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An analysis of the marriage and dependency premiums among active duty Navy personnel

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MONTEREY, CALIFORNIA

MBA PROFESSIONAL REPORT

**An Analysis of the Marriage and Dependency
Premium among Active Duty
Navy Personnel**

By: Ronald A. Fauntleroy

June 2005

**Advisor: John K. Shank
Second Reader: David Henderson**

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**AN ANALYSIS OF THE MARRIAGE AND DEPENDENCY PREMIUMS
AMONG ACTIVE DUTY NAVY PERSONNEL**

Ronald A. Fauntleroy, Lieutenant Junior Grade, United States Naval Reserve

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

**NAVAL POSTGRADUATE SCHOOL
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NAVY PERSONNEL**

ABSTRACT

Within the Navy, married active duty service members and unwed single sailors with dependents are entitled to receive additional benefits compared to their single counterparts. The majority of these benefits are received through increases in the service member's Basic Allowance for Housing, Family Separation Allowance and medical coverage for spouses and dependents. This study estimates how much these increases cost the Navy. Data acquired from the Center for Defense Manpower Data Center and the Center for Naval Analyses are used to determine the average increase in BAH, FSA and medical coverage costs for married sailors and unwed single sailors with dependents. Surprisingly, the pay premium for being married or having dependents ranges from only 4 percent to only 10 percent for all enlisted ranks of E-5 and above and for all officer ranks. This premium is well below the marriage premium in the civilian labor market. Also, it is far below the pay increment received from advancement to the next pay grade .

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I. INTRODUCTION

There's an old Navy adage: if the Navy wanted you to marry, they'd issue you a wife. However, a different message could be perceived by a sailor given that the Navy offers higher compensation for married personnel. Studies within the civilian labor force have identified several factors that appear to have a significant influence on an employee's compensation. Several of these influential factors include: age, gender, experience, education and training. One particularly interesting factor is an employee's marital status. With controls set to minimize the effects of other influencing factors such as age, gender or education, a married employee can earn 10 to 40 percent more than single counterparts (Korenman, 1991). The purpose of this study is to measure the cost of the marriage premium of active duty Navy personnel.

While there is little debate over the existence or magnitude of the marriage premium, the origin of the marriage premium remains highly contested among labor economists. There are three prevailing theories used to account for the cause of the marriage premium. The first theory attributes the marriage premium to specialization. Specialization occurs when a marriage provides a worker with the opportunity to spend less time on domestic work and become more specialized in market labor. The second theory attributes the premium to unmerited employer bias toward married employees. The third theory attributes the marriage premium to mutually favorable traits. As such, the same characteristics that increase the probability of finding and keeping a spouse are also likely to facilitate promotions and higher wages. The three proposed theories have been evaluated extensively using empirical studies of the civilian labor market.

The marriage premium among active duty military members is the result of written policy. Marriage entitles all active duty service-members and their spouses to increased pay, benefits and opportunities. The gains achieved through marriage occur primarily through family separation pay, basic allowance for housing and healthcare.

In most studies, the magnitude of the marriage premium of the civilian labor market is often quoted to be between 20 to 30 percent. However, the overall net cost of the marriage premium to the military and its branches remains to be measured.

The former commandant of the Marine Corps, General Carl E. Mundy Jr., was aware of the non-financial costs of married soldiers. Mundy noticed that with the duration and frequency of Marine deployments increasing, there have been increasing divorce rates and stresses on families within the Marine Corps. In addition, Mundy surmised that marriage was an inevitable distraction for new Marines. Furthermore, this distraction could reduce the effectiveness of training and readiness. A married soldier would be affected whenever family dilemmas arise, leading to problems such as moonlighting, missed training, missed deployments, and emergency leave. Additionally, leaders might find it difficult to punish married servicemen with restrictions or pay forfeitures, knowing their families will suffer as well. Furthermore, the Marines are highly dependant upon forming strong bonds among units. A Marine with a spouse and children would be less likely to invest the same level of time and effort in the formation of a strong unit bond. As a result, General Mundy recommended prohibiting marriage during a Marine's first years of enlistment. Unsurprisingly, General Mundy's recommendation was not well received and deemed politically unviable. The recommendation launched an investigation by two assistant defense secretaries and numerous military and civilian bureaucrats with the goal of preventing General Mundy's decision. The investigation produced a 600-page document that finds "no direct, clear, meaningful and statistically valid relationship (positive or negative) between marital status and readiness." Furthermore the study recommended increasing cost of living and housing allowances.

II. LITERATURE REVIEW

The occurrence of a considerably high difference in compensation for married workers in comparison to single workers with similar qualities has consistently been observed by labor economists. There is a general consensus about the magnitude of the marriage premium within the labor market; most research estimates the premium to be about 20 percent and the range of estimates is between 10 and 40 percent. However, there is disagreement over the origin of the marriage premium. Furthermore, there is disagreement as to whether the observed premium is actually the result of marriage or just a correlation. A review of literature reveals three primary hypotheses commonly used to account for the observed difference in compensation between married employees and their single counterparts.

Marriage can enable an employee to increase productivity at work in several ways. Most often, the increase in productivity is thought to occur by the division of household labor (Figure 1). A single worker has to divide his time between market production and domestic labor. A decrease in time spent on housework affords an opportunity to increase earnings. The division of domestic labor provided through marriage enables a spouse to focus more on market labor production without sacrificing domestic labor. This increased productivity, in turn, would lead to improved performance and an increase in the frequency of pay raises as well as promotions. Another assumption is that the increase in productivity is the result of the stability and encouragement afforded by marriage. The concept of marriage increasing productivity and, in turn, creating an earnings gap has been supported by various studies.

