Navy has a limited control over its existing tools to retain talent, but changes can be made. Two factors that seek to mitigate talent leakage to an extent are promotions and longevity pay raises, which are largely dependent upon time in grade and service, and provide growing compensation.

a. Promotion

The Navy is granted a fixed amount of officers in each pay grade by Congressional mandate, regardless of community (e.g., SWOs versus aviators). For those who decide to stay after the MSO, the promotion schedule is fixed. A lieutenant junior grade will promote to lieutenant at four years and serve in that pay grade for a six additional years. Similarly, a lieutenant commander and commander will be promoted at roughly the 10- and 15-year point, respectively, followed by the attainment of captain at roughly the 20-year mark.

Unlike civilian jobs, the military promotion structure is nearly fixed in terms of when promotions occur, which removes any ambiguity, which serves the

member well by signaling upward mobility and a predetermined career path. The near certainty of knowing exactly when the next pay grade will be obtained is a valued benefit of military service by knowing that a promotion is in sight, something to work towards.

b. Longevity Pay Raises

Pay raises are one benefit that aims to retain service members. Pay raises come in two forms, the annual type on the first of each calendar year, and longevity pay raises. Longevity pay raises happen every even year of service and compensate service members for their growing experience. According to Navy Cyberspace, “Longevity pay raises are based on your creditable cumulative service in any and all branches of the armed forces* (there are statutory periods when service in a particular component may not be counted)” (Navy Cyberspace, n.d.). Service members are eligible for longevity pay raises through the maximum of 40 years of service. Compared to annual pay raises that offset inflation, longevity pay raises reward time in service.

III. LITERATURE REVIEW

An abundance of research has been done on retention in the military, with a majority focusing on junior officers. An officer reaching the 20-year point sounds like a retention success story, but the fact remains prior-enlisted officers get out at a greater rate at the 20-year point and do not stay in to fill more senior positions. Just as much research has been done on the best course of action to retain service members, studies examined in this review focus on officer retention, the performance of prior-enlisted officers, and how best to incentivize continued service. However, the research is lacking in comparison to how retention differs between prior-enlisted officers and non-prior enlisted officers, particularly at the 20-year point.

A. FILIP STUDY: IMPROVING THE NAVY'S OFFICER BONUS PROGRAM EFFECTIVENESS

Filip (2006) attempted to determine the reasons naval officers continue service by studying the bonus structure with labor market forces as a backdrop. His primary question was “How might the bonus structure for naval officers be changed to meet recruitment and retention goals, with qualified personnel, while providing Department of the Navy with flexibility and cost effectiveness as the military and civilian labor markets change?”

The literature review provided background on existing naval officer compensation by detailing pay components, such as base pay, housing allowances, sustenance allowances, etc. In addition, he analyzed non-monetary compensation including healthcare, services, tax exemptions, and personal satisfaction. He then continued to discuss the existing bonus structures for aviators, submariners, and SWOs.

Filip (2006) used auction theory for his thesis framework and discussed the different types of auctions including ascending-bid, descending-bid, first-price sealed bid, and second-price sealed bid. Different bidding strategies were analyzed as was the application of auctions to the Navy. Implementing auctions into the bonus pay structure is

not without consequence, however. Filip (2006) acknowledges that an adverse perception could result as some service members would continue service for less compensation.

Of particular relevance, the thesis examined signaling, which “can be used to resolve information asymmetry between an employer and a prospective employee.” (Filip, 2006, p. 33) The application of signaling to the Navy is that “in the end, the Navy does not know which officers intend to continue service and which intend to separate, causing all members to receive equal compensation regardless of one’s personal ‘reservation price’” (p. 36).

In conclusion, signaling and auctions can be combined to restructure the Navy bonus program and optimize service member needs, as well as those of the Navy. Under his proposed restructuring, officers would bid on their contract length and the lowest bidder would be assigned that contract. The findings and recommendations are that auctions could be used to improve officer signaling, and would, ultimately, be more cost effective than the existing bonus structures.

B. BISE STUDY: THE EFFECT OF PAY SCALE CAPS ON MARINE MUSTANG OFFICERS AND RETIREMENT

In this thesis, Bise (2008) examines the pay scale cap and its effect on Marine mustang and retirement. As the author notes, “A Marine Officer with sufficient time in service stops receiving longevity pay, and experiences the phenomenon known as pay compression”(p. 3). This phenomenon affects officers from the O-3E to O-7 pay grades by eliminating any pay raise with the exception of cost-of-living adjustment (COLA).

Bise (2008) addresses what some of the intrinsic and extrinsic motivations are within human psychology and discusses military turnover; specifically, the need for the Marine Corps to maximize its return on investment. Using comparative descriptive statistics, Bise (2008) determined that only 877 out of 15,372 Marine officers remained until retirement. Furthermore, only 15 of those officers stayed past 26 years. In addition, only two stayed for a full 30 years of service.

Bise (2008) found via data examination that prior-enlisted Marine officers do behave differently than non-prior enlisted officers, particularly when it came to staying in past the MSO. Prior-enlisted officers were more likely to stay in for 20 years than those without prior experience.

The key recommendation of Bise (2008) was to expand the special pay schedule (“E” pay) to the O-4 and O-5 pay grades, which resulted in further retention. “By eliminating a dissatisfier, the Marine Corps would no longer be promoting field-grade officers from a truncated pool of candidates for promotion, and could build a more robust officer corps through the retention of quality prior-enlisted Marine Officers” (p. 46).

C. CLEMENS STUDY: AN ANALYSIS OF FACTORS AFFECTING THE RETENTION PLANS OF JUNIOR U.S. NAVY OFFICERS

In this thesis, Clemens (2002) attempts to determine what factors determine whether a junior naval officer will continue to serve past the initial service obligation (ISO). Of 17 factors examined, nine had a significant role in determining retention. Specifically, the “demographic characteristics of family status; the tenure characteristics of military rank (O3), and military life expectations; the economic characteristics of the transferability of skills gained in the navy over to a good civilian job, and the satisfaction with military work values, and military allocation of time” (2002, Abstract, p. v).

As Clemens (2002) identifies via a study by Bowman in 1995, training a SWO, and subsequently, replacing him, cost the Navy \$99,093 without factoring in lost productivity. In 1998, the sea air land (SEAL) community received 38 resignation letters, yet another community that has faced retention problems. The Navy can reduce its cost drastically by curbing this behavior.

Other factors play a large role in whether someone will stay on the job or exit. Clemens (2002) points out that race, age, and obtainment of life goals are determining factors in retention. If life has become better since joining the Navy, a person would be inclined to continue service; conversely, if it has become worse, the tendency is to leave.

Aside from the easily identifiable factors, “a group of 20 variables were combined, using factor analysis to yield the final four composite variables depicting satisfaction with military life” (p. 21). Using a multivariate logit model, Clemens (2002) concludes that the:

factors that were found to be significant in explain the retention intentions of junior Navy officers with an obligation, were: Military Rank (O2, O3), Military Occupation, Family Status, Life expectations, and Factor1, satisfaction with military work values, and Factor2, satisfaction with military allocation of time. (p. 32)

The Navy policymakers are concerned with factors over which they have the greatest control. One factor over which that they do have control is allowing its members to attain the occupation they chose, which resulted in a 13.78 percent increase in intending to stay in (p. 36).

D. COUGHLAN, MYUNG, AND GATES: ONE SIZE DOES NOT FIT ALL: PERSONALIZED INCENTIVES IN MILITARY COMPENSATION

“One size does NOT fit all” when it comes to military compensation according to this research. As the compensation system stands currently, roughly 51 percent of military service member compensation is cash (basic pay, basic allowance for housing, etc.), while 21 percent is non cash (health care, housing, etc.), and the remaining 28 percent is deferred (retired pay accrual, veterans benefits, etc.). This structure is not inherently flawed but service members place their own value on varying parts of compensation, in some cases, less value than what it actually cost the Department of Defense (DoD).

The premise of this research lies in the fact that “the per person cost of military personnel has grown by 46 percent over the last 10 years” (Harrison & Montgomery, 2011). Couple this with the size of DoD spending on its personnel and it is “reasonable area to look for savings in defense expenditures.” With a desire to cut spending in the fiscally constrained environment in which the DoD is now operating, some concern exists

as to what effect spending cuts would have on an all-volunteer force (AVF). An additional factor is the increase in operational tempo and deployments due to recent confrontations.

The problem with the one-size fits all model is that the DoD is not getting the most bang for its buck. The existing scheme compensates all service members equally without regard for what matters to service members. Coughlan, Myung, and Gates (2002) point out a question from then Chief of Naval Personnel, VADM Ferguson (2008) that is analogous to the overarching problem, “Why are we giving childcare incentives to an 18 year old single sailor with no dependents?” Every DoD-offered incentive may not be valued equally by each service member, which leaves room for improvement. The recommendation made in this research is to change the existing incentive structure to a tailored scheme decided by the service member to allow the service member the ability to pick the incentive valued the most. The corresponding cost of that incentive may be less than the value placed on it by the service member, which may result in a greater return for the DoD’s expense. Conversely, if the cost of the incentive exceeds the value placed on it by the service member, improving or removing the undervalued incentive may be an option.

The non-monetary incentives that the DoD could offer include geographic stability, assignment choice, telecommuting, and sabbatical opportunities. A survey of junior SWOs was used as an example to show the value of how each non-monetary incentive (NMI) differed based on personal preference. These officers listed homeport and billet choice (geographic stability and assignment choice) as the most highly valued NMI’s, which cost the Navy nothing, yet are underleveraged as incentives.

In summary, this research illustrated the potential benefits of a tailored NMI scheme. Service members have a personal discount rate (the value they place on varying incentives) that is unknown to the DoD. By offering a NMI package, the DoD optimizes its cost to benefit matching, which results in greater retention.

E. ASTRELLA STUDY: AN ANALYSIS OF THE EFFECT OF PRIOR-ENLISTED SERVICE ON NAVY OFFICER PERFORMANCE

“This thesis compares commissioned officers who have prior-enlisted service with those who have no prior enlisted service on the basis of selected measures of performance.” The performance measures used to compare the two different communities were recommendation for accelerated promotion (RAP) and whether the officer was promoted to lieutenant commander.

The premise for this study was that too many officers were leaving the Navy to seek civilian employment during an economic boom. To counter this, Astrella (1998) asserts that the enlisted community may be “fertile ground for growing new officers who possess a longer-term commitment” (p. 2). To be an option, the study points out ADM Boorda’s implementation of the Seaman to Admiral (STA-21) program that allows qualified enlisted personnel to become officers.

The methodology used in this thesis is based off the Bowman-Mehay officer database, which includes the Navy’s promotion history file, fitness report file, and the loss file (when and why an officer left active duty) (p. 25). Building on this information, the study uses a “multivariate Logit model to account for possible differences in promotion to O-4, based on race, gender, marital status, warfare community, college selectivity, and year of the promotion board, as well as prior enlisted service.” For analyzing RAP, Astrella (1998) used an ordinary least squares regression model.

This study has some limitations, as Astrella (1998) recognizes, specifically, that “some background factors that may be important in explaining promotion outcomes were not available in the file.” Additionally, a potential problem with this study that needs to be noted is that promotion rates and recommendations for RAP may not necessarily be representative of performance. Simply, the study does not account for any potential biases that may exist among board members (disproportionately non-prior enlisted officers) (i.e., board members seek to promote officers of similar backgrounds as themselves). Further research could be done using different performance metrics or more metrics that would be better representative of actual performance. Consideration must also be given to the fact that promotions only apply to those officers that choose to stay.

A high performing prior-enlisted officer who voluntarily leaves the Navy skews the study's comparison. Lastly, the Navy's performance evaluation tool used for grading its officers, also known as a fitness report (FITREP), is not without flaws.

In conclusion, the study found that "prior-enlisted officers are less likely than officers without prior service to receive a RAP'd FITREP" (Astrella, 1998, p. 67). In terms of promotion, "the prior enlisted officers were less likely to be promoted and the results are significant." The significance, however, is lost, in pre-drawdown years, which may speak to separation programs, and incentives that existed at the time. Although the findings are unfavorable toward prior-enlisted officers, Astrella (1998) considers it possible that other factors are at play. It is common practice to withhold favorable FITREPS, RAPS from officers soon leaving the Navy; often, prior-enlisted officers are looking to retire around the O-4 promotion point (p. 70).

F. MISHOE STUDY: AN ANALYSIS OF THE EFFECTS OF PRIOR-ENLISTED SERVICE ON MIDSHIPMEN PERFORMANCE, GRADUATION, AND FLEET RETENTION AT THE U.S. NAVAL ACADEMY

This study focuses on the performance of prior enlisted midshipman at the United States Naval Academy (USNA). Mishoe (2000) hypothesizes that "prior enlisted experience provides these midshipmen with values and skills that help them overcome perceived academic deficiencies to be successful at the Naval Academy." To analyze the influence on performance, linear and non-linear LOGIT regression models are used based on admissions data.

Looking at previous studies regarding USNA performance, it has been concluded that military enculturation (coming from a military family) plays a significant role in academy success. By this reasoning, Mishoe (2000) suggests that prior enlisted midshipman should also perform well given their military background. Other factors as well play into USNA performance, which is why the whole-man multiple is used in granting admission. The whole-man multiple looks at an individual's well roundedness rather than focusing on any one metric (e.g., SAT score or GPA). A person's character

and involvement in community or athletics contributes to a midshipman's motivation and ability to handle the rigors of the USNA.

In conclusion, Mishoe (2000) found that "the results of this study that in addition to the variables in the candidate multiple, prior enlisted experience also has a positive effect on performance and graduation" (p. 77). Moreover, "the prior enlisted explanatory variable predicted higher rates of success than any of the components of the Candidate Multiple." Success at the academy was not the entire significant finding of this study. It was also noted that prior-enlisted officers have a propensity for making a career of the Navy.

IV. DATA

A. RETENTION RATES OF PRIOR-ENLISTED VERSUS NON-PRIOR ENLISTED OFFICERS

Data from DMDC help determine whether prior-enlisted officers leave the Navy at a higher rate than non-prior enlisted officers after 20 years of service. Working closely with a data analysis from DMDC, Jennifer Murguia, the following officer cohort study of officers who became commissioned between fiscal year (FY) 1985–FY 1989 was received as shown in Table 5 (Murguia, 2013a).