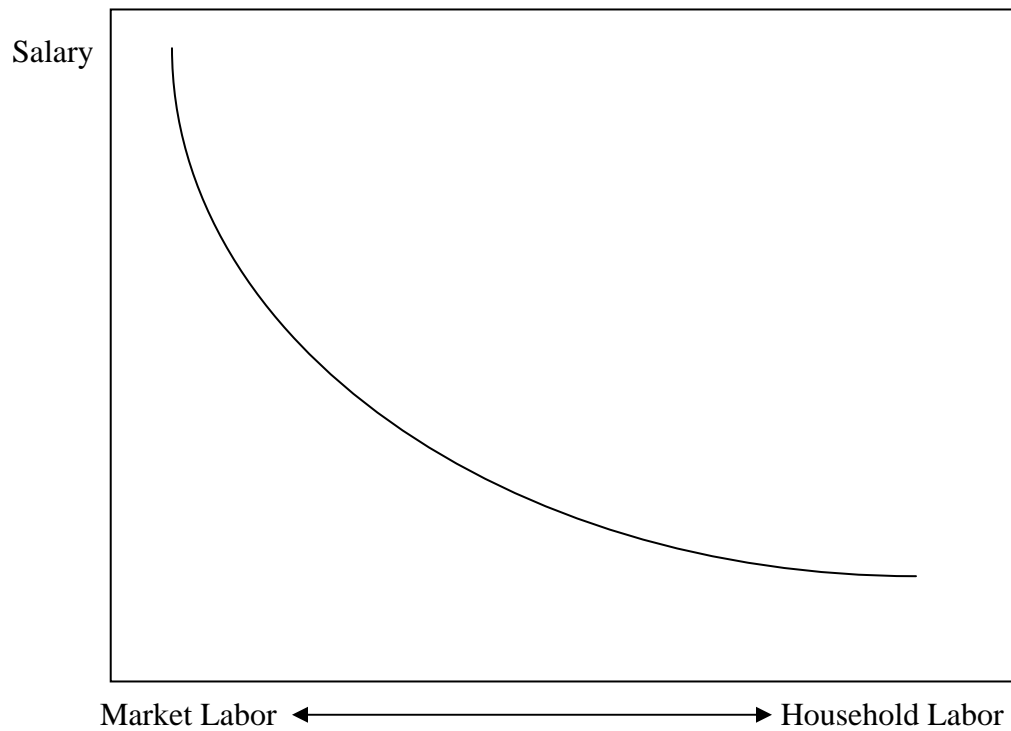


Figure 1. Fiduciary Effect of Market Labor and Household Labor Distribution

A Study by Hyunbae Chun and Injae Lee “Why Do Married Men Earn More: Productivity or Marriage Selection” found supporting evidence for the specialization theory. To analyze the possibility of the increased productivity from specialization, they decomposed the marriage premium into “a potential gain from marriage and a wage penalty associated with the wife’s labor market hours”. They found that married men whose spouse did not participate in the labor market had 31.4 percent greater earnings than their single counterparts. Furthermore, they found that for each additional hour of labor that a spouse participates in the labor market, the marriage premium decreased by 6 percent. A similar finding was observed by economists McKinley, Blackburn and Sanders. They observed a decrease in the marriage premium of 10 percent from 1967 to 1988. This observation could reflect an increase in spouses' participation in the labor market and a more equal division of household labor.

Katarina Richardson’s research on the evolution of the marriage premium in the Swedish labor market also identified a decrease in the premium that coincides with a more equal division of household labor. Richardson measured the marriage premium

within the Swedish labor market from 1968 to 1991. During this period several notable changes have occurred within the Swedish labor market. In 1971, Sweden switched from joint taxation to individual taxation in addition to other changes that made it more profitable for spouses to participate in the labor market. In addition, the Swedish government began to offer heavily subsidized public childcare to all households. The percentage of women who participated in the labor market increased from 54 percent (in 1965) to 82 percent (in 1989). Additionally, married men have doubled the amount of time spent on household labor while the time spent by married women was cut in half. The researchers expanded their study to include cohabitating single men rather than just evaluating single and married men.

Richardson found that the 1968 marriage premium of 23 percent had dropped to 8 percent by 1991. A similar decline was found among cohabitating men, from 16 percent in 1968 down to 4 percent in 1991. These findings suggest that the marriage premium is indeed related to the division of domestic labor.

Despite the observations and empirical results that support the productivity theory, there are studies available with contradicting results. One investigation concerning the origin of the marriage premium used data from the National Survey of Families and Households (Hersch and Stratton, 2000). This survey provides information on the time spent on home labor as well as wages for 13,008 households. Comparing the average number of hours spent on domestic labor for single and married workers yielded interesting results. As expected, married men spent less time on tasks such as cleaning or cooking. However, they found little difference between single and married individuals and the total amount of time spent on domestic labor. This observation suggests that either the type of domestic labor is more important than the amount of labor or that specialization might not be the primary cause of the marriage premium. Instead, employer bias might be more influential in creating the compensation difference.

Researchers have also found increases in compensation due to employer bias. Albeit hard to prove, the idea of compensation differences due to employer bias is logical. The presence of a spouse could afford a greater opportunity for networking and building social relationships with employers. In addition, an employer might attribute

unmerited favorable qualities to a married employee. This, in turn, would lead to a faster rate of promotion than unmarried counterparts with similar qualities. One study has identified an increased incidence of favorable performance evaluations for married employees (Korenman, Neumark 1991). This study analyzed company personnel data from a large U.S. manufacturing firm. The data were on white male managers and professionals working within the firm. In addition the data included supervisor performance ratings, as well as each worker's salary. The performance rating was based on a six-point scale, six being the most favorable. They concluded that the marriage premium arises through married personnel occupying the higher job grades and not through a higher wage for similar jobs. They also found that married workers were more likely to receive favorable performance ratings from their immediate supervisors. These higher ratings, in turn, increase the probability of promoting and receiving higher wages than single employees. However, it is possible that married personnel receive higher ratings because they possess certain characteristics that are favorable both to supervisors and to a potential spouse. Specialization and employer bias suggest that the observed marriage premium has a specific origin between the theory and the observed premium. However, the third theory of unobservable characteristics being valued by both employers and potential spouses, suggest that there is no direct cause of the marriage premium, but rather a correlation.

The concept of unobservable characteristics as a driving force of the marriage premium has also been widely investigated and supported. The hypothesis is that the wage difference among married and single workers is not the result of employer bias or the division of domestic labor. Instead, the observed wage difference is the result of both employers and potential spouses favoring similar characteristics such as a sound work ethic, cognitive ability, trustworthiness and reliability. Interestingly, even traits such as attractiveness and charisma could influence both employers and potential spouses. One study supports this theory by observing the marriage premium from shotgun weddings (Ginther, Zavodny 1998). Their study compares the marriage premium of men who had a child within seven months of marriage with those who did not. The assumption is that premarital conception makes the marriage a random event and removes issues of

selection. They found that men who married after the woman conceived received higher returns from marriage. This suggests that these men did indeed have some unobserved trait that increased their likelihood of both attracting and keeping a spouse and having a successful career.

In contrast, another study found no support for the selection theory (Antonovics, Town). This study evaluated the selection theory by using data on identical twins. The data came from the Minnesota Twins Registry which accounts for about 80 percent of the total population of surviving intact pairs born in Minnesota from 1936 to 1955. If the selection theory is valid, then identical twins with similar backgrounds and education should have similar salaries regardless of marital status. Of the 128 Twin pairs analyzed, 24 percent differed in their marital status. Their results found that the marriage premium was still present at 27 percent. This suggests that the selection might not be the primary influence for the origin of the marriage premium.

It is possible, if not probable, that the overall marriage premium is the net result of all three factors combined. However, which theory accounts for the majority of the wage differential remains widely debated. Despite conflicts pertaining to the source of the marriage premium, the magnitude of the premium is widely agreed upon. Within the military, the sources of the marriage premium are easily identifiable. However, the magnitude of the marriage premium within the Department of Defense is unknown. A thorough literature review has found no documentation addressing the overall difference in compensation and benefits for married military personnel and their single counterparts.

The production theory probably does not apply to enlisted Navy personnel. This is because a single enlisted sailor living on a ship or in BEQ has a relatively low amount of domestic tasks such as cleaning, food preparation and laundry. These services are provided when living on a ship. This would not apply to officers who typically live in private quarters. There is a possibility of supervisor bias affecting the marriage premium within the Navy. If a supervisor attributes unmerited favorable characteristics to his subordinates, it would be reflected on the subordinate's evaluations. These higher evaluations would greatly affect a sailor's probability of promotion. As such, employer

bias could lead to higher pay by advancing the employee to the next higher rank, in addition to the increase in BAH and additional medical coverage.

III. BACKGROUND

The marriage premium within the military occurs via increases in both allowances and benefits. The increase in benefits occurs through the free medical care offered to active duty members, their spouses and children. The increase in financial compensation is provided primarily through basic allowance for housing (BAH) and family separation pay. Entitlements to increases in compensation are immediately present after the active duty member has married and notified his or her service. In contrast, the marriage premium within the civilian labor market is not immediately realized but rather develops and increases with years of marriage. Although minor in comparison to differences in BAH and medical coverage, additional wage differences for active duty members can also be found in the cost of living allowance (COLA), relocation and moving expenses.

Every service member is entitled to some form of housing. The manner in which housing and BAH is provided depends upon several factors including: rank, location and marital status. Married service members usually have the option to reside in free on-base housing or live off base and receive a tax-free monetary allowance (Basic allowance for housing). The amount provided for BAH depends upon several factors including: rank, location and the number of dependents. Single service members who are within the pay grades of E-4 and below are typically required to live on Navy provided quarters such as a ship, barracks or bachelor enlisted quarters. However, service members who are E-6 and above are usually given the option to live in private quarters and receive BAH. When a service member, regardless of rank, resides in government quarters, he receives a partial BAH.

In general, on-base housing is limited with vacancy sometimes taking more than a year to acquire. In addition, housing is typically reserved for married service members with dependents. As such the size of the house provided is determined by the number of dependents. Aside from not paying rent, there are additional advantages to living on-base. Trash collection, water, gas and electric are provided free of charge. In addition, major appliances are provided as well.