**Percentage of Officers who Remain on Active Duty from 1 to 40 Years
for those Individuals who became Commissioned Naval Officers between FY 1985-FY 1989**

Data as of: September 30, 2012

Source: Officer Cohort File

YEARS SERVED	NON-PRIOR		PRIOR		UNKNOWN		TOTAL	
	25,299		3,875		2,481		31,655	
	N	%	N	%	N	%	N	%
0	25,299	100.0	3,875	100.0	2,481	100.0	31,655	100.0
1	25,299	100.0	3,875	100.0	2,222	89.6	31,396	99.2
2	25,073	99.1	3,875	100.0	2,013	81.1	30,961	97.8
3	24,549	97.0	3,875	100.0	1,864	75.1	30,288	95.7
4	24,112	95.3	3,875	100.0	1,752	70.6	29,739	93.9
5	22,326	88.2	3,875	100.0	1,301	52.4	27,502	86.9
6	19,706	77.9	3,874	100.0	858	34.6	24,438	77.2
7	17,046	67.4	3,868	99.8	652	26.3	21,566	68.1
8	14,849	58.7	3,857	99.5	525	21.2	19,231	60.8
9	12,722	50.3	3,824	98.7	427	17.2	16,973	53.6
10	10,589	41.9	3,766	97.2	360	14.5	14,715	46.5
11	9,058	35.8	3,703	95.6	314	12.7	13,075	41.3
12	7,740	30.6	3,622	93.5	284	11.4	11,646	36.8
13	6,634	26.2	3,545	91.5	233	9.4	10,412	32.9
14	6,195	24.5	3,472	89.6	204	8.2	9,871	31.2
15	5,851	23.1	3,414	88.1	176	7.1	9,441	29.8
16	5,683	22.5	3,351	86.5	159	6.4	9,193	29.0
17	5,640	22.3	3,258	84.1	136	5.5	9,034	28.5
18	5,628	22.2	3,190	82.3	125	5.0	8,943	28.3
19	5,620	22.2	3,113	80.3	105	4.2	8,838	27.9
20	5,598	22.1	3,033	78.3	79	3.2	8,710	27.5
21	3,608	14.3	2,726	70.3	67	2.7	6,401	20.2
22	3,192	12.6	2,128	54.9	38	1.5	5,358	16.9
23	2,857	11.3	1,796	46.3	24	1.0	4,677	14.8
24	2,184	8.6	1,492	38.5	20	0.8	3,696	11.7
25	1,583	6.3	1,243	32.1	14	0.6	2,840	9.0
26	1,057	4.2	1,052	27.1	8	0.3	2,117	6.7
27	514	2.0	889	22.9	5	0.2	1,408	4.4
28	117	0.5	736	19.0	4	0.2	857	2.7
29	39	0.2	598	15.4	4	0.2	641	2.0
30	11	0.0	468	12.1	4	0.2	483	1.5
31	3	0.0	291	7.5	2	0.1	296	0.9
32	0	0.0	225	5.8	0	0.0	225	0.7
33	0	0.0	176	4.5	0	0.0	176	0.6
34	0	0.0	129	3.3	0	0.0	129	0.4
35	0	0.0	87	2.2	0	0.0	87	0.3
36	0	0.0	50	1.3	0	0.0	50	0.2
37	0	0.0	26	0.7	0	0.0	26	0.1
38	0	0.0	14	0.4	0	0.0	14	0.0
39	0	0.0	6	0.2	0	0.0	6	0.0
40	0	0.0	1	0.0	0	0.0	1	0.0

Table 5 Percentage of officers who remain on active duty from 1 to 40 years (from Murguia, 2013a)

See the corresponding graph in Figure 1.

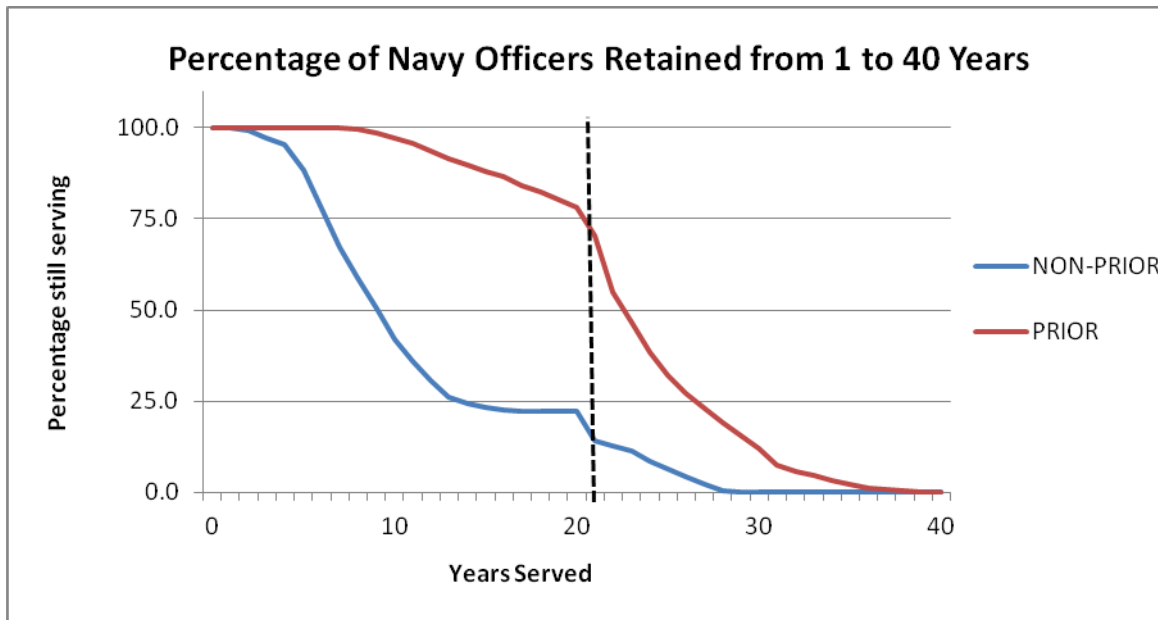


Figure 1 Graph of percentage of prior-enlisted versus non-prior enlisted officers retained from 1 to 40 years

It is evident by the graph in Figure 1 that prior-enlisted officers do indeed retire at a greater rate at the 20 year of service mark.

For the purpose of this thesis, the story that the tails of the data tell is not of interest. Only the time frame between 20 and 30 years of service is of interest. With that in mind, analyzing the data with a more critical eye on the specified time frame reveals the following (the portion of the table in white is the original table from DMDC and the yellow highlighted portion of the table is an analysis of the data).

YEARS SERVED	NON-PRIOR		PRIOR		% CHANGE FROM PRIOR YEAR	
	25,299		3,875		NON-PRIOR	PRIOR
	N	%	N	%		
20	5,598	22.1	3,033	78.3	-0.087	-2.065
21	3,608	14.3	2,726	70.3	-7.866	-7.923
22	3,192	12.6	2,128	54.9	-1.644	-15.432
23	2,857	11.3	1,796	46.3	-1.324	-8.568
24	2,184	8.6	1,492	38.5	-2.660	-7.845
25	1583	6.3	1,243	32.1	-2.376	-6.426
26	1057	4.2	1052	27.1	-2.079	-4.929
27	514	2.0	889	22.9	-2.146	-4.206
28	117	0.5	736	19.0	-1.569	-3.948
29	39	0.2	598	15.4	-0.308	-3.561
30	11	0.0	468	12.1	-0.111	-3.355

Table 6 Percentage change in retention from previous year, analyzed from Table 5 (after Murguia, 2013a)

The graphic display tells an even more compelling story, as seen in Figure 2. Not only does a difference in the retention rates of prior-enlisted and non-prior enlisted officers occur, but it is significantly different as well.

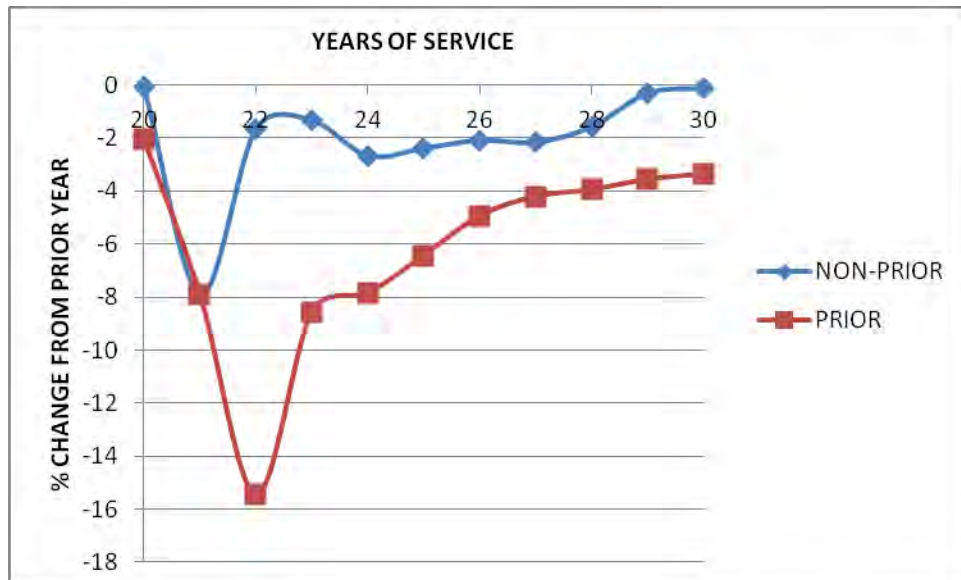


Figure 2 Graph of percentage change in retention from previous year

1. There Is One Exception

The twenty-first year of service is the only year that percentage change in retention is similar for both prior-enlisted and non-prior enlisted officers. One possible explanation for this phenomenon is the retirement pay structure. People who retire from the military are given a retirement rate based on their pay over the last three years of service. If they were promoted to a higher pay grade at their eighteenth year of service, they would be compensated with a pension that incorporates the average of two years at the higher pay grade and one year at their previous, lower pay grade. Another possible explanation for the twenty-first year of service to be similar in retention rates between prior-enlisted and non-prior enlisted officers could be explained by obligated service requirements of a new duty station. Moving military members and their families is expensive. Officers are typically transferred every two to four years. If officers desire to be rotated to a new duty station at their nineteenth year of service, the Navy usually requires them to obligate another two years of service. The result of requiring the service member to obligate is to spread moving costs over the two years.

Regardless of the reason why retention rates between the prior-enlisted officer and the non-prior enlisted officer are roughly the same in the twenty-first year of service, when considering the 10-year span as a whole, it is clear that prior-enlisted officers leave at a higher rate after 20 years than the non-prior enlisted officers.

B. DISPROPORTION OF NON-PRIOR ENLISTED OFFICERS IN HIGHER RANKS

Another issue was discovered upon receiving and analyzing the data from DMDC as seen Table 7. A disparity appears between the proportion of prior-enlisted officers in the O-6 to O-10 pay grades. This disparity is an issue because the O-6 to O-10 ranks are considered the policy-making ranks of the Navy. Prior-enlisted officers comprise nearly 23 percent of the officer corps, yet they only make up 15 percent, seven percent, and less than one percent of commanders, captains, and flag officers, respectively (Murguia, 2013b). This discovery is not too surprising when considering the amount of time prior-enlisted officers spend in the enlisted community, and the amount of time it takes for an

officer to move up through the ranks; however, it is disconcerting that the policy-making ranks are comprised of a more homogenous group of officers.

Current Active Duty Officers with Non-Prior Enlisted versus Prior Enlisted Status by Pay Grade

Data as of: June 30, 2013

Source: Active Duty Personnel Master file

PAY GRADE	NON-PRIOR ENLISTED	PRIOR ENLISTED	UNKNOWN	TOTAL
O01	5,018	881	571	6,470
O02	4,962	1,464	236	6,662
O03	13,260	5,347	421	19,028
O04	7,374	3,149	10	10,533
O05	5,564	999	4	6,567
O06	2,950	211	0	3,161
O07	114	1	0	115
O08	63	1	0	64
O09	41	0	1	42
O10	10	0	0	10
UNKNOWN	1	0	0	1
TOTAL	39,357	12,053	1,243	52,653

**Prior-enlisted status is generated using the Active Federal Military Service Base Calendar Date (Military Base Date) and the Active Federal Military Officer Service Base Calendar Date (Officer Base Date). If the Officer Base Date is unknown, then the Prior Enlisted Status is "UNKNOWN." If both the Military Base Date and the Officer Base Date are known, and if the Military Base Date is at least 4 years earlier (1,461 days or more) than the Officer Base Date, then the officers are given a status of "PRIOR ENLISTED," otherwise the officers are given a status of "NON-PRIOR ENLISTED." Note: the Military Base Date and the Officer Base Date may have been adjusted for breaks in service and lost time.*

Produced by the Defense Manpower Data Center on August 19, 2013
DRS #65929

Table 7 Current active duty officers with non-prior enlisted versus prior-enlisted status by pay grade (from Murguia, 2013b)

Current Active Duty Officers with Non-Prior Enlisted versus Prior Enlisted Status by Pay Grade

Data as of: June 30, 2013

Source: Active Duty Personnel Master file

PAY GRADE	NON-PRIOR ENLISTED	PRIOR ENLISTED	% PRIOR
O01	5,018	881	13.62%
O02	4,962	1,464	21.98%
O03	13,260	5,347	28.10%
O04	7,374	3,149	29.90%
O05	5,564	999	15.21%
O06	2,950	211	6.68%
O07	114	1	0.87%
O08	63	1	1.56%
O09	41	0	0.00%
O10	10	0	0.00%
UNKNOWN	1	0	0.00%
TOTAL	39,357	12,053	22.89%

Table 8 Percentage of prior-enlisted officers by pay grade (after Murguia, 2013b)

C. HOW MUCH WOULD IT COST?

How much would it cost the Navy if it were interested in eliminating the early pay scale caps for the prior-enlisted officers by extending the E designation through all the ranks, in hopes of increasing prior-enlisted officers? The costs associated with such a decision can be determined by using a combination of the data received by DMDC and the Navy's pay scale found on the Defense Finance Accounting System (DFAS) website, found in Table 8 and Table 9 (Defense Finance and Accounting Services, n.d.). The first step in determining the cost would be to calculate how much extra the O-1E through O-3E would receive compared to their non-prior enlisted officers colleagues. The second step would be to combine what is learned from step one with the total amount of prior-enlisted officers in the ranks that currently do not receive the E designation, O-4 through O-10, which protects them from the early longevity pay caps.

1. Step One

Determine how much extra O-1E through O-3E pay grades receive compared to their non-prior enlisted officers colleagues with the same amount of years served. This determination is accomplished by comparing the green highlighted numbers to the yellow

highlighted numbers seen in Table 9. This comparison will yield that the average pay difference between the non-prior enlisted officers and the prior-enlisted officers is about \$442 per month (the computational work is shown in Table 10).