Those members who do not reside in on-base housing or provided quarters are entitled to BAH. In addition to rank and marital status, the level of BAH is also determined by duty station location. On an annual basis, the amount of BAH for each duty location is assessed and adjusted. Each year, the military hires an independent agency to assess the average cost of housing for each area in which a service member would likely reside. The amount of BAH supplied to each member is intended to cover 100 percent of the total average housing cost.

Under special circumstances, some service members receive BAH Differential (BAH-DIFF) in lieu of the regular BAH. BAH differential is given to eligible service members who do not have legal custody of their child and are paying child support or spouse support. The BAH-DIFF rate is determined by taking the difference between the full married rate of BAH and the full single rate of BAH. To be eligible, the member must prove that the amount of child support or spouse support he is obligated to provide is equal to or greater than the amount of BAH-DIFF that he would receive.

Another contributing factor to the compensation difference is the family separation allowance (FSA). Only service members who are married or have dependents are eligible for family separation allowance. In addition to having dependents, the service member must, as a result of duty assignment, be away from his/her dependents for a period greater than 30 days. There are two types of FSA, Type I and Type II. Service members may be eligible for either or both types of FSA concurrently. The most common type of family separation allowance is Type II. Eligibility for Type II family separation allowance occurs when the military member is required to be away from his/her family for a period of 30 days or greater. This type of allowance compensates for the expenses incurred via transportation of dependents, additional expenses incurred from a temporary duty assignment and serving at sea. The purpose of Type I FSA is to compensate a service member for added housing expenses resulting from forced separation from dependents in addition to having to incur a cost of obtaining private housing. As such Type I FSA is considered to be an additional basic housing allowance and is received in addition to their regular BAH.

Medical care for active duty naval personnel and their families is provided via the TRICARE medical system. The TRICARE system is comprised of combined Army, Navy and Air Force medical resources. Additionally, the TRICARE system also uses a network of civilian providers to facilitate greater access to medical care. The TRICARE facilities include 70 military hospitals and medical centers, 411 medical clinics and 417 dental clinics. 69 percent of the TRICARE employees are military members and the remaining 31 percent are civilians.

Eligibility for TRICARE coverage is extended to active duty military personnel, retired military members and their corresponding families. According to TRICARE's 2005 Stakeholders Report, there are 9.1 million TRICARE beneficiaries. Reported weekly numbers include: 1.95 million claims processed, 19,200 inpatient admissions, 400,000 dental procedures and a weekly bill of \$717 million. The TRICARE medical system offers three coverage plans: prime, extra and standard.

TRICARE prime is a no-fee option for Active duty members and their families. Retirees and their families have to pay a small annual fee of \$230 and \$460 for individuals and families respectively. Under this option, military treatment facilities are the primary source of medical care. The use of a civilian care provider has to be authorized by a primary care manager. The TRICARE extra plan requires an annual deductible of 150 dollars per individual or a family rate of 50 to 100 dollars (E-4 and below) and 300 dollars (E-5 and above). Additional fees include 15% of the cost for civilian outpatient visits. Under this plan, the beneficiary can use the military treatment centers for free or any civilian facilities authorized under the standard plan. The TRICARE Standard plan provides the most flexibility, allowing members to select from military treatment centers and a broader list of approved civilian providers. The annual deductible for TRICARE standard is the same as the deductible for TRICARE extra.

However there are larger fees for civilian outpatient visits, 20% of covered charges. In addition to medical care, all active duty members are entitled to free dental care. However, dependents of active duty members are given a low cost family dental plan.

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IV. METHODOLOGY

In the reviewed literature, measuring the effects of marriage on income required controls to adjust the effects of other influential factors such as age, profession, education and race. However, calculating the magnitude of the marriage premium within the military does not require controlling for other factors. Factors that would normally influence compensation have little influence. Instead, the only determinates of compensation for basic pay, BAH and FSA would be paygrade, years of service, location and dependency status (marriage and/or children).

Data for this project were provided by the Defense Manpower Data Center (DMDC). The DMDC collects and maintains an archive of manpower, personnel, training, and financial databases and conducts research and analysis for the military. The data provided by DMDC contained the basic pay, family separation pay, basic allowance for housing, years of service, marital status and dependency status for all paygrades in the navy for the month of February 2005. A review of the data uncovered several anomalies. For example, the data contained an E-1 who received a base pay for February in the sum of \$7,406 whereas the maximum monthly basic pay for an E-1 on the 2005 pay scale is \$1235.10. In addition, several members did not have data recorded for basic pay, BAH or FSA. There are several plausible reasons for these anomalies. It is not uncommon for underpayments and overpayments to occur often by error and by request for advanced pay. Data may be absent if the service member had just enlisted or promoted to the next paygrade and as such, entries have not occurred before the data was collected for this project.

Members who had data missing were removed from the study. Next, the data were compared to 2005 basic pay chart (Table 1). All data that were outside the maximum and minimum of the 2005 basic pay chart were removed. The same procedure was done for basic allowance for housing using the 2005 single and married BAH charts (Table 2).

	E1	E2	E3	E4	E5	E6	E7	E8	E9	
Minimum	1235	1385	1456	1613	1760	1920	2220	3194	3901	
Maximum	1235	1385	1641	1958	2422	2908	3990	4465	5232	
	W2	W3	W4	W5						
Minimum	2594	2948	3229	5548						
Maximum	3660	4247	5636	6121						
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
Minimum	2344	2670	3125	3554	4119	4941	6666	8022	11338	12963
Maximum	3661	4327	5425	5934	6998	8576	9764	11008	12149	13769

Table 1. 2005 Maximum and Minimum Basic Pay

	E1	E2	E3	E4	E5	E6	E7	E8	E9
Minimum	413	413	413	413	475	501	542	599	626
Maximum	1667	1667	1667	1667	1873	1998	2193	2560	2578
	W2	W3	W4	W5					
Minimum	599	628	676	707					
Maximum	2560	2580	2675	2848					
	O1	O2	O3	O4	O5	O6	O7		
Minimum	495	567	567	703	724	576	771		
Maximum	2548	2574	2656	2821	2949	3145	3208		

Table 2. 2005 Maximum and Minimum BAH, Without Dependents

	E1	E2	E3	E4	E5	E6	E7	E8	E9
Minimum	612	612	612	612	582	668	700	735	778
Maximum	2167	2167	2167	2167	2548	2656	2801	3013	3173
	W2	W3	W4	W5					
Minimum	714	756	786	820					
Maximum	2888	3145	3184	3229					
	O1	O2	O3	O4	O5	O6	O7		
Minimum	592	666	755	835	891	898	908		
Maximum	2843	3106	3191	2555	2649	3135	3441		

Table 3. 2005 Maximum and Minimum BAH, With Dependents

The majority of the anomalies found occurred among the entry level enlisted paygrades. After removing the anomalies, the data were arranged by paygrade and dependency status (single, single with dependents and married). For any given paygrade, no more than 9 percent of the original population was removed (Table 4). Of the 313,190 enlisted personnel in the original population, 10,635 were removed. Overall, 97 percent of enlisted personnel data were used for evaluation. Among the officer data, 53,198 of the original 53,712 officers, 99 percent, were included in the study.

	E1	E2	E3	E4	E5	E6	E7	E8	E9	
Original population	13,111	19,377	57,360	60,165	74,350	55,190	23,760	6,809	3,068	
Number Removed	1,158	692	5,170	2,028	842	511	201	21	12	
Revised Population	11,953	18,685	52,190	58,137	73,508	54,679	23,559	6,788	3,056	
Percent Evaluated	91	96	91	97	99	99	99	100	100	
	W2	W3		W4			W5			
Original population		709			602		306		24	
Number Removed		17			3		3		0	
Revised Population		692			599		303		24	
Percent Evaluated		98			100		99		100	
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
Original population	6,356	7,052	17,640	10,383	6,967	3,455	108	70	31	9
Number Removed	116	86	154	73	41	18	2	0	1	0
Revised Population	6,240	6,966	17,486	10,310	6,926	3,437	106	70	30	9
Percent Evaluated	98	99	99	99	99	99	98	100	97	100

Table 4. Comparison of Original Population Before and After Removing Anomalies

Information addressing the value of medical benefits received by active duty service members, spouses and dependents was obtained from a research article prepared by the Center for Naval Analyses (Reed and Jebo, 2000). The Center for Naval Analyses (CNA) is a federally funded research and development center that provides analytic support to Navy and Marine Corps. The article, "The Evolution of the Military Health Care System: Changes in Public Law and DOD Regulations," identified four medical beneficiary groups: active duty members, active duty dependents, retirees and dependents below age 65 and retirees and dependents above age 65. For each group, the article provides information concerning the allocation of military healthcare resources (Figure 2). In addition, the average cost per beneficiary group was calculated (Figure 3). Given that the CNA study was conducted in 2000, an adjustment was necessary to convert the average costs of military healthcare into 2005 values (Figure 4). The average monthly compensation received for BAH, FSA, basic pay and medical coverage was then determined for single, single with dependents, and married personnel. The average monthly compensation for single with dependents and married personnel were then compared with the monthly compensation for single members to determine the percent of increased compensation resulting from marriage premium and dependency status.