BASIC PAY—EFFECTIVE JANUARY 1, 2013											
Pay Grade	2 or less	Over 2	Over 3	Over 4	Over 6	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18
O-10 ¹											
O-9 ¹											
O-8 ¹	9,847.80	10,170.30	10,364.50	10,444.20	10,711.50	11,157.60	11,261.40	11,685.00	11,806.50	12,171.60	12,700.20
O-7 ¹	8,182.50	8,562.90	8,738.70	8,878.50	9,131.70	9,381.90	9,671.10	9,959.40	10,248.60	11,157.60	11,924.70
O-6 ¹	6,064.80	6,663.00	7,100.10	7,100.10	7,127.10	7,432.80	7,473.00	7,473.00	7,897.80	8,648.70	9,089.40
O-5	5,055.90	5,695.50	6,089.70	6,164.10	6,410.10	6,557.10	6,880.80	7,118.40	7,425.30	7,895.10	8,118.00
O-4	4,362.30	5,049.90	5,386.80	5,461.80	5,774.70	6,109.80	6,527.70	6,852.90	7,078.80	7,208.70	7,283.70
O-3	3,835.50	4,347.90	4,692.90	5,116.50	5,361.60	5,630.70	5,804.70	6,090.60	6,240.00	6,240.00	6,240.00
O-2	3,314.10	3,774.30	4,347.00	4,493.70	4,586.40	4,586.40	4,586.40	4,586.40	4,586.40	4,586.40	4,586.40
O-1	2,876.40	2,994.00	3,619.20	3,619.20	3,619.20	3,619.20	3,619.20	3,619.20	3,619.20	3,619.20	3,619.20
O-3 ²				5,116.50	5,361.60	5,630.70	5,804.70	6,090.60	6,332.10	6,470.70	6,659.40
O-2 ²				4,493.70	4,586.40	4,732.50	4,978.80	5,169.30	5,311.20	5,311.20	5,311.20
O-1 ²				3,619.20	3,864.60	4,007.70	4,153.80	4,297.20	4,493.70	4,493.70	4,493.70
W-5											
W-4	3,963.90	4,263.90	4,386.00	4,506.60	4,713.90	4,919.10	5,126.70	5,439.60	5,713.50	5,974.20	6,187.50
W-3	3,619.50	3,770.40	3,925.20	3,975.90	4,138.20	4,457.10	4,789.20	4,945.50	5,126.40	5,313.00	5,648.10
W-2	3,202.80	3,505.80	3,599.40	3,663.30	3,871.20	4,194.00	4,353.90	4,511.40	4,704.00	4,854.30	4,990.80
W-1	2,811.60	3,114.00	3,195.30	3,367.50	3,570.90	3,870.60	4,010.40	4,205.70	4,398.30	4,549.80	4,689.00
E-9 ³							4,788.90	4,897.50	5,034.30	5,194.80	5,357.40
E-8						3,920.10	4,093.50	4,200.90	4,329.60	4,469.10	4,720.50
E-7	2,725.20	2,974.50	3,088.20	3,239.10	3,357.00	3,559.20	3,673.20	3,875.70	4,043.70	4,158.60	4,281.00
E-6	2,357.10	2,593.80	2,708.10	2,819.40	2,935.50	3,196.50	3,298.50	3,495.30	3,555.60	3,599.70	3,650.70
E-5	2,159.40	2,304.30	2,415.90	2,529.90	2,707.50	2,893.50	3,045.60	3,064.20	3,064.20	3,064.20	3,064.20
E-4	1,979.70	2,081.10	2,193.90	2,304.90	2,403.30	2,403.30	2,403.30	2,403.30	2,403.30	2,403.30	2,403.30
E-3	1,787.40	1,899.90	2,014.80	2,014.80	2,014.80	2,014.80	2,014.80	2,014.80	2,014.80	2,014.80	2,014.80
E-2	1,699.80	1,699.80	1,699.80	1,699.80	1,699.80	1,699.80	1,699.80	1,699.80	1,699.80	1,699.80	1,699.80
E-1 ⁴	1,516.20										

Notes:

1. Basic pay for an O-7 to O-10 is limited by Level II of the Executive Schedule which is \$14,975.10. Basic pay for O-8 and below is limited by Level V of the Executive Schedule which is \$12,141.60.
2. While serving as Chairman, Joint Chief of Staff/Vice Chairman, Joint Chief of Staff, Chief of Navy Operations, Commandant of the Marine Corps, Army/Air Force Chief of Staff, Commander of a unified or specified combatant command, basic pay is \$20,937.90. (See note 1 above).
3. Applicable to O-1 to O-3 with at least 4 years and 1 day of active duty or more than 1460 points as a warrant and/or enlisted member. See Department of Defense Financial Management Regulations for more detailed explanation on who is eligible for this special basic pay rate.
4. For the Master Chief Petty Officer of the Navy, Chief Master Sergeant of the AF, Sergeant Major of the Army or Marine Corps or Senior Enlisted Advisor of the JCS, basic pay is \$7,738.80. Combat Zone Tax Exclusion for O-1 and above is based on this basic pay rate plus Hostile Fire Pay/Imminent Danger Pay which is \$225.00.
5. Applicable to E-1 with 4 months or more of active duty. Basic pay for an E-1 with less than 4 months of active duty is \$1,402.20.
6. Basic pay rate for Academy Cadets/Midshipmen and ROTC members/applicants is \$1,006.80.

Table 9 Base pay chart highlighting the difference between prior-enlisted officer pay versus non-prior enlisted pay (after Defense Finance and Accounting Services, n.d.)

2. Step Two

Combine the additional \$442 a month that the O-1E through O-3E pay grades earn and apply that figure to the rest of the prior-enlisted officer corps that currently do not receive the “E” pay scale designation. The result of this effort shows that it would cost the Navy just over \$23,000,000 annually to extend the E designation to all officer ranks that meet the “prior-enlisted” criteria; the computational work is shown in Table 10.

Pay Grade	Over 6	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18
O-3					\$6,240.00	\$6,240.00	\$6,240.00
O-2		\$4,586.40	\$4,586.40	\$4,586.40	\$4,586.40		
O-1	\$3,619.20	\$3,619.20	\$3,619.20	\$3,619.20	\$3,619.20		
O-3E					\$6,332.10	\$6,470.70	\$6,659.40
O-2E		\$4,732.50	\$4,978.80	\$5,169.30	\$5,311.20		
O-1E	\$3,864.60	\$4,007.70	\$4,153.80	\$4,297.20	\$4,493.70		
Difference							
O-3E					\$92.10	\$230.70	\$419.40
O-2E		\$146.10	\$392.40	\$582.90	\$724.80		
O-1E	\$245.40	\$388.50	\$534.60	\$678.00	\$874.50		
	Average	\$442.45					
Paygrade	Prior Enlisted						
O-4	3,149						
O-5	999						
O-6	211						
O-7	1						
O-8	1						
Average Pay Difference Between E and Non (per month per prior-enlisted)	\$442.45						
Annual Cost	\$23,154,293.40						

Table 10 Cost to extend “E” designation through all officer pay grades

These numbers would be for the first year of implementation. If this strategy increases retention in the prior-enlisted ranks, the cost would also rise. A sensitivity analysis shows how much this strategy would cost if it succeeds in increasing retention of prior-enlisted officers from a range of two percent to 20 percent as shown in Table 11.

		Increase Retention					
Paygrade	2012 Prior Enlisted	2%	6%	10%	14%	18%	20%
O-4	3,149	3,212	3,338	3,464	3,590	3,716	3,779
O-5	999	1,019	1,059	1,099	1,139	1,179	1,199
O-6	211	215	224	232	241	249	253
O-7	1	1	1	1	1	1	1
O-8	1	1	1	1	1	1	1
Average Pay Difference Between E and Non (per month per prior-enlisted)	\$ 442.45	\$ 442.45	\$ 442.45	\$ 442.45	\$ 442.45	\$ 442.45	\$ 442.45
Annual Cost	\$23,154,293.40	\$23,616,211.20	\$24,545,356.20	\$25,469,191.80	\$26,398,336.80	\$27,322,172.40	\$27,784,090.20

Table 11 Cost of extending “E” designation through all officer pay grades taking increased retention into account

V. MODEL CHAPTER AND ANALYSIS OF RESULTS

Everyone has their own opinion as to whether an officer is better off staying in the Navy past 20 years of service or getting out and pursuing a civilian job. It seems that if 10 people are asked the same question, five will say that they are better off staying in while the other five say they are better off by getting out. Imagine being that individual who is trying to make the decision at the 20-year mark, whether to stay in longer or become a civilian. No online calculator exists to help them make an informed decision. That lack of an online calculator was the basis for this financial planning model. It was designed to help these officers make a better-informed decision at their 20-year mark; however, it can also be used to determine if these prior-enlisted officers are better off financially in the civilian sector or staying in past 20 years. This model could also help explain why these prior-enlisted officers leave the Navy if the model returns that they are better off financially by leaving.

A. INPUTS

The model takes many different inputs into consideration and provides a value in today's dollars for it to determine correctly whether it is in the best interest for a prior-enlisted naval officer to retire at the 20-year service point or stay in for another 10 years to max out retirement. The inputs for the model are: inflation, starting salary for someone with a Master's degree, civilian pay raises, military pay raises, average return on a 401k plan, employer matching the 401k plan, personal contribution of salary to the 401k plan, social security, total amount saved by the service member by the twentieth year of service, percentage of pay to Thrift Savings Plan (TSP) from service year 20 to 30, income tax rate, life expectancy, and expected promotion for the prior-enlisted officer from the twentieth service year to the thirtieth service year.

1. Inflation

Inflation is inevitable; therefore, to make the model as real as possible, it is included. Since inflation is always changing and unpredictable, the model uses the same average annual inflation rate of 3.24 percent since 1913 that is stated on the inflation

website, inflationdata.com (McMahon, 2013). This inflation rate is applied in two different locations in the model. The first time inflation affects the model is through future cash flows. All the cash flows are taken for every year and then adjusted by the inflation factor to account for time value of money (TVM). The second effect that inflation has on the model is through social security payments. A starting social security payment from the retirement planning website is \$14,500 per year (The Calculator Site, n.d.), but that figure is adjusted as time passes; therefore, the starting social security payment at age 62 was taken and a TVM multiple applied to it for the corresponding year (i.e., $\$14,500 * 1.03242$ for the first year, age 63, after the original payment). By applying TVM to both future cash flows and social security payments, it is then possible to understand fully how much the decision costs the service member in today's dollars, not in 2059 dollars.

If the model assumes increased inflation, the opportunity cost associated with leaving the military after 20 years increases; conversely, if the inflation variable is decreased, the opportunity cost falls. As inflation goes up, the discount rate rises, which has a larger negative impact on all future cash flows. Since the inflation rate is also tied to social security payments in this model, in the form of a TVM multiple, it has the opposite effect. As the inflation rate rises, the social security payments increases; however, this effect is negated through discounting the social security payment cash flows back to present time using the increased discount rate.

2. Starting Civilian Pay

When service members leave the military, they can expect to find employment with pay appropriate for their education level and experience. Based on data received from DMDC, over half (58 percent) of the prior-enlisted officers who have reached typical retirement pay grades (O-4/O-5) have an education level of a Master's degree or higher (Murguia, 2013b). According to the Bureau of Labor Statistics (BLS), the median wage of an individual with a Master's degree is \$1,300 a week, which equates to \$67,600 a year (United States Department of Labor, Bureau of Labor Statistic, 2013). Of course, this number is a generalized figure and it is hoped that a retired naval officer with 20

years of experience would be able to command a higher salary; regardless, it was decided to use this figure as the starting salary for this model. A sensitivity analysis can be found in Appendix A with different starting civilian salaries and the present value (PV) of the decision to leave at 20 years.

If the starting civilian salary of a recently retired naval officer is increased, retiring from the service at 20 years becomes more attractive. The amount of increase needed for the service member to become indifferent to the decision of staying in the service or retiring is \$1,864 a week or \$96,928 a year.

3. Military Promotion

If the service members stay in the Navy, they can assume that they will still achieve promotion commensurate with their years in pay grade and that their peers achieve. Using Table 12 from The Navy Personnel Command, it is possible to determine what the typical career progression of the 10-year prior-enlisted officer would be; the result appears in Table 13 (Navy Personnel Command, 2012).

Average Promotion Opportunity		
To Grade	Percent Opportunity (+/-10%)	Flow Point (Avg) (Yrs Comm Svc)
O-6	50%	21-23
O-5	70%	15-17
O-4	80%	9 -11
O-3	AFQ	4
O-2	AFQ	2
CWO5	40%	"12-13
CWO4	80%	"4
CWO3	AFQ	"3

(NPC, 2012)

Table 12 Average promotion opportunity

Prior Enlisted

To Grade	Flow Point (Avg) (Yrs in Svc)
O-6	32
O-5	26
O-4	19
O-3	14
O-2	12

Table 13 Expected promotion

With these two pieces of information, it is then possible to plot the prior-enlisted officers' progression through the pay grades on a pay chart, which is seen in Figure 3. The expected promotion path is highlighted in yellow.

Pay Grade	Years of Service					Years of Service				
	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18	Over 20	Over 22	Over 24	Over 26
O-8	10971	11073	11490	11609	11968	12488	12967	13286	13286	13286
O-7	9225	9509	9793	10077	10971	11726	11726	11726	11726	11785
O-6	7309	7348	7348	7766	8504	8938	9371	9637	9667	10351
O-5	6448	6766	6999	7301	7703	7982	8399	8448	8448	8448
O-4	6008	6419	6738	6981	7088	7162	7162	7162	7162	7162
O-3	5537	5708	5989	6136	6136	6136	6136	6136	6136	6136
O-2	4510	4510	4510	4510	4510	4510	4510	4510	4510	4510
O-1	3559	3559	3559	3559	3559	3559	3559	3559	3559	3559
Commissioned Officer With Over 4 Years of Active Service as an Enlisted Member or Warrant Officer										
See Note 2	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18	Over 20	Over 22	Over 24	Over 26
O-3E	5537	5708	5989	6226	6362	6548	6548	6548	6548	6548
O-2E	4653	4896	5083	5222	5222	5222	5222	5222	5222	5222
O-1E	3941	4085	4226	4419	4419	4419	4419	4419	4419	4419

No longevity pay raises

Figure 3 Expected promotion path

This assumption, promotion rate, cannot be changed in the model. If it could, it would be expected that retiring from the service at the 30-year point becomes even more attractive if the promotion rates increase; conversely, if the promotion rates decrease, the civilian employment opportunity becomes more attractive.

4. Annual Civilian Pay Raises

The private sector understands how important annual raises are to retain talent and to prevent flight. Due to this understanding, on average, the private sector gives out annual pay raises that outpace inflation. According to USMILITARY.COM, the largest pay raise from the years 1976 through 2009 occurred in 1981 and 1982. The raise for those two years was 9.1 percent. On average however, the raise for these 33 years was 4.656 percent. Based on this evidence, 4.656 percent was used as the annual civilian pay raise (Powers, 2009).

If it is assumed that the civilian annual pay raises are going to be higher than the 33-year average of 4.656 percent, the difference between retiring at the 20-year mark and staying in for the full 30 years becomes smaller. For instance, if the 4.656 percent annual raise is increased to five percent, the difference in today's dollars changes to \$180,689 (a difference of \$30,329). The service member is still better off monetarily by over \$180,000 by choosing to stay in the Navy. The higher the annual civilian pay raise, the more attractive the option of retiring at 20 years and seeking civilian employment will be. This situation is especially true if the service member can lock in a civilian annual raise of 6.64 percent; the point at which the service member compares the two options, staying in the service for 30 years or retiring from military service at 20 years, and becomes indifferent (monetarily speaking) to the choice.

5. Annual Military Pay Raises

The military also understands how important annual raises are to retain talent and to prevent flight. Historically, the military has compensated their employees comparable to the civilian sector. Over the same 33-year span as mentioned previously, the military has had an average of 4.544 percent compared to the civilian sector 4.656 percent. To obtain pay information for future years, a retirement calculator from Office of the

Secretary of Defense (Office of Secretary of Defense, Military Compensation, n.d.) was used. The online calculator has a fixed rate of four percent per year for military raises. This percentage, unfortunately, creates a slight disconnect between the model and reality; it was necessary to use an annual raise in the amount of four percent rather than the 4.544 percent the past 33-years' worth of data provides.

The service members would be better off financially if they decide to stay to the 30-year point if the military annual raise increases, but by how much? If the four percent annual military pay raise is changed to the 4.544 percent, this model returns a figure of \$226,875, a difference of \$15,857. Even if the military were to issue a 0 percent annual pay raise, the service member would still be better off by \$101,463 to continue service to their 30-year point.

6. Tax Rates

Income determines the individual income tax rates in the United States. It would be inaccurate to determine if the service member would be better off financially by staying in the service or seeking civilian employment at their 20-year mark without taking this the tax rates into consideration. To determine the appropriate tax rates to use, Forbes.com was consulted and the following tax brackets used in this model:

Tax Brackets			
Tax Bracket	Married Filing Jointly	Lower Limit	Upper Limit
10%	\$0 – \$17,400	\$0	\$17,400
15%	\$17,400 – \$70,700	\$17,400	\$70,700
25%	\$70,700 – \$142,700	\$70,700	\$142,700
28%	\$142,700 – \$217,450	\$142,700	\$217,450
33%	\$217,450 – \$388,350	\$217,450	\$388,350
35%	Over \$388,350	\$388,350	\$10,000,000
(Nickel, n.d.)			