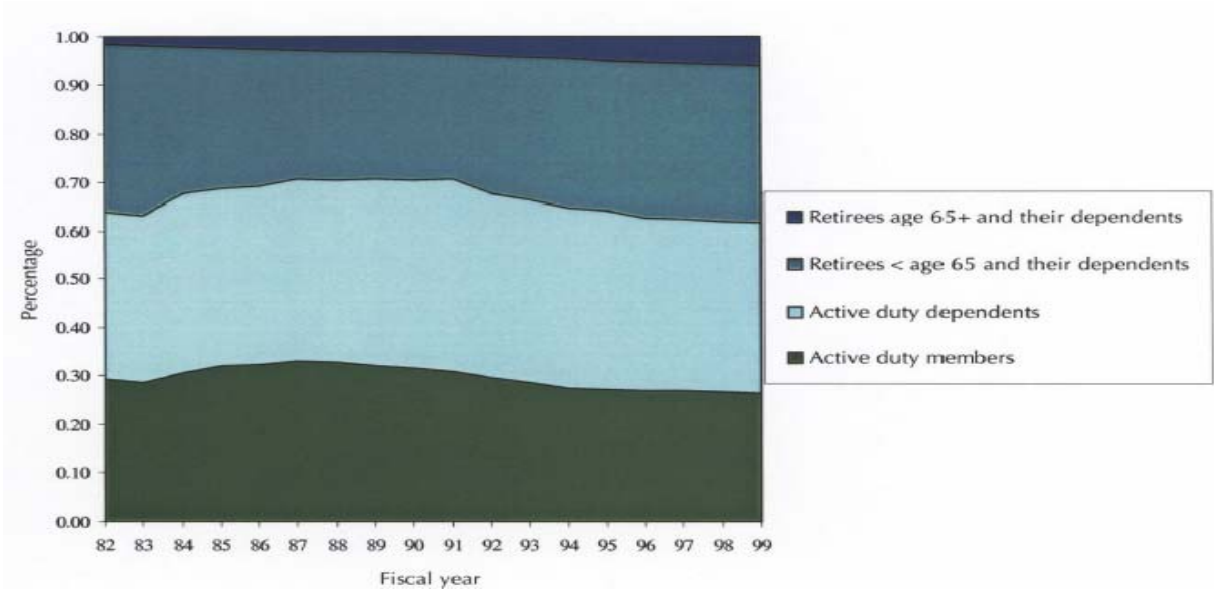


Figure 2. Distribution of Military Healthcare Resources by Beneficiary Group

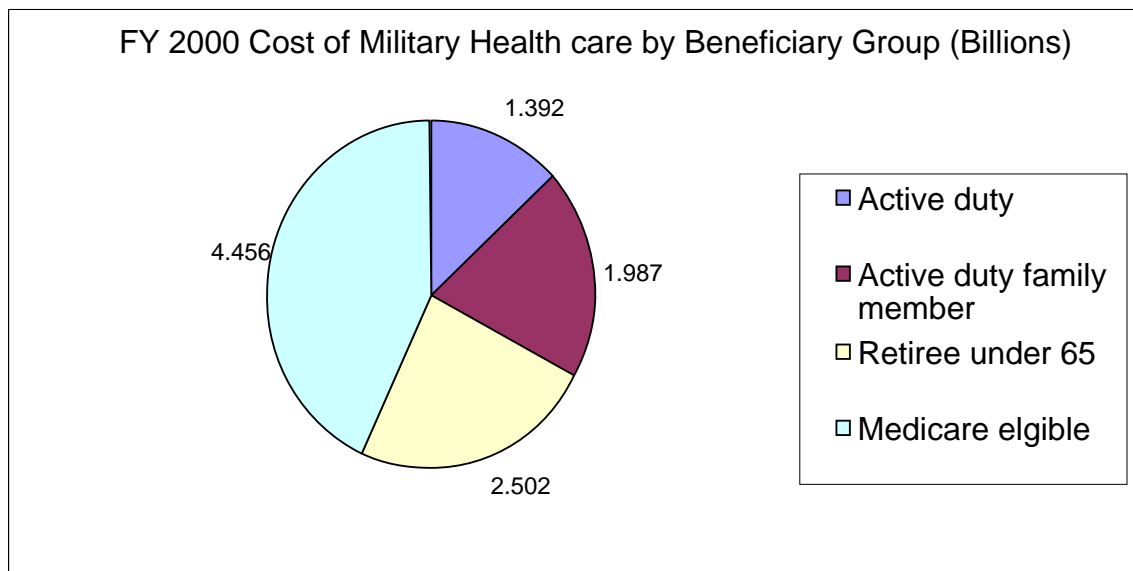


Figure 3. FY 2000 Cost of Military Healthcare by Beneficiary Group

The data were also examined to identify how the population was distributed among the three groups. Among the 321,498 enlisted personnel evaluated, 49 percent were married, 45 percent were single without dependents and 6 percent were single with

dependents (Figure 5). The 53,198 officers had 68 percent married, 23 percent single without dependents and 9 percent single with dependents (Figure 6). Both enlisted and officer marriage and dependency status by paygrade show interesting trends (Table 5).

For paygrades E-1 to E-4, the majority of personnel are single with no dependents (Table 5). E-5 is the point at which married personnel become the majority and this percent continues to increase through the remainder of the enlisted paygrades and throughout the warrant officer paygrades. In contrast, officers had only one paygrade, O-1, in which single personnel were the plurality. By O-2, married personnel become the majority. By O-3, the number of married personnel is nearly three times as large as the number of single. From O-6 to O-10, the percent of married personnel rises from 90 percent to 100 percent.