Table 14 Tax brackets (from Nickel, n.d.)

7. Investments

a. 401(k)

Civilian corporations typically offer 401(k) plans to their employees; therefore, this perk must be included in the calculation to determine if the service member is better off in the civilian sector. Two key factors need to be addressed. The first is how much does the employee contribute. The second is how much does the employer contribute. According to the Survey of Income and Program Participation (SIPP), the employee contribution rate of earnings has a mean of 8.0 percent and the median is 5.7 percent. Meanwhile, the employer contributes a mean of 4.6 percent with a median of 3.0 percent (Porterba, Venti & Wise, 2010). Companies “match” their employees’ contribution in differing ways. “Matching.” is basically comprised of two different parts. The employers match up to a certain percentage of the employees’ contribution and then they apply a specific rate to that figure. Typical rates that the company applies to the contribution is defined by Hilery Simpson (2010) of the BLS as the following. Approximately 53 percent of employers match their employees’ contribution at a rate of \$0.50 or less per \$1 contributed, while 36 percent match their employees’ contribution 100 percent, and nine percent match at a rate of \$0.51 to \$0.99 per dollar. She further stated that 41 percent of employers match up to six percent of their employees’ contribution while 10 percent match at a rate greater than six percent. Even with some 401k plans, affectionately referred to as “Cadillac plans,” the employer matches 100 percent of what the employees contribute. These last plans are rare (Simpson, 2010). Using the information just provided, it was decided to split the difference of employee contribution median and mean to arrive at a rate of seven percent. It was also decided to use a flat figure of 3.92 percent for the employer contribution in this model. This 3.92 percent figure is not too far removed from MSN Money’s figure of 4.1 percent in 2011 (MSN Money, 2012).

The civilian employment option makes some gains on continued military service through the matching portion of the 401(k) variable. The higher the rate that the civilian employer matches the employees’ contribution, the more attractive the civilian option will be. To have an indifference point on the 401K variable, both the service

member and the employer would have to contribute more than 12.4 percent of the employees' pay to the 401K. This scenario is extremely unlikely.

b. TSP

TSP is basically the military's equivalent to the civilian 401(k). It allows service members to make tax-free contributions throughout their service and then draw on the funds after they retire from their second career at a lower tax rate. Meanwhile, they can collect gains and interest off their funds, which the TSP reinvests. Due to the nature of the TSP program, the contribution rate is treated the same as a 401(k) plan (seven percent).

c. 401K and TSP Returns

According to The Motley Fool, a company that dedicates itself to improving the knowledge of the individual investors, investment choices in a 401(k) plan vary with different amount of risks and rewards associated with each. These choices are likely to be the following.

- Money market funds
- Low risks and low rewards (four percent per year)
- Stable value accounts (guaranteed investment contracts or bank deposit accounts)
- Low risks and low rewards (four percent per year)
- Bond mutual funds
- Risks vary between very safe and somewhat risky with mediocre returns (four to eight percent per year)
- Stock mutual funds
- Highest risks but also comes with the greatest chance at a high return (10.7 percent per year) (The Motley Fool, n.d.)

With this information in mind, it was decided to use a return of seven percent for a 401(k). It was also decided to use a return of seven percent for the TSP due to the close relatedness to the 401(k).

Retiring from military service at the 20-year mark and pursuing a civilian career becomes more attractive as the expected return increases due to larger

contributions to the service members' investment accounts. The larger amounts are attributed to the civilian employer contributing a portion of the employees' pay to the account. For example, if the service members retire from the military at the 20-year mark, they will have a total of \$10,264 in their 401(k) and TSP account; whereas, they would have a total of just \$8,059 in their TSP account if they stayed in the military. The indifference point between continuing service to their 30-year point and retiring at 20 years would be if the service member could guarantee a very unlikely return of 19.15 percent on both their TSP and 401(k) accounts. A sensitivity analysis can be found in Appendix A with different 401K returns and the PV of the decision to leave at 20 years.

8. Social Security

Social security payments were included to determine accurately at what age the prior-enlisted officer could fully retire. To determine what payments the retired officer will receive from social security, the retirement website, calculatorsite.com, was used. The following information was retrieved for a person collecting benefits starting at age 60.

- A salary of under \$25,000 will receive \$8,000 a year in benefits
- A salary between \$25,000–\$40,000 will receive \$12,000 a year in benefits
- A salary of over \$40,000 will receive \$14,500 a year in benefits (The Calculator Site, n.d.)

Naval officers make more than \$40,000 a year in salary; therefore, the \$14,500 a year for social security benefits was used in this model.

This model does not allow for any changing of this data.

9. Life Expectancy

To retire fully, the service members must plan on being able to support themselves until their expected death, which is accomplished through a lifetime of good decision making and a certain amount of financial intelligence. The first step is to have a baseline for life expectancy. The DoD Office of the Actuary actually conducted some research in 2010 to determine the life expectancy of retired military officers and found that the average age at which a retired male officer dies is 85. Table 15 has been adapted

from this research (Schneeweis, 2011). Based off this information, 85 was used as the life expectancy of the prior-enlisted naval officer in this model.

Life Expectancy of Retired Military Officers		
Current Age	Life Expectancy in Years	Expected Age at Death
45	38.6	83.6
50	34	84
55	29.4	84.4
60	24.8	84.8
65	20.4	85.4
70	16.1	86.1
74	13	87
	Average	85.04285714

Table 15 Life expectancy of retired military officers

The model is not designed to change this variable; therefore, any deviations of life expectancy are not assumed. The usefulness of the model is thus limited; however, it should not have a large effect on the overall findings.

10. Income Requirement for Full-Time Retirement

How much money is needed to retire completely? This question needs to be answered so it can be applied to this model. In the past, financial experts stated the rule of 70. This rule of thumb stated that it could be possible to retire once enough cash flow from investments have been achieved to be able to maintain 70 percent of the last working year salary for the remainder of a person's life. Today, however, that number seems to be a little small. Perhaps this decrease is due to rising health care costs or just the rising cost of living. Even some financial experts today say that everyone needs to have 135 percent of their final working years' salary for the rest of their expected life to

retire fully. This goal seems to be a little high. In the later years of life, it is expected that the amount of bills would be reduced for multiple reasons, house is paid off, less is needed for entertainment purposes, children are out on their own, the children's college education has already been paid for, etc. Walter Updegrave from CNN Money states that the correct figure to use is still 70 percent–75 percent (Updegrave, 2012). Being a little conservative, the slightly higher number of 75 percent is used for this model.

If the 75 percent is adjusted in this model, the only thing that changes is the age an individual can expect to retire. It does not change the PV of the choice to continue military service to 30 years or to retire at 20 years. At the current 75 percent figure, the service members can expect to retire fully at the age of 66 if they stay in the service for 20 years versus 60 if they stay in for the full 30 years. If the requirement is raised to the 135 percent that some financial experts say is required, it increases the full time retirement age to 76 for both options.

B. LIMITATIONS OF MODEL

Some may argue that these aforementioned numbers, the opportunity cost, do not “fully” encompass all the benefits from staying in the Navy from years 20 to 30. When people compare the military to civilian wages, they typically say the military wages are understated by as much as 50 percent. Understated meaning once all the other benefits that the military receives are considered (health insurance, dental insurance, G.I. Bill, retirement pay, commissary privileges, tax advantages, etc.), an equivalent “paying” civilian job would have to pay that individual an amount 150 percent more than their current military pay. Since the decision to retire from the Navy after 20 years of service to retiring after 30 years is being examined, many of these differences in pay are invalid because the service members have already met the requirement to receive these benefits for the remainder of their life. These benefits include the largest, retirement pay, which alone is worth over a million dollars (the cumulative retirement cash flows from age 38–85 is \$4,740,463; PV of those cash flows using the 3.24 percent expected inflation is

\$1,025,928). The only benefits that the individual who retires at 20 years loses compared to staying in for 30 years are some tax advantages and the 2.5 percent increase per year in retirement pay.

1. State Income Tax

While in the military, the service member can claim to be a “resident” of any state. Many choose to be a “resident” of one of the nine states that does not collect income taxes or one of five states that do not tax military income (RapidTax.com, 2013); according to a CNA study conducted in 2006, only 17 percent of military officers pay any state tax (Grefer, 2008). Once the service members retire from military service and gains civilian employment, they must claim the state in which they actually reside. If their residence is in one of the 41 states that does collect income taxes, their pay will be taxed and their take home pay will be smaller. If the prior-enlisted officer opts to stop serving after 20 years, becomes employed by the civilian sector, and lives in a state that collects income tax, that officer can expect to pay \$3,418 for the first year of employment to \$5,148 for the tenth year for a cumulative amount of \$42,308 over the course of 10 years (assuming starting pay at \$67,600 and a 4.66 percent civilian pay raise a year, 5.056 percent state income tax rate (interpreted from data found online at the tax foundation website (Tax Foundation, 2013))). The alternative is serving in the Navy for 10 more years and pay \$0 in state taxes, which equates to an average of \$4,230 per year of tax savings.

2. Federal Income tax

Nearly the entire civilian paycheck is subjected to federal income taxes; whereas, the military only has a portion of its income taxed (base pay). Many other “allowances” in the military are not taxed; more specifically, basic allowance for housing (BAH) and basic allowance for subsistence (BAS). This tax advantage results in a larger paycheck for the service member than an equivalent paying civilian job. In the example of an O-4 with 20 years of service, the military pay totals \$115,127. Included in this figure is base pay, BAH, and BAS. Subtracting the BAH and BAS rates from overall pay can provide what percentage of a paycheck is actually taxed (average BAH is \$26,571 while BAS is

\$2,911 for the year, which totals \$29,482 of non-taxable allowances per year that leaves \$85,644 of taxable income and a taxable percent of income rate of 74 percent). This 74 percent rate of taxed income can be used and applied to the 10 years the service member can choose to stay on active duty to ascertain the expected federal tax savings. Using a 25 percent tax rate, a savings of \$7,370 the first year is expected up to a savings of \$12,066 for the tenth year for a cumulative value of \$94,441 over the course of the 10 years, which is an average savings of \$9,444 per year.

3. Is the Model Still Applicable?

The model does not take these tax savings into consideration, which can add up quickly. The first year's combined tax saving could be as much as \$10,788 and a total of \$136,750 over the course of 10 years. These savings were not included in the model for two reasons, 1) It would be too difficult to determine which state's tax code to use to determine the state's savings amount, and 2) the tax code could change in future years that would make 100 percent of the military members pay taxable. By not including the tax savings aspects of benefits, a useful tool is thus available to determine if the prior-enlisted officers are financially better off by staying in the Navy from years 20 to 30. Keep in mind that the opportunity cost for leaving the Navy at the 20-year service mark that the model returns is slightly understated because it does not include any tax advantages (i.e., it "costs" the service member more than the \$211,018 to leave the Navy after 20 years and seek civilian employment.

C. CHAPTER SUMMARY

In summary, a model was constructed that answers the question whether prior-enlisted officers are better off financially if they retire from military service after serving for 20 or 30 years. The aforementioned variables were used and the PV of all the expected cash flows at the age of 61 for both scenarios were compared; serving 20 years in the service and seeking civilian employment until able to retire fully versus serving for 30 years and seeking civilian employment until able to retire fully. If the value were negative, which it is given the above variables, the service member would be better off

financially by staying in the service for 30 years. The numerical value the model returns is the opportunity cost for the service member to depart the service at the 20-year mark.

$$\sum \text{ of the PV of payments expected for scenario one} - \sum \text{ of the PV of payments expected for scenario two} = \text{Opportunity Cost for departing the service}$$

VI. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

In comparing retention rates among prior enlisted officers and non-prior officers the findings were significant, and aid in understanding the existing problem. Simply stated, prior enlisted officers get out a 310 percent higher rate than non-prior enlisted colleagues, despite a steep financial opportunity cost. The premise of this study, and more importantly the findings, are important because they address an opportunity for the Navy to improve its Officer Corps. By improving retention of prior enlisted officers, the Navy can diversify its talent pool and promote the right people, optimizing the desired end state of matching talent to task. Men and women are the Navy's greatest asset, and retaining the best and the brightest will always be priority.

The results of this study, based on a cost benefit analysis and using DMDC data, suggest that existing policies disincentivize continued service from prior enlisted officers beyond the 20-year point. It is a fact that prior enlisted officers leave the Navy at a greater rate than their non-prior enlisted counterparts. The cessation of longevity pay raises is one such policy. By terminating E-pay at the O-3 pay grade the Navy no longer compensates enlisted experience amongst its Officer Corps. By doing this, the Navy is shrinking its pool from which it can draw talent.

It is without question that service members get out for a myriad of reasons, many of which are personal. The research is inconclusive on why prior-enlisted officers get out at 20 years but it is indisputable that they get out at greater rate than those without enlisted experience. Undoubtedly, officers leave the military service at 20 years, as they are able to retire. It remains unanswered as to why, given the fact that they are better off financially, to the tune \$211,000, to stay in until their 30-year point. It is unknown to most officers what the opportunity cost is to getting out at the 20-year point. The benefits of 20 years of service are locked in but substantial monetary incentive to stay in still exists.

The Navy is a hierarchal organization that cannot promote 100 percent of its officer corps through the sequential pay grades. Only a select percentage are granted the privilege to continue service, although more would likely stay. Maintaining the proper manning throughout the various pay grades is daunting, but keeping the right ones is even more difficult. By being a hierarchal organization, the Navy is able to retain only top performers, but the question remains, is it picking top performers from the largest talent pool possible? Based on this study, it is not.

B. RECOMMENDATIONS

1. Determine WHY Prior Enlisted Officers Get Out

It is recommended that further research should be conducted on why prior-enlisted officers get out at a greater rate than non-prior enlisted officers. Such research would provide insight into why service members leave. By knowing why an individual leaves military service, the Navy would be able to adapt its future policies to improve retention.

2. Extend “E” Pay through All Pay Grades

Further research should be conducted on the effects of E pay and its termination at the O-4 pay grade. A CBA could conclusively show whether E pay should be continued through O-4 to O-6 pay grades. As an expanded study, NMI could be studied as an alternative to E pay. This research should seek to synthesize work done by Dr. Gates and Professor Myung (2013).

3. Research Retention Trends Prior to 20-Year Milestone

This thesis focused on the 20-year point and beyond but did not study trends leading up to this career milestone. Further research could examine, in a similar vein, if prior-enlisted officers are getting out at a higher rate prior to the 20-year point. If the goal is to draw talent from the largest pool possible, this time frame may offer some opportunities to expand the pool.

4. Target Bonuses to Top Performers, Prior-Enlisted Officers

More could be done to improve the existing talent pool within the officer corps. Bonuses in their current structure are available to all comers regardless of performance. This inefficiency promotes mediocrity and lends to talent leakage, as those most capable seek reward for their above average performance elsewhere. In today's fiscally constrained environment, every effort needs to be made in getting a bigger bang for the buck.

5. Raise Pension Benefit Percentage

For every additional year of service beyond 20 years, the Navy increases the base pension income of 50 percent by an additional 2.5 percent of the service member's active duty base pay salary, annually. For example, an officer with 25 years of service would receive 62.5 percent of active duty base pay (five years beyond 20 years, multiplied by 2.5 percent yields 12.5 percent). The Navy should make continued service more enticing for prior enlisted officers by raising the percentage. The percentage necessary should be determined using a CBA and survey data of prior-enlisted officers.

Great strides have been made in diversifying the Navy in a piece-wise function. First, the Navy opened service to African Americans followed shortly thereafter to women. Now it has even opened combat roles and is currently exploring the possibilities to put females on submarines. The Navy should take the next step to add more diversity by ensuring the officer corps is comprised of people with different cultures, Mustangs.

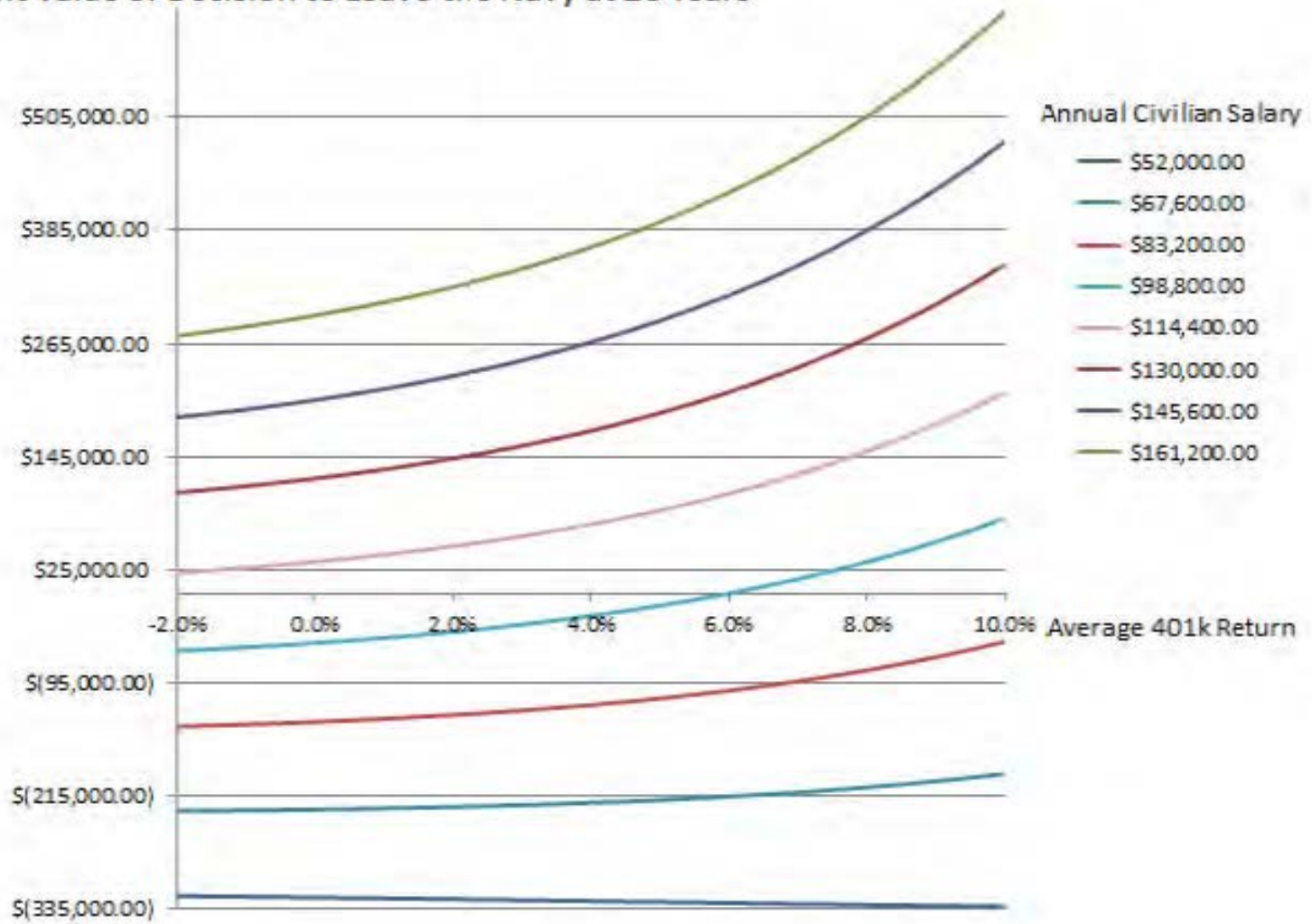
The Navy spends \$29 million dollars for acquiring each F/A-18 Hornet aircraft (Naval Air Systems Command, n.d.)). For a similar price, as a result of instating E pay through the O-6 pay grade as an example, the Navy could greatly expand its talent pool by retaining more prior-enlisted officers, which is but one example of a means to reducing the disparity in retention between prior-enlisted officers and non-prior enlisted officers. Imagine the unintended benefits of retaining higher quality officers... improved enlisted accessions and retention, improved junior officer accession and retention, reduced turnover cost, reduced cost resulting from better decision making, and an improved war fighting capability, etc. The effects would be profound.

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APPENDIX A. SENSITIVITY ANALYSIS

Annual Salary													
401k Returns	-2.0%	-1.0%	0.0%	1.0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
\$ 52,000.00	\$ (320,824.51)	\$ (321,653.08)	\$ (322,519.54)	\$ (323,421.87)	\$ (324,356.91)	\$ (325,320.10)	\$ (326,305.23)	\$ (327,304.02)	\$ (328,305.72)	\$ (329,296.63)	\$ (330,259.53)	\$ (331,172.96)	\$ (332,010.46)
\$ 57,200.00	\$ (287,937.75)	\$ (288,253.57)	\$ (288,519.39)	\$ (288,718.14)	\$ (288,829.08)	\$ (288,827.20)	\$ (288,682.40)	\$ (288,358.62)	\$ (287,812.78)	\$ (286,993.60)	\$ (285,840.15)	\$ (284,280.28)	\$ (282,228.70)
\$ 62,400.00	\$ (262,941.50)	\$ (262,744.57)	\$ (262,409.75)	\$ (261,904.91)	\$ (261,191.76)	\$ (260,224.80)	\$ (258,950.07)	\$ (257,303.73)	\$ (255,210.36)	\$ (252,581.07)	\$ (249,311.28)	\$ (245,278.11)	\$ (240,337.46)
\$ 67,600.00	\$ (230,794.70)	\$ (230,085.02)	\$ (229,149.56)	\$ (227,941.13)	\$ (226,403.89)	\$ (224,471.85)	\$ (222,067.20)	\$ (219,098.29)	\$ (215,457.39)	\$ (211,018.00)	\$ (205,631.86)	\$ (199,125.39)	\$ (191,295.67)
\$ 72,800.00	\$ (204,304.18)	\$ (203,081.75)	\$ (201,545.64)	\$ (199,633.63)	\$ (197,272.29)	\$ (194,375.18)	\$ (190,840.60)	\$ (186,549.13)	\$ (181,360.69)	\$ (175,111.20)	\$ (167,608.71)	\$ (158,628.94)	\$ (147,910.15)
\$ 78,000.00	\$ (172,650.81)	\$ (170,915.63)	\$ (168,778.88)	\$ (166,163.28)	\$ (162,977.85)	\$ (159,115.66)	\$ (154,451.16)	\$ (148,837.12)	\$ (142,101.15)	\$ (134,041.56)	\$ (124,422.72)	\$ (112,969.66)	\$ (99,361.79)
\$ 83,200.00	\$ (141,223.91)	\$ (138,975.99)	\$ (136,238.59)	\$ (132,919.40)	\$ (128,909.89)	\$ (124,082.62)	\$ (118,288.19)	\$ (111,351.59)	\$ (103,068.07)	\$ (93,198.38)	\$ (81,463.20)	\$ (67,536.84)	\$ (51,039.90)
\$ 88,400.00	\$ (115,486.80)	\$ (112,726.13)	\$ (109,388.09)	\$ (105,365.32)	\$ (100,531.71)	\$ (94,739.36)	\$ (87,815.01)	\$ (79,555.84)	\$ (69,724.79)	\$ (58,045.00)	\$ (44,193.47)	\$ (27,793.81)	\$ (8,407.80)
\$ 93,600.00	\$ (90,058.45)	\$ (86,785.03)	\$ (82,846.35)	\$ (78,119.99)	\$ (72,462.28)	\$ (65,704.86)	\$ (57,650.58)	\$ (48,068.85)	\$ (36,690.27)	\$ (23,200.37)	\$ (7,232.50)	\$ 11,640.46	\$ 33,915.55
\$ 98,800.00	\$ (60,957.33)	\$ (57,171.16)	\$ (52,631.84)	\$ (47,201.89)	\$ (40,720.09)	\$ (32,997.60)	\$ (23,813.39)	\$ (12,909.09)	\$ 17.03	\$ 15,317.02	\$ 33,401.24	\$ 54,747.50	\$ 79,911.66
\$ 104,000.00	\$ (32,029.45)	\$ (27,730.53)	\$ (22,590.56)	\$ (16,457.02)	\$ (9,151.14)	\$ (463.56)	\$ 9,850.57	\$ 22,077.43	\$ 36,551.09	\$ 53,661.19	\$ 73,861.75	\$ 97,681.30	\$ 125,734.54
\$ 109,200.00	\$ (1,115.82)	\$ 3,695.85	\$ 9,436.46	\$ 16,273.58	\$ 24,403.56	\$ 34,056.22	\$ 45,500.28	\$ 59,049.70	\$ 75,070.89	\$ 93,991.09	\$ 116,308.00	\$ 142,600.85	\$ 173,543.16
\$ 114,400.00	\$ 21,934.40	\$ 27,258.82	\$ 33,600.07	\$ 41,140.78	\$ 50,094.85	\$ 60,712.58	\$ 73,286.57	\$ 88,158.56	\$ 105,727.29	\$ 126,457.59	\$ 150,890.84	\$ 179,656.99	\$ 213,488.37
\$ 119,600.00	\$ 54,041.36	\$ 59,878.53	\$ 66,820.43	\$ 75,064.72	\$ 84,842.89	\$ 96,425.69	\$ 110,129.61	\$ 126,324.16	\$ 145,440.42	\$ 167,980.83	\$ 194,530.43	\$ 225,769.87	\$ 262,490.33
\$ 124,800.00	\$ 80,548.50	\$ 86,898.42	\$ 94,440.96	\$ 103,388.84	\$ 113,991.10	\$ 126,538.98	\$ 141,372.82	\$ 158,889.94	\$ 179,553.73	\$ 203,904.24	\$ 232,570.19	\$ 266,282.93	\$ 305,892.46
\$ 130,000.00	\$ 106,936.18	\$ 113,798.85	\$ 121,942.03	\$ 131,593.50	\$ 143,019.85	\$ 156,532.81	\$ 172,496.58	\$ 191,336.26	\$ 213,547.59	\$ 239,708.20	\$ 270,490.49	\$ 306,676.53	\$ 349,175.13
\$ 135,200.00	\$ 133,160.93	\$ 140,536.35	\$ 149,280.18	\$ 159,635.23	\$ 171,885.67	\$ 186,363.71	\$ 203,457.40	\$ 223,619.65	\$ 247,378.52	\$ 275,349.23	\$ 308,247.86	\$ 346,907.21	\$ 392,294.88
\$ 140,400.00	\$ 160,765.07	\$ 168,653.23	\$ 177,997.70	\$ 189,056.34	\$ 202,130.88	\$ 217,573.99	\$ 235,797.61	\$ 257,282.42	\$ 282,588.82	\$ 312,369.63	\$ 347,384.62	\$ 388,517.26	\$ 436,794.01
\$ 145,600.00	\$ 186,737.79	\$ 195,138.71	\$ 205,083.82	\$ 216,846.05	\$ 230,744.67	\$ 247,152.87	\$ 266,506.41	\$ 289,313.78	\$ 316,167.73	\$ 347,758.64	\$ 384,889.97	\$ 428,495.91	\$ 479,661.73
\$ 150,800.00	\$ 216,412.47	\$ 225,326.13	\$ 235,871.89	\$ 248,337.70	\$ 263,060.42	\$ 280,433.69	\$ 300,917.16	\$ 325,047.09	\$ 353,448.57	\$ 386,849.59	\$ 426,097.26	\$ 472,176.50	\$ 526,231.39
\$ 156,000.00	\$ 243,672.45	\$ 253,098.87	\$ 264,245.27	\$ 277,414.67	\$ 292,961.48	\$ 311,299.82	\$ 332,913.22	\$ 358,365.72	\$ 388,314.73	\$ 423,525.85	\$ 464,889.87	\$ 513,442.41	\$ 570,386.37
\$ 161,200.00	\$ 273,140.17	\$ 283,079.33	\$ 294,826.37	\$ 308,699.36	\$ 325,070.26	\$ 344,373.69	\$ 367,117.01	\$ 393,892.08	\$ 425,388.62	\$ 462,409.84	\$ 505,890.21	\$ 556,916.04	\$ 616,749.08

Present Value of Decision to Leave the Navy at 20 Years



APPENDIX B. FINANCIAL PLANNING MODEL IN EXCEL

[illegible]

	Military Retirement					Civilian Job			Combined				401K	Social Security	
Age	Before Taxes					Before Taxes			Total	After Taxes					% y*
	Years Out	Year	Monthly Pay	Annual Pay	Cumulative	Monthly Pay	Annual Pay	Cumulative	Before Tax	Tax Bracket	Annual	Cumulative			
38	1	2012	\$3,431	\$41,167	\$41,167	\$5,633	\$67,600.00	\$67,600	\$108,767	25%	\$81,575	\$81,575	\$10,263.61		(\$749.63)
39	2	2013	\$3,551	\$42,607	\$83,774	\$5,896	\$70,747.38	\$138,347	\$113,354	25%	\$85,016	\$166,591	\$21,690.17		(\$1,589.02)
40	3	2014	\$3,675	\$44,099	\$127,873	\$6,170	\$74,041.29	\$212,389	\$118,140	25%	\$88,605	\$255,196	\$34,380.72		(\$2,526.97)
41	4	2015	\$3,804	\$45,642	\$173,515	\$6,457	\$77,488.57	\$289,877	\$123,131	25%	\$92,348	\$347,544	\$48,444.06		(\$3,573.12)
42	5	2016	\$3,937	\$47,240	\$220,754	\$6,758	\$81,096.34	\$370,974	\$128,336	25%	\$96,252	\$443,796	\$63,997.66		(\$4,738.12)
43	6	2017	\$4,074	\$48,893	\$269,647	\$7,073	\$84,872.09	\$455,846	\$133,765	25%	\$100,324	\$544,120	\$81,168.04		(\$6,033.70)
44	7	2018	\$4,217	\$50,604	\$320,252	\$7,402	\$88,823.64	\$544,669	\$139,428	25%	\$104,571	\$648,691	\$100,091.63		(\$7,472.80)
45	8	2019	\$4,365	\$52,375	\$372,627	\$7,747	\$92,959.16	\$637,628	\$145,334	28%	\$104,641	\$753,332	\$120,915.43		(\$9,069.76)
46	9	2020	\$4,517	\$54,209	\$426,836	\$8,107	\$97,287.23	\$734,916	\$151,496	28%	\$109,077	\$862,409	\$143,797.91		(\$10,840.46)
47	10	2021	\$4,675	\$56,106	\$482,942	\$8,485	\$101,816.81	\$836,733	\$157,923	28%	\$113,704	\$976,113	\$168,909.58		(\$12,802.51)
48	11	2022	\$4,839	\$58,070	\$541,011	\$8,880	\$106,557.28	\$943,290	\$164,627	28%	\$118,532	\$1,094,645	\$196,434.20		(\$14,975.52)
49	12	2023	\$5,008	\$60,102	\$601,113	\$9,293	\$111,518.46	\$1,054,808	\$171,620	28%	\$123,567	\$1,218,212	\$226,569.55		(\$17,381.35)
50	13	2024	\$5,184	\$62,206	\$663,319	\$9,726	\$116,710.63	\$1,171,519	\$178,917	28%	\$128,820	\$1,347,032	\$259,528.64		(\$20,044.42)
51	14	2025	\$5,365	\$64,383	\$727,701	\$10,179	\$122,144.54	\$1,293,663	\$186,528	28%	\$134,300	\$1,481,331	\$295,540.64		(\$22,992.10)
52	15	2026	\$5,553	\$66,636	\$794,338	\$10,653	\$127,831.45	\$1,421,495	\$194,467	28%	\$140,017	\$1,621,348	\$334,852.20		(\$26,255.11)
53	16	2027	\$5,747	\$68,968	\$863,306	\$11,149	\$133,783.13	\$1,555,278	\$202,751	28%	\$145,981	\$1,767,329	\$377,728.73		(\$29,868.11)
54	17	2028	\$5,949	\$71,382	\$934,688	\$11,668	\$140,011.91	\$1,695,290	\$211,394	28%	\$152,204	\$1,919,532	\$424,455.78		(\$33,870.26)
55	18	2029	\$6,157	\$73,881	\$1,008,569	\$12,211	\$146,530.70	\$1,841,821	\$220,412	33%	\$147,676	\$2,067,208	\$475,340.51		(\$38,305.98)
56	19	2030	\$6,372	\$76,467	\$1,085,036	\$12,779	\$153,353.00	\$1,995,174	\$229,820	33%	\$153,979	\$2,221,188	\$530,713.18		(\$43,225.87)
57	20	2031	\$6,595	\$79,143	\$1,164,178	\$13,374	\$160,492.94	\$2,155,667	\$239,636	33%	\$160,556	\$2,381,744	\$590,928.95		(\$48,687.78)
Assumptions Sensitivity Analysis SC 1 Retirement at 20 with job SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security															