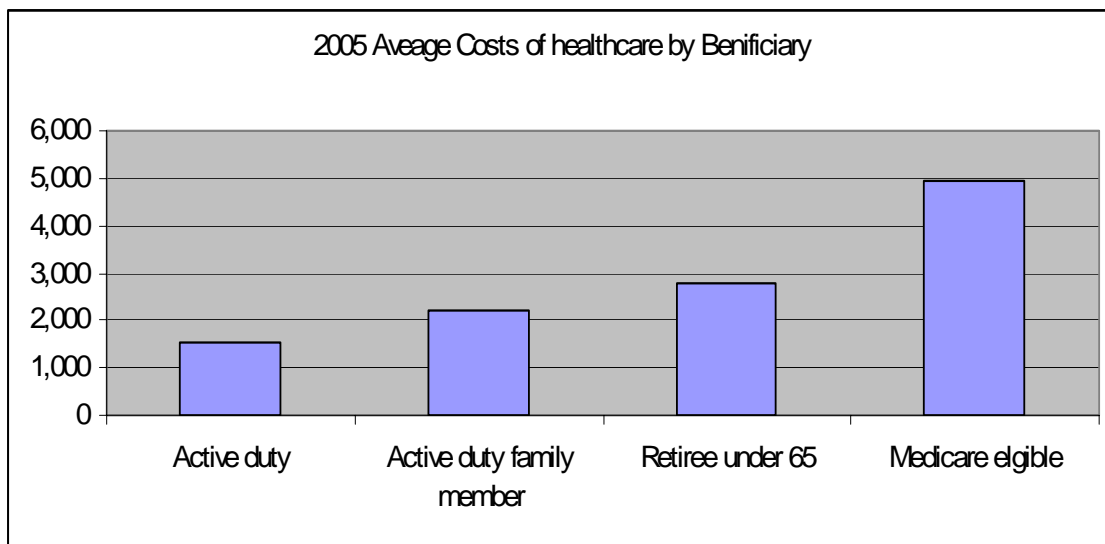


Figure 4. 2005 Average Costs of Healthcare by Beneficiary

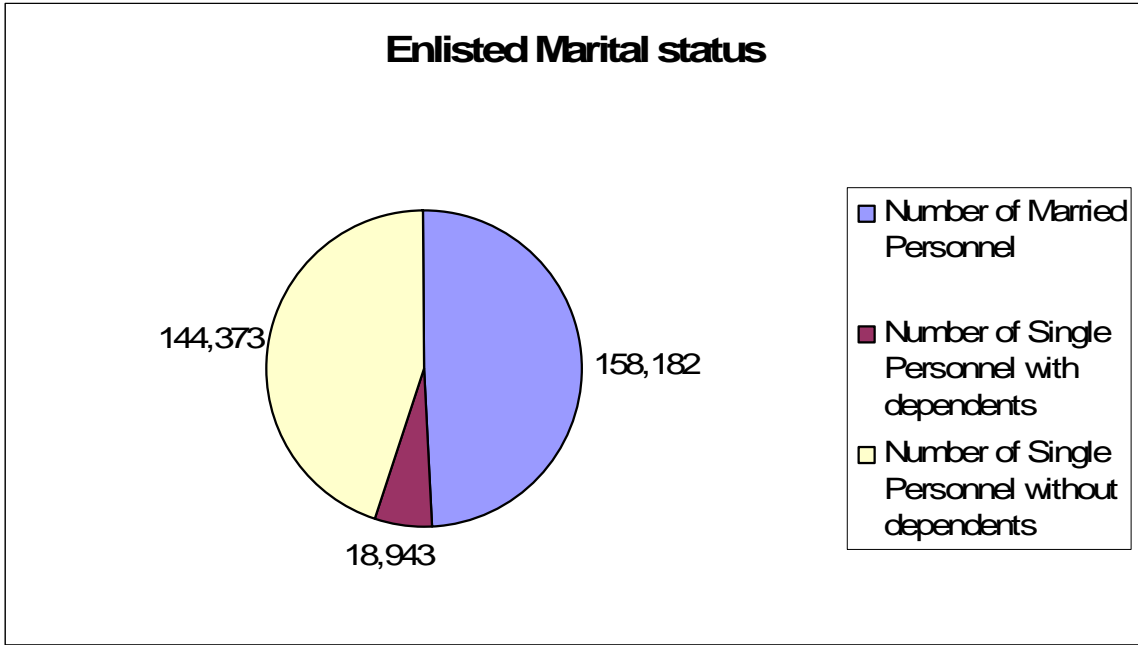


Figure 5. Enlisted Marital Status

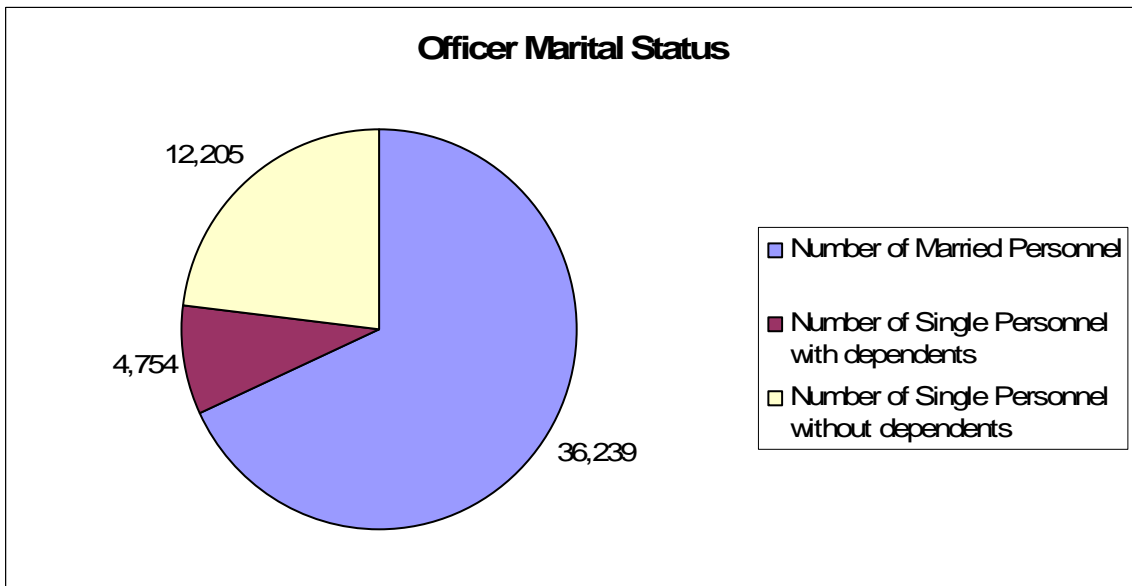


Figure 6. Officer Marital Status

	E1	E2	E3	E4	E5	E6	E7	E8	E9	
Married	1,148 (10%)	2,591 (14%)	16,167 (27%)	24,445 (42%)	42,506 (58%)	42,359 (77%)	20,210 (86%)	6,000 (88%)	2,756 (90%)	
Single with dependents	336 (03%)	565 (03%)	2,300 (04%)	3,256 (06%)	5,693 (08%)	4,486 (08%)	1,698 (07%)	448 (07%)	161 (05%)	
Single, no dependents	10,469 (87%)	15,529 (83%)	41,463 (69%)	30,436 (52%)	25,309 (34%)	7,834 (14%)	1,651 (07%)	340 (05%)	139 (05%)	
	W2	W3	W4	W5						
Married	503 (73%)	486 (81%)	269 (89%)	23 (96%)						
Single w/ dependents	136 (20%)	90 (15%)	17 (06%)	0 (0%)						
Single, no dependents	53 (07%)	23 (04%)	17 (56%)	1 (04%)						
	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
Married	2,017 (32%)	3,291 (47%)	11,710 (67%)	8,577 (83%)	6,101 (88%)	3,061 (89%)	98 (92%)	65 (93%)	29 (96%)	9 (100%)
Single with dependents	1,205 (19%)	818 (12%)	1,670 (10%)	465 (05%)	237 (03%)	114 (03%)	2 (02%)	0 (0%)	0 (0%)	0 (0%)