Age	Military Retirement					Civilian Job			Combined				401K	Social Security		% ye
	Before Taxes					Before Taxes			Total	After Taxes						
	Years Out	Year	Monthly Pay	Annual Pay	Cumulative	Monthly Pay	Annual Pay	Cumulative	Before Tax	Tax Bracket	Annual	Cumulative				
58	21	2032	\$6,826	\$81,913	\$1,246,091	\$13,997	\$167,965.30	\$2,323,632	\$249,878	33%	\$167,418	\$2,549,162	\$656,369.69		(\$54,758.12)	
59	22	2033	\$7,065	\$84,780	\$1,330,871	\$14,649	\$175,785.57	\$2,499,417	\$260,566	33%	\$174,579	\$2,723,741	\$727,445.95		(\$61,513.58)	
60	23	2034	\$7,312	\$87,747	\$1,418,618	\$15,331	\$183,969.93	\$2,683,387	\$271,717	33%	\$182,050	\$2,905,792	\$804,598.98		(\$69,043.05)	
61	24	2035	\$7,568	\$90,818	\$1,509,436	\$16,045	\$192,535.36	\$2,875,923	\$283,353	33%	\$189,847	\$3,095,638	\$888,303.03		(\$77,450.27)	
62	25	2036	\$7,833	\$93,997	\$1,603,433	\$16,792	\$201,499.58	\$3,077,422	\$295,497	33%	\$197,983	\$3,293,621	\$979,067.78	\$14,500.00	(\$86,856.95)	
63	26	2037	\$8,107	\$97,287	\$1,700,720	\$17,573	\$210,881.16	\$3,288,303	\$308,168	33%	\$206,473	\$3,500,094	\$1,077,440.84	\$14,969.80	(\$97,406.87)	
64	27	2038	\$8,391	\$100,692	\$1,801,412	\$18,392	\$220,699.54	\$3,509,003	\$321,392	33%	\$215,332	\$3,715,426	\$1,184,010.53	\$15,454.82	(\$109,271.15)	
65	28	2039	\$8,685	\$104,216	\$1,905,628	\$19,248	\$230,975.05	\$3,739,978	\$335,191	33%	\$224,578	\$3,940,004	\$1,299,408.86	\$15,955.56	(\$122,655.00)	
66	29	2040	\$8,989	\$107,864	\$2,013,491	\$20,144	\$241,728.98	\$3,981,707	\$349,593	33%	\$234,227	\$4,174,231	\$1,424,314.77	\$16,472.52	(\$137,806.75)	
67	30	2041	\$9,303	\$111,639	\$2,125,130	\$21,082	\$252,983.60	\$4,234,691	\$364,623	33%	\$244,297	\$4,418,528	\$1,559,457.34	\$17,006.23	(\$155,029.71)	
68	31	2042	\$9,629	\$115,546	\$2,240,676	\$22,064	\$264,762.21	\$4,499,453	\$380,308	33%	\$254,807	\$4,673,335	\$1,705,619.61	\$17,557.23	(\$174,698.42)	
69	32	2043	\$9,966	\$119,590	\$2,360,267	\$23,091	\$277,089.23	\$4,776,542	\$396,679	35%	\$257,842	\$4,931,176	\$1,863,642.42	\$18,126.08	(\$197,280.80)	
70	33	2044	\$10,315	\$123,776	\$2,484,042	\$24,166	\$289,990.18	\$5,066,532	\$413,766	35%	\$268,948	\$5,200,124	\$2,034,428.64	\$18,713.37	(\$223,369.33)	
71	34	2045	\$10,676	\$128,108	\$2,612,151	\$25,291	\$303,491.78	\$5,370,024	\$431,600	35%	\$280,540	\$5,480,664	\$2,218,947.51	\$19,319.68	(\$253,725.42)	
72	35	2046	\$11,049	\$132,592	\$2,744,742	\$26,469	\$317,622.00	\$5,687,646	\$450,214	35%	\$292,639	\$5,773,303	\$2,418,239.60	\$19,945.64	(\$289,344.42)	
73	36	2047	\$11,436	\$137,233	\$2,881,975	\$27,701	\$332,410.11	\$6,020,056	\$469,643	35%	\$305,268	\$6,078,571	\$2,633,421.86	\$20,591.88	(\$331,553.05)	
74	37	2048	\$11,836	\$142,036	\$3,024,011	\$28,991	\$347,886.73	\$6,367,943	\$489,923	35%	\$318,450	\$6,397,021	\$2,865,693.14	\$21,259.05	(\$382,159.97)	
75	38	2049	\$12,251	\$147,007	\$3,171,018	\$30,340	\$364,083.93	\$6,732,027	\$511,091	35%	\$332,209	\$6,729,230	\$3,116,340.12	\$21,947.85	(\$443,696.72)	
76	39	2050	\$12,679	\$152,152	\$3,323,170	\$31,753	\$381,035.25	\$7,113,062	\$533,187	35%	\$346,572	\$7,075,802	\$3,386,743.62	\$22,658.96	(\$519,819.32)	
77	40	2051	\$13,123	\$157,478	\$3,480,647	\$33,231	\$398,775.80	\$7,511,838	\$556,254	35%	\$361,565	\$7,437,367	\$3,678,385.45	\$23,393.11	(\$616,010.98)	
78	41	2052	\$13,567	\$162,804	\$3,638,174	\$34,770	\$417,342.33	\$7,929,180	\$580,146	35%	\$377,005	\$7,844,462	\$3,993,842.40	\$24,151.05	(\$740,884.78)	
▶ H Assumptions Sensitivity Analysis SC 1 Retirement at 20 with job SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security																

	Military Pay and Retirement					Civilian Job			Combined				401K/TSP	Social Security	
Age			Before Taxes			Before Taxes			Total	After Taxes				&	
	Years Out	Year	Monthly Pay	Annual Pay	Cumulative	Monthly Pay	Annual Pay	Cumulative	Before Tax	Tax Bracket	Annual	Cumulative			Military Rank
38	0	2012	\$9,594	\$115,128	\$115,128	\$0	\$0.00	\$0	\$115,128	25%	\$86,346	\$86,346	\$8,058.93	O-4	(\$588.60)
39	0	2013	\$9,978	\$119,733	\$234,860	\$0	\$0.00	\$0	\$119,733	25%	\$89,799	\$176,145	\$17,004.33	O-4	(\$1,245.74)
40	0	2014	\$10,377	\$124,522	\$359,382	\$0	\$0.00	\$0	\$124,522	25%	\$93,391	\$269,537	\$26,911.17	O-4	(\$1,977.96)
41	0	2015	\$10,792	\$129,503	\$488,885	\$0	\$0.00	\$0	\$129,503	25%	\$97,127	\$366,664	\$37,860.15	O-4	(\$2,792.48)
42	0	2016	\$11,224	\$134,683	\$623,568	\$0	\$0.00	\$0	\$134,683	25%	\$101,012	\$467,676	\$49,938.17	O-4	(\$3,697.22)
43	0	2017	\$11,673	\$140,070	\$763,638	\$0	\$0.00	\$0	\$140,070	25%	\$105,053	\$572,729	\$63,238.75	O-4	(\$4,700.91)
44	0	2018	\$ 13,963	\$167,553	\$931,191	\$0	\$0.00	\$0	\$167,553	28%	\$120,638	\$693,367	\$79,394.17	O-5	(\$5,927.54)
45	0	2019	\$14,521	\$174,255	\$1,105,446	\$0	\$0.00	\$0	\$174,255	28%	\$125,464	\$818,830	\$97,149.62	O-5	(\$7,287.11)
46	0	2020	\$15,102	\$181,225	\$1,286,671	\$0	\$0.00	\$0	\$181,225	28%	\$130,482	\$949,312	\$116,635.86	O-5	(\$8,792.80)
47	0	2021	\$15,706	\$188,474	\$1,475,146	\$0	\$0.00	\$0	\$188,474	28%	\$135,701	\$1,085,014	\$137,993.57	O-5	(\$10,459.23)
48	1	2022	\$9,044	\$108,533	\$1,583,679	\$ 12,518	\$150,211.30	\$150,211	\$258,744	33%	\$173,359	\$1,258,373	\$171,653.50		(\$13,086.32)
49	2	2023	\$9,361	\$112,332	\$220,865	\$13,100	\$157,204.96	\$307,416	\$269,537	33%	\$180,590	\$1,438,962	\$208,699.27		(\$16,010.43)
50	3	2024	\$9,689	\$116,264	\$337,129	\$13,710	\$164,524.24	\$471,940	\$280,788	33%	\$188,128	\$1,627,090	\$249,412.74		(\$19,263.13)
51	4	2025	\$10,028	\$120,333	\$457,462	\$14,349	\$172,184.29	\$644,125	\$292,517	33%	\$195,987	\$1,823,077	\$294,097.47		(\$22,879.82)
52	5	2026	\$10,379	\$124,544	\$582,006	\$15,017	\$180,200.99	\$824,326	\$304,745	33%	\$204,179	\$2,027,256	\$343,080.32		(\$26,900.26)
53	6	2027	\$10,742	\$128,903	\$710,910	\$15,716	\$188,590.94	\$1,012,917	\$317,494	33%	\$212,721	\$2,239,977	\$396,713.28		(\$31,369.28)
54	7	2028	\$11,118	\$133,415	\$844,325	\$16,448	\$197,371.51	\$1,210,288	\$330,787	33%	\$221,627	\$2,461,604	\$455,375.23		(\$36,337.53)
55	8	2029	\$11,507	\$138,085	\$982,409	\$17,213	\$206,560.89	\$1,416,849	\$344,646	33%	\$230,913	\$2,692,517	\$519,473.90		(\$41,862.53)
56	9	2030	\$11,910	\$142,918	\$1,125,327	\$18,015	\$216,178.13	\$1,633,027	\$359,096	33%	\$240,594	\$2,933,111	\$589,447.98		(\$48,009.74)
57	10	2031	\$12,327	\$147,920	\$1,273,247	\$18,854	\$226,243.12	\$1,859,270	\$374,163	33%	\$250,689	\$3,183,801	\$665,769.49		(\$54,854.03)
Assumptions Sensitivity Analysis SC 1 Retirement at 20 with job SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security															

Age	Military Pay and Retirement					Civilian Job			Combined				401K/TSP	Social Security &	
			Before Taxes			Before Taxes			Total	After Taxes					
	Years Out	Year	Monthly Pay	Annual Pay	Cumulative	Monthly Pay	Annual Pay	Cumulative	Before Tax	Tax Bracket	Annual	Cumulative			
														Military Rank	
57	10	2031	\$12,327	\$147,520	\$1,273,247	\$18,854	\$226,243.12	\$1,859,270	\$374,163	33%	\$250,689	\$3,183,801	\$665,769.49		(\$54,854.03)
58	11	2032	\$12,758	\$153,097	\$1,426,344	\$19,731	\$236,776.74	\$2,096,047	\$389,874	35%	\$253,418	\$3,437,218	\$748,946.16		(\$62,481.38)
59	12	2033	\$13,205	\$158,455	\$1,584,799	\$20,650	\$247,800.78	\$2,343,848	\$406,256	35%	\$264,066	\$3,701,285	\$839,524.09		(\$70,991.02)
60	13	2034	\$13,667	\$164,001	\$1,748,800	\$21,612	\$259,338.10	\$2,603,186	\$423,339	35%	\$275,170	\$3,976,455	\$938,090.57		(\$80,498.04)
61	14	2035	\$14,145	\$169,741	\$1,918,541	\$22,618	\$271,412.57	\$2,874,599	\$441,154	35%	\$286,750	\$4,263,205	\$1,045,277.03		(\$91,136.68)
62	15	2036	\$14,640	\$175,682	\$2,094,224	\$23,671	\$284,049.22	\$3,158,648	\$459,731	35%	\$298,825	\$4,562,030	\$1,161,762.34	\$14,500.00	(\$103,064.50)
63	16	2037	\$15,153	\$181,831	\$2,276,055	\$24,773	\$297,274.22	\$3,455,922	\$479,105	35%	\$311,418	\$4,873,449	\$1,288,276.22	\$14,969.80	(\$116,467.61)
64	17	2038	\$15,683	\$188,195	\$2,464,250	\$25,926	\$311,114.96	\$3,767,037	\$499,310	35%	\$324,551	\$5,198,000	\$1,425,602.96	\$15,454.82	(\$131,567.47)
65	18	2039	\$16,232	\$194,782	\$2,659,032	\$27,133	\$325,600.11	\$4,092,637	\$520,382	35%	\$338,248	\$5,536,249	\$1,574,585.43	\$15,955.56	(\$148,629.73)
66	19	2040	\$16,800	\$201,599	\$2,860,631	\$28,397	\$340,759.66	\$4,433,397	\$542,359	35%	\$352,533	\$5,888,782	\$1,736,129.30	\$16,472.52	(\$167,975.74)
67	20	2041	\$17,388	\$208,655	\$3,069,287	\$29,719	\$356,625.03	\$4,790,022	\$565,280	35%	\$367,432	\$6,256,214	\$1,911,207.65	\$17,006.23	(\$189,998.13)
68	21	2042	\$17,997	\$215,958	\$3,285,245	\$31,102	\$373,229.08	\$5,163,251	\$589,187	35%	\$382,972	\$6,639,185	\$2,100,865.86	\$17,557.23	(\$215,181.59)
69	22	2043	\$18,626	\$223,517	\$3,508,762	\$32,551	\$390,606.18	\$5,553,857	\$614,123	35%	\$399,180	\$7,038,365	\$2,306,226.86	\$18,126.08	(\$244,131.75)
70	23	2044	\$19,278	\$231,340	\$3,740,102	\$34,066	\$408,792.35	\$5,962,649	\$640,132	35%	\$416,086	\$7,454,451	\$2,528,496.66	\$18,713.37	(\$277,615.34)
71	24	2045	\$19,953	\$239,437	\$3,979,539	\$35,652	\$427,825.24	\$6,390,475	\$667,262	35%	\$433,720	\$7,888,172	\$2,768,970.54	\$19,319.68	(\$316,617.77)
72	25	2046	\$20,651	\$247,817	\$4,227,356	\$37,312	\$447,744.28	\$6,838,219	\$695,561	35%	\$452,115	\$8,340,287	\$3,029,039.34	\$19,945.64	(\$362,427.13)
73	26	2047	\$21,374	\$256,491	\$4,483,847	\$39,049	\$468,590.72	\$7,306,810	\$725,082	35%	\$471,303	\$8,811,590	\$3,310,196.57	\$20,591.88	(\$416,760.33)
74	27	2048	\$22,122	\$265,468	\$4,749,315	\$40,867	\$490,407.76	\$7,797,217	\$755,876	35%	\$491,319	\$9,302,909	\$3,614,045.62	\$21,259.05	(\$481,957.94)
75	28	2049	\$22,897	\$274,759	\$5,024,074	\$42,770	\$513,240.56	\$8,310,458	\$788,000	35%	\$512,200	\$9,815,109	\$3,942,307.81	\$21,947.85	(\$561,295.94)
76	29	2050	\$23,698	\$284,376	\$5,308,450	\$44,761	\$537,136.44	\$8,847,594	\$821,512	35%	\$533,983	\$10,349,092	\$4,296,830.98	\$22,658.96	(\$659,505.42)
77	30	2051	\$24,527	\$294,329	\$5,602,779	\$46,815	\$562,144.88	\$9,400,739	\$856,171	35%	\$556,708	\$10,905,800	\$4,670,500.40	\$23,393.11	(\$763,601.87)
Assumptions Sensitivity Analysis SC 1 Retirement at 20 with job SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security															

Year	Military Pay	Average Private	
	Raise Percent	Sector Raise	Pay Gap
1976	5	9	2.60%
1977	4.8	7	4.80%
1978	7.1	6.8	4.50%
1979	5.5	7.5	6.50%
1980	7	7.8	7.30%
1981	11.7	9.1	4.80%
1982	14.3	9.1	0.00%
1983	4	8.1	3.90%
1984	4	5.6	5.50%
1985	4	5.1	6.70%
1986	3	4.4	8.10%
1987	3	4.2	9.40%
1988	2	3.5	11.00%
1989	4.1	3.5	10.30%
1990	3.6	4.4	11.20%
1991	4.1	4.4	11.50%
1992	4.2	4.2	11.50%
1993	3.7	3.7	11.50%
1994	2.2	2.7	12.10%
1995	2.6	3.1	12.60%

BAH Calculations Based off of the BAH zipcode that returned the mean BAH rate

SC 1 & 2			according to http://calculator.gijobs.com/paycalc		
Current Military Pay			Month		
O-4 20 yrs	\$9,593.96		2012 O-4 20 yrs	\$2,398.49	Week in 2012\$
2013 O-4 21 yrs	\$ 2,398.49	Assume 4%			
2014 O-4 22 yrs	\$ 2,398.49	Military pay			
2015 O-4 23 yrs	\$ 2,398.49	per yr			
2016 O-4 24 yrs	\$ 2,398.49				
2017 O-4 25 yrs	\$ 2,398.49	Assuming military pay raise			
2018 O-5 26 yrs	\$ 2,758.74	\$ 3,490.69	per week in yr 2018		
2019 O-5 27 yrs	\$ 2,758.74	\$ 13,962.74	per month		
2020 O-5 28 yrs	\$ 2,758.74				
2021 O-5 29 yrs	\$ 2,758.74				
2022 O-5 30 yrs	\$ 2,758.74				

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MILITARY TO CIVILIAN PAY CALCULATOR

Get the civilian salary equivalent to your current military pay, taking into account factors such as:
• Bonuses, life health care, dental, etc. • Special (inclosure) pay • Location after the military • Tax rates
To get started enter your information below.

INPUT

Current Status

Pay Grade:

Years of Service:

Dependents:

Other Annual Income:

Filing Status:

Tax Exemptions:

Current residence zip code:

State you plan to live in upon leaving the military:

Local income tax rate where you plan to live upon leaving the military:

OUTPUT

Current Military Compensation Summary

	Twice a Month	Monthly	Annual
Basic Pay	\$3,580.50	\$7,161.00	\$85,932.00
Special Pays	\$0.00	\$0.00	\$0.00
BAS	\$119.50	\$239.00	\$2,879.52
BAH	\$1,096.50	\$2,193.00	\$26,316.00
Total Gross Pay	\$4,796.50	\$9,593.00	\$115,127.52

Total Civilian Pay Needed to Match Your Military Pay*

	Twice a Month	Monthly	Annual
Civilian Pay	\$5,394.63	\$11,969.36	\$143,628.72

* Civilian pay equivalent based on average military compensation and does NOT include Combat Pay or Tax-free 102(b)s

Starting at 62
\$14,500

If you make under \$25,000, enter \$8,000
If you make between \$25,000 - \$40,000, enter \$12,000
If you make over \$40,000, enter \$14,500

From: <http://www.thecalculatorsite.com/finance/calculators/retirement-planning.php>
<http://www.thecalculatorsite.com/finance/calculators/retirement-planning.php>

http://taxfoundation.org/article_ns/state-individual-income-tax-rates-2000-2013

State Individual Income Tax Rates, As of January 1, 2013

Assumptions: Individual is married with single income

Starting salary of \$67,600/ year to \$106,000 by age 48

Type of Tax Return	Rates		Brackets	Standard Deduction	Personal Exemptions		Deduct Federal Tax Payment on State Return?	Local Income Taxes Added?
					Per Filer	Per Dependent		
Alabama (a, f)								
Single	2%	>	\$0	\$2,500 (b)	\$1,500	\$1,000 (b)	Yes	Yes (h)
	4%	>	\$500					
	5%	>	\$3,000					
Couple	2%	>	\$0	\$7,500 (b)	\$1,500	\$1,000 (b)		
	4%	>	\$1,000					
	5%	>	\$6,000					
Sources: State income tax form, CCH State Tax Handbook, Ala. Code § 40-18-5, -15, -19 (2013).								
Alaska								
All	None			n.a.	n.a.	n.a.	n.a.	n.a.
SC 2 Retirement at 30 with job				Life expectancy	MBA Salaries	Pay Raise		Tax Rate

AVG 5.056%

10 years of civilian cash flows

Year	Pay	State Tax
1	\$ 67,600.00	\$ 3,418.13
2	\$ 70,747.38	\$ 3,577.27
3	\$ 74,041.29	\$ 3,743.82
4	\$ 77,488.57	\$ 3,918.13
5	\$ 81,096.34	\$ 4,100.56
6	\$ 84,872.09	\$ 4,291.47
7	\$ 88,823.64	\$ 4,491.28
8	\$ 92,959.16	\$ 4,700.39

Arkansas (d, e)																	
Single	1%	>	\$0	\$2,000	\$23 (r)	\$23 (r)	No Yes (h)										
	2.5%	>	\$4,099														
	3.5%	>	\$8,199														
	4.5%	>	\$12,199														
	6%	>	\$20,399														
	7%	>	\$33,999														
Couple	1%	>	\$0	\$4,000	\$23 (r)	\$23 (r)											
	2.5%	>	\$4,099														
	3.5%	>	\$8,199														
	4.5%	>	\$12,199														
	6%	>	\$20,399														
	7%	>	\$33,999														
Sources: State income tax form, CCH State Tax Handbook, Ark. Code Ann. § 26-51-201, -430, -501 (2																	
California (a, e)																	
Single	1.0%	>	\$0	\$3,841	\$102 (r, s)	\$321 (r, s)	No No										
	2.0%	>	\$7,455														
◀ ▶ ▶ SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings																	

California (a, e)									
Single	1.0%	>	\$0	\$3,841	\$102 (r, s)	\$321 (r, s)	No	No	
	2.0%	>	\$7,455						
	4.0%	>	\$17,676						
	6.0%	>	\$27,897						
	8.0%	>	\$38,726						
	9.3%	>	\$48,942						
	10.3%	>	\$250,000						
	11.3%	>	\$300,000						
	12.3%	>	\$500,000						
	13.3%	>	\$1,000,000						
Couple	1.0%	>	\$0	\$7,682	\$208 (r, s)	\$321 (r, s)			
	2.0%	>	\$14,910						
	4.0%	>	\$35,352						
	6.0%	>	\$55,794						
	8.0%	>	\$77,452						
	9.3%	>	\$97,884						
	10.3%	>	\$500,000						
	11.3%	>	\$600,000						
	13.3%	>	\$1,000,000						

Sources: State income tax form, State estimated income tax form, CCH State Tax Handbook, Cal. Revenue and Taxation Code § 17041, 17043, 17045, 17054, 17073.5 (2012).

[SC 2 Retirement at 30 with job](#)
[Life expectancy](#)
[MBA Salaries](#)
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Connecticut (a, t)									
Single	3.00%	>	\$0	n.a	\$13,500 (u)	\$0	No	No	
	5.00%	>	\$10,000						
	5.50%	>	\$50,000						
	6.00%	>	\$100,000						
	6.50%	>	\$200,000						
	6.70%	>	\$250,000						
Couple	3.00%	>	\$0	n.a	\$13,500 (u)	\$0			
	5.00%	>	\$20,000						
	5.50%	>	\$100,000						
	6.00%	>	\$200,000						
	6.50%	>	\$400,000						
	6.70%	>	\$500,000						
Sources: State income tax form, CCH State Tax Handbook, Conn. Gen. Stat. § 12-700 (2013).									
Delaware (v)									
Single	2.2%	>	\$2,000	\$3,250	\$110 (r)	\$110 (r)	No	Yes (h)	
	3.9%	>	\$5,000						
	4.8%	>	\$10,000						
	5.2%	>	\$20,000						
	5.55%	>	\$25,000						

Delaware (v)								
Single	2.2%	>	\$2,000	\$3,250	\$110 (r)	\$110 (r)	No	Yes (h)
	3.9%	>	\$5,000					
	4.8%	>	\$10,000					
	5.2%	>	\$20,000					
	5.55%	>	\$25,000					
	6.75%	>	\$60,000					
Couple	2.2%	>	\$2,000	\$6,500	\$110 (r)	\$110 (r)		
	3.9%	>	\$5,000					
	4.8%	>	\$10,000					
	5.2%	>	\$20,000					
	5.55%	>	\$25,000					
	6.75%	>	\$60,000					
Sources: State income tax form, CCH State Tax Handbook, Del. Code Ann. Tit. 30, § 1102, 1108, 1110								
Florida								
	None		n.a	n.a	n.a	n.a		
	0%							
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings								

Georgia																			
Single	1%	>	\$0	\$2,300	\$2,700	\$3,000	No	No											
	2%	>	\$750																
	3%	>	\$2,250																
	4%	>	\$3,750																
	5%	>	\$5,250																
	6%	>	\$7,000																
Couple	1%	>	\$0	\$3,000	\$7,400	\$3,000													
	2%	>	\$1,000																
	3%	>	\$3,000																
	4%	>	\$5,000																
	5%	>	\$7,000																
	6%	>	\$10,000																
Sources: State income tax form, CCH State Tax Handbook, Ga. Code Ann. § 48-7-20, -26, -27 (2010), 2012 Ga. Laws Act 607, H.B. 386 (Approved April 19, 2013).																			

Hawaii (w)									
Single	1.4%	>	\$0	\$2,200	\$1,144	\$1,144	No	No	
	3.2%	>	\$2,400						
	5.5%	>	\$4,800						
	6.4%	>	\$9,600						
	6.8%	>	\$14,400						
	7.2%	>	\$19,200						
	7.6%	>	\$24,000						
	7.9%	>	\$36,000						
	8.25%	>	\$48,000						
	9%	>	\$150,000						
	10%	>	\$175,000						
	11%	>	\$200,000						
Couple	1.4%	>	\$0	\$4,400	\$1,144	\$1,144			
	3.2%	>	\$4,800						
	5.5%	>	\$9,600						
	6.4%	>	\$19,200						
	6.8%	>	\$28,800						
	7.2%	>	\$38,400						
	7.6%	>	\$48,000						
	7.9%	>	\$72,000						
	8.25%	>	\$96,000						
	9%	>	\$300,000						
	10%	>	\$350,000						
	11%	>	\$400,000						

Sources: State income tax form, CCH State Tax Handbook, Haw. Rev. Stat. § 235-2.4, 235-51, 235-54 (2)

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Idaho (e)									
Single	1.6%	>	\$0	\$5,950	\$3,800	\$3,800	No	No	
	3.6%	>	\$1,380						
	4.1%	>	\$2,760						
	5.1%	>	\$4,140						
	6.1%	>	\$5,520						
	7.1%	>	\$6,900						
	7.4%	>	\$10,350						
Couple	1.6%	>	\$0	\$11,900	\$3,800	\$3,800			
	3.6%	>	\$2,760						
	4.1%	>	\$5,520						
	5.1%	>	\$8,280						
	6.1%	>	\$11,040						
	7.1%	>	\$13,800						
	7.4%	>	\$20,700						
Sources: State income tax form, LCH State Tax Handbook, Idaho State Tax Commission, Idaho Code Ann. 63-3022, 3022M, 3024 (2013)									
Illinois									
5% of federal				n.a.	\$2,100	\$2,100	No	No	
adjusted gross income									
with modification									
Sources: State income tax form, CCH State Tax Handbook, Ill. Comp. Stat. 5/201(b)(5), 5/203, 5/204 (2013)									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

Indiana							
3.4% of federal	n.a	\$1,000	\$1,500 (x)	No	Yes (h)		
adjusted gross income							
with modification							
State income tax form and instructions, CCH State Tax Handbook, Ind. Code 6-3-2-1, 6-3-1-3.5							
Iowa (f)							
0.36%	>	\$0	\$1,900	\$40 (a)(r)	\$40 (a)(r)	Yes	Yes (h)
0.72%	>	\$1,494					
2.43%	>	\$2,988					
4.50%	>	\$5,976					
6.12%	>	\$13,446					
6.48%	>	\$22,410					
6.80%	>	\$29,880					
7.92%	>	\$44,820					
8.98%	>	\$67,230					
0.36%	>	\$0	\$4,670	\$40 (a)(r)	\$40 (a)(r)		
0.72%	>	\$1,494					
2.43%	>	\$2,988					
4.50%	>	\$5,976					
6.12%	>	\$13,446					
6.48%	>	\$22,410					
6.80%	>	\$29,880					
7.92%	>	\$44,820					
8.98%	>	\$67,230					
State income tax form, CCH State Tax Handbook, Iowa Department of Revenue 2012 Tax							

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Kansas							
3.0%	>	\$0	\$3,000	\$2,250	\$2,250	No	No
4.90%	>	\$15,000					
3.00%	>	\$0	\$3,000	\$2,250	\$2,250		
4.90%	>	\$30,000					
Kan. Stat. Ann. § 79-32, -110 (2013).							
Kentucky (a)							
2%	>	\$0	\$2,290	\$20 (r)	\$20 (r)	No	Yes (h)
3%	>	\$3,000					
4%	>	\$4,000					
5%	>	\$5,000					
5.8%	>	\$8,000					
6%	>	\$75,000					
2%	>	\$0	\$2,290	\$20 (r)	\$20 (r)		
3%	>	\$3,000					
4%	>	\$4,000					
5%	>	\$5,000					
5.8%	>	\$8,000					
6%	>	\$75,000					
State income tax form, CCH State Tax Handbook, Ky. Rev. Stat. Ann. 141.020, 141.081(2011).							

Maryland (a)									
Single	2%	>	\$0.00	\$2,000 (o)	\$3,200 (g)	\$3,200 (g)	No	Yes (h)	
	3%	>	\$ 1,000						
	4%	>	\$ 2,000						
	4.75%	>	\$ 3,000						
	5%	>	\$ 100,000						
	5.25%	>	\$ 125,000						
	5.5%	>	\$ 150,000						
	5.75%	>	\$ 250,000						
Couple	2%	>	\$0.00	\$4,000 (o)	\$3,200 (g)	\$3,200 (g)			
	3%	>	\$ 1,000						
	4%	>	\$ 2,000						
	4.75%	>	\$ 3,000						
	5%	>	\$ 150,000						
	5.25%	>	\$ 175,000						
	5.5%	>	\$ 225,000						
	5.75%	>	\$ 300,000						
Sources: State income tax form and instructions, CCH State Tax Handbook, Md. Code Ann., Tax-Gen 10-105, 10-211, 10-217 (2012). Note: Does not include significant local income taxes.									
Mass. (a)									
	5.25%	>	\$0	n.a.	\$4,400	\$1,000	No	No	
Sources: State income tax form, CCH State Tax Handbook, Massachusetts Department of Revenue. The rate above applies to income from wages, interest and dividends. Mass. imposes an additional 1.2% tax on capital gain income.									
Michigan									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

Michigan							
4.25%	4.25% of federal adjusted gross income with modification	n.a.	\$3,950	n.a.	No	Yes (h)	

Sources: State income tax form, CCH State Tax Handbook, Mich. Comp. Laws 206.31 (Oct. 1, 2012).

Minn.							
Single	5.35%	>	\$0	\$5,950 (p)	\$3,800 (p)	\$3,800 (p)	No
	7.05%	>	\$24,270				
	7.85%	>	\$79,730				
Couple	5.35%	>	\$0	\$11,900 (p)	\$3,800 (p)	\$3,800 (p)	
	7.05%	>	\$35,480				
	7.85%	>	\$140,960				

Sources: State income tax form, CCH State Tax Handbook, Minnesota Statute §290.06(2013).

Mississippi (a)							
Single	3%	>	\$0	\$2,300	\$6,000	\$1,500	No
	4%	>	\$5,000				
	5%	>	\$10,000				
Couple	3%	>	\$0	\$4,600	\$12,000	\$1,500	
	4%	>	\$5,000				
	5%	>	\$10,000				

Sources: State income tax form, Miss. Code Ann. 27-7-5, -17, -21 (2010).

Missouri (f)													
▶	▶	SC 2 Retirement at 30 with job	Life expectancy	MBA Salaries	Pay Raise	Tax Rates	Military Pay	BAH Rates	Social Security	401k	State tax rates	Federal Tax savings	📍

Missouri (f)									
Single	1.5%	>	\$0	\$6,100	\$2,100	\$1,200	Yes (k)	Yes (h)	
	2%	>	\$1,000						
	2.5%	>	\$2,000						
	3%	>	\$3,000						
	3.5%	>	\$4,000						
	4%	>	\$5,000						
	4.5%	>	\$6,000						
	5%	>	\$7,000						
	5.5%	>	\$8,000						
	6%	>	\$9,000						
Couple	1.5%	>	\$0	\$12,200	\$4,200	\$1,200			
	2%	>	\$1,000						
	2.5%	>	\$2,000						
	3%	>	\$3,000						
	3.5%	>	\$4,000						
	4%	>	\$5,000						
	4.5%	>	\$6,000						
	5%	>	\$7,000						
	5.5%	>	\$8,000						
	6%	>	\$9,000						
Sources: State income tax form, CLH State Law Handbook, Mo. Rev. Stat. 143.011, 143.131, 143.1b1, 143.161, 143.171 (2012), Rev. Proc. 11-52, 2011-45 IRB 7-01									
Montana (a, e, f)									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

Montana (a, e, f)									
Single	1%	>	\$0	4,200 (aa)	\$2,240	\$2,240	Yes (k)	No	
	2%	>	\$2,700						
	3%	>	\$4,800						
	4%	>	\$7,300						
	5%	>	\$9,300						
	6%	>	\$12,700						
	6.9%	>	\$16,400						
Couple	1%	>	\$0	8,400 (aa)	\$2,240	\$2,240			
	2%	>	\$2,700						
	3%	>	\$4,800						
	4%	>	\$7,300						
	5%	>	\$9,300						
	6%	>	\$12,700						
	6.9%	>	\$16,400						
Sources: State income tax form, LCH State Tax Handbook, MONT. CODE ANN. 15-30-2103, -2104, -2131, -2132 (Ann. 31 2012)									
Nebraska									
Single (ee)	2.46%	>	\$0	\$6,100	\$126 (r)	\$126 (r)	No	No	
	3.51%	>	\$2,400						
	5.01%	>	\$17,500						
	6.84%	>	\$27,000						
Couple (ee)	2.46%	>	\$0	\$12,200	\$126 (r)	\$126 (r)			
	3.51%	>	\$4,800						
	5.01%	>	\$35,000						
	6.84%	>	\$54,000						
Sources: State income tax form, Neb. Rev. Stat. §77-2715.02 (Jan 2013)									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

Nevada									
None				n.a.	n.a.	n.a.			
0%									
New Hampshire (c)									
Single	5%	>	\$0	n.a.	\$ 2,400	n.a.	No	No	
Couple	5%	>	\$0	n.a.	\$ 4,800	n.a.			
Sources: State income tax form, CCH State Tax Handbook, N.H. Rev. Stat. Ann. 77:1, 77:3, 77:5 (;									
New Jersey									
Single	1.4%	>	\$0	n.a.	\$1,000	\$1,500	No	Yes (h)	
	1.75%	>	\$20,000						
	3.5%	>	\$35,000						
	5.525%	>	\$40,000						
	6.37%	>	\$75,000						
	8.97%	>	\$500,000						
Couple	1.40%	>	\$0	n.a.	\$1,000	\$1,500			
	1.75%	>	\$20,000						
	2.45%	>	\$50,000						
	3.50%	>	\$70,000						
	5.525%	>	\$80,000						
	6.37%	>	\$150,000						
	8.97%	>	\$500,000						
Sources: State income tax form, CCH State Tax Handbook, N.J. Stat. Ann. 54A:2-1, 54A:3-1 (2004									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

New Mexico									
Single	1.7%	>	\$0	\$6,100	\$3,900	\$3,900	No	No	
	3.2%	>	\$5,500						
	4.7%	>	\$11,000						
	4.9%	>	\$16,000						
Couple	1.7%	>	\$0	\$12,200	\$3,900	\$3,900			
	3.2%	>	\$8,000						
	4.7%	>	\$16,000						
	4.9%	>	\$24,000						
Sources: State income tax form, CCH State Tax Handbook, N.M. Stat. 7-2-2, -7 (2012), Rev. Proc. 11-52, 2011-45 IRB 701.									
New York									
Single (f)	4%	>	\$0	7500 (gg)	n.a.	\$1,000	No	Yes (h)	
	4.5%	>	\$8,200						
	5.25%	>	\$11,300						
	5.9%	>	\$13,350						
	6.45%	>	\$20,550						
	6.65%	>	\$77,150						
	6.85%	>	\$205,850						
	8.82%	>	\$1,029,250						
Couple (ff)	4%	>	\$0	15000 (gg)	n.a.	\$1,000			
	4.5%	>	\$16,450						
	5.25%	>	\$22,600						
	5.9%	>	\$26,750						
	6.45%	>	\$41,150						
	6.65%	>	\$154,350						
	6.85%	>	\$308,750						
	8.82%	>	\$2,058,550						
Sources: State income tax form, CCH State Tax Handbook, N.Y. Tax Law 601, 614, 616 (2012), TSE									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

North Carolina

Single	6%	>	\$0	\$3,000	\$2,500 (q)	\$2,500 (q)	No	No
	7%	>	\$12,750					
	7.75%	>	\$60,000					
Couple	6%	>	\$0	\$6,000	\$2,500 (q)	\$2,500 (q)		
	7%	>	\$21,250					
	7.75%	>	\$100,000					

Sources: State income tax form, CCH State Tax Handbook, N.C. Gen. Stat. 105-134.2, -134.6 (2011).

North Dakota (e)

Single	1.51%	>	\$0	6,100 (bb)	3,900 (bb)	3,900 (bb)	No	No
	2.82%	>	\$36,250					
	3.13%	>	\$87,850					
	3.63%	>	\$193,250					
	3.99%	>	\$398,350					
Couple	1.51%	>	\$0	2,200 (bb)	3,900 (bb)	3,900 (bb)		
	2.82%	>	\$60,650					
	3.13%	>	\$146,400					
	3.63%	>	\$223,050					
	3.99%	>	\$398,350					

Sources: State income tax form and 2012 estimated tax schedule, CCH State Tax Handbook, N.D. Cent. Code 57-38-30.3 (2011) Rev. Proc. 11-52 2011-45 I.R.B. 701

Ohio (a, e)								
Single	0.587%	>	\$0	n.a	\$1,700	\$1,700	No	Yes (h)
	1.174%	>	\$5,200					
	2.348%	>	\$10,400					
	2.935%	>	\$15,650					
	3.521%	>	\$20,900					
	4.109%	>	\$41,700					
	4.695%	>	\$83,350					
	5.451%	>	\$104,250					
	5.925%	>	\$208,500					
Couple	0.587%	>	\$0	n.a	\$1,700	\$1,700		
	1.174%	>	\$5,100					
	2.348%	>	\$10,200					
	2.935%	>	\$15,350					
	3.521%	>	\$20,450					
	4.109%	>	\$40,850					
	4.695%	>	\$81,650					
	5.451%	>	\$102,100					
	5.925%	>	\$204,200					
Sources: State income tax form, CCH State Tax Handbook, Ohio Rev. Code Ann. 5747.02, 5747.								
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings								

Oklahoma (a)									
Single	0.5%	>	\$0	\$5,950 (p)	\$1,000	\$1,000	No	No	
	1%	>	\$1,000						
	2%	>	\$2,500						
	3%	>	\$3,750						
	4%	>	\$4,900						
	5%	>	\$7,200						
	5.25% (ee)	>	\$8,700						
Couple	0.5%	>	\$0	\$11,900 (p)	\$1,000	\$1,000			
	1%	>	\$2,000						
	2%	>	\$5,000						
	3%	>	\$7,500						
	4%	>	\$9,800						
	5%	>	\$12,200						
	5.25% (ee)	>	\$15,000						
Sources: State income tax form, CCH State Tax Handbook, Okla. Stat. tit. 68, 2355, 2355.1A,									
Oregon (a, e, f, i)									
Single	5%	>	\$0	\$2,025	\$188 (r)	\$188 (r)	Yes (k)	Yes (h)	
	7%	>	\$3,250						
	9%	>	\$8,150						
	9.9%	>	\$125,000						
Couple	5%	>	\$0	\$4,055	\$188 (r)	\$188 (r)			
	7%	>	\$6,500						
	9%	>	\$16,300						
	9.9%	>	\$250,000						
Sources: State income tax form, CCH State Tax Handbook, Or. Rev. Stat. 316.037, 316.060, 316.680, 316.695 (2013)									
► SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

Pennsylvania									
3.07%	>	\$0	n.a	n.a	n.a	No	Yes (h)		
Sources: State income tax form, CCH State Tax Handbook									
Rhode Island (e)									
Single	3.75%	>	\$0	\$8,000 (dd)	\$3,750 (dd)	\$3,750 (dd)	No	No	
	4.75%	>	\$58,600						
	5.99%	>	\$133,250						
Couple	3.75%	>	\$0	\$16,000 (dd)	\$3,750 (dd)	\$3,750 (dd)			
	4.75%	>	\$58,600						
	5.99%	>	\$133,250						
Sources: State income tax form, Rhode Island Advisory 2012-38.									
South Carolina (e)									
Single	0%	>	\$0	\$6,100 (p)	3,900 (p)	3,800 (p)	No	No	
	3%	>	\$2,850						
	4%	>	\$5,700						
	5%	>	\$8,550						
	6%	>	\$11,400						
	7%	>	\$14,250						
Couple	0%	>	\$0	\$6,100 (p)	3,900 (p)	3,800 (p)			
	3%	>	\$2,850						
	4%	>	\$5,700						
	5%	>	\$8,550						
	6%	>	\$11,400						
	7%	>	\$14,250						
Sources: State income tax form, CCH State Tax Handbook, 2012 Declaration of Estimated Tax from Individuals Form SC1040-ES Rev. Proc. 11-52 2011-45 I.R.B. 701									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

South Dakota									
			None		n.a		n.a		n.a
		0%							
Tenn.(c)									
Single	6%	>	\$0	n.a	\$1,250	n.a	No	No	
Couple	6%	>	\$0	n.a	\$2,500	n.a	No	No	
Sources: State income tax form, CCH State Tax Handbook									
Texas									
			None		n.a		n.a		n.a
		0%							
Utah (a)									
	5%	>	\$0	(1)	\$2,850	\$2,850	No	No	
Sources: State income tax form, CCH State Tax Handbook									
Vermont (ii)									
Single	3.55%	>	\$0	\$6,100 (p)	3,900 (p)	3,900 (p)	No	No	
	6.8%	>	\$36,250						
	7.80%	>	\$87,850						
	8.8%	>	\$183,250						
	8.95%	>	\$398,350						
Couple	3.55%	>	\$0	\$12,200 (p)	3,900 (p)	3,900 (p)			
	6.8%	>	\$60,550						
	7.80%	>	\$146,400						
	8.8%	>	\$223,050						
	8.95%	>	\$398,350						
Sources: State income tax form, CCH State Tax Handbook, 2012 Estimated Tax Payment Form									
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings									

Virginia (a)							
Single	2%	>	\$0	\$3,000	\$930	\$930	No
	3%	>	\$3,000				
	5%	>	\$5,000				
	5.75%	>	\$17,000				
Couple	2%	>	\$0	\$6,000	\$930	\$930	
	3%	>	\$3,000				
	5%	>	\$5,000				
	5.75%	>	\$17,000				
Sources: State income tax code, Va. Code Ann. §58.1-320							
Washington							
	None		n.a	n.a	n.a	n.a	
	0%						
West Virginia (a)							
Single	3%	>	\$0	n.a	\$2,000	\$2,000	No
	4%	>	\$10,000				
	4.5%	>	\$25,000				
	6%	>	\$40,000				
	6.5%	>	\$60,000				
Couple	3%	>	\$0	n.a	\$2,000	\$2,000	
	4%	>	\$10,000				
	4.5%	>	\$25,000				
	6%	>	\$40,000				
	6.5%	>	\$60,000				
Sources: State income tax form, CCH State Tax Handbook							
SC 2 Retirement at 30 with job Life expectancy MBA Salaries Pay Raise Tax Rates Military Pay BAH Rates Social Security 401k State tax rates Federal Tax savings							

APPENDIX C. NAVAL OFFICE PAY GRADES/RANKS

Junior Officers

O-1	Ensign (ENS)
O-2	Lieutenant Junior Grade (LTJG)
O-3	Lieutenant (LT)
O-4	Lieutenant Commander (LCDR)

Senior Officers

O-5	Commander (CDR)
O-6	Captain (CAPT)

Flag Ranks

O-7	Rear Admiral (Lower Half) (RDML)
O-8	Rear Admiral (Upper Half) (RADM)
O-9	Vice Admiral (VADMO-10 Admiral (ADM)

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