Single, no dependents	3,018 (48%)	2,857 (41%)	4,106 (23%)	1,268 (12%)	588 (08%)	262 (08%)	6 (06%)	5 (07%)	1 (03%)	0 (0%)

Table 5. Enlisted and Officer Marriage and Dependency Status by Paygrade

The calculations for this project were set to determine the changes in compensation due solely to marriage or having a dependent. As such, when determining the additional medical cost of having a spouse or child, the increase in medical compensation was increased only by \$2213 (the average cost of healthcare for an active duty family member). However, married couples are likely to have children and a single person with dependents may have more than one dependent. It would be beneficial to know the average number of dependents for single and married personnel (Figures 7 & 8). The average number of dependents for single enlisted members is near zero for E-1 and increases to one for paygrades E8 and E9. The number of non-spouse dependents for officers remains fairly constant, about 0.5, from O-1 to O-7.

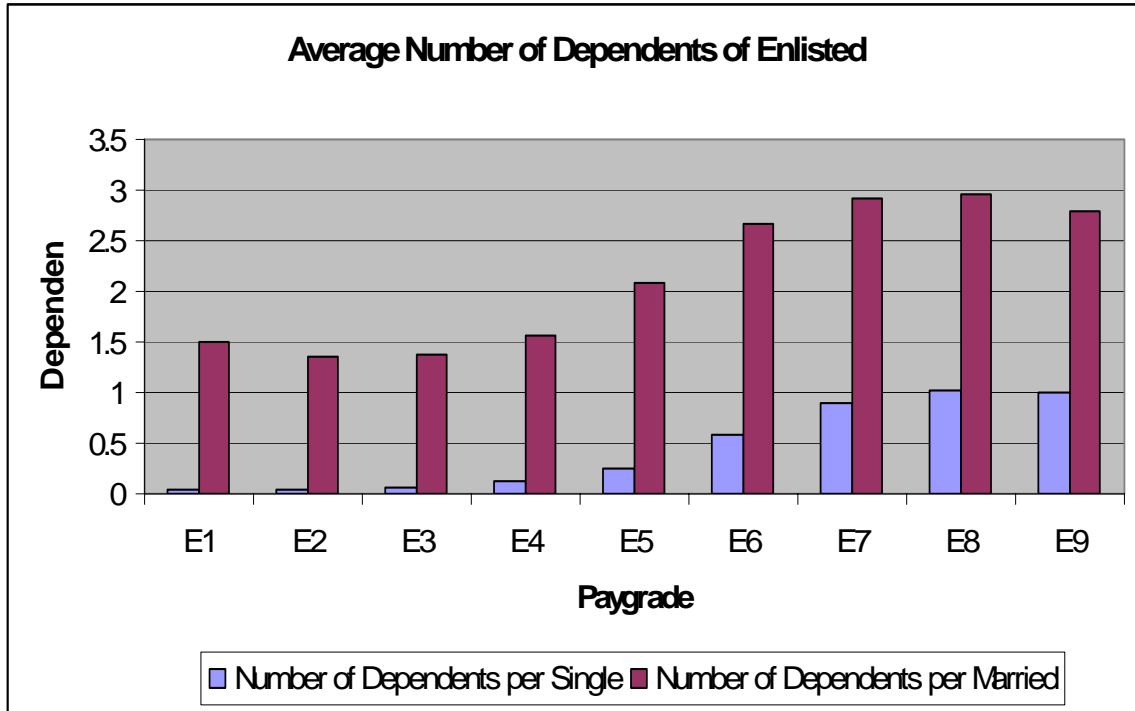


Figure 7. Average Number of Dependents of Enlisted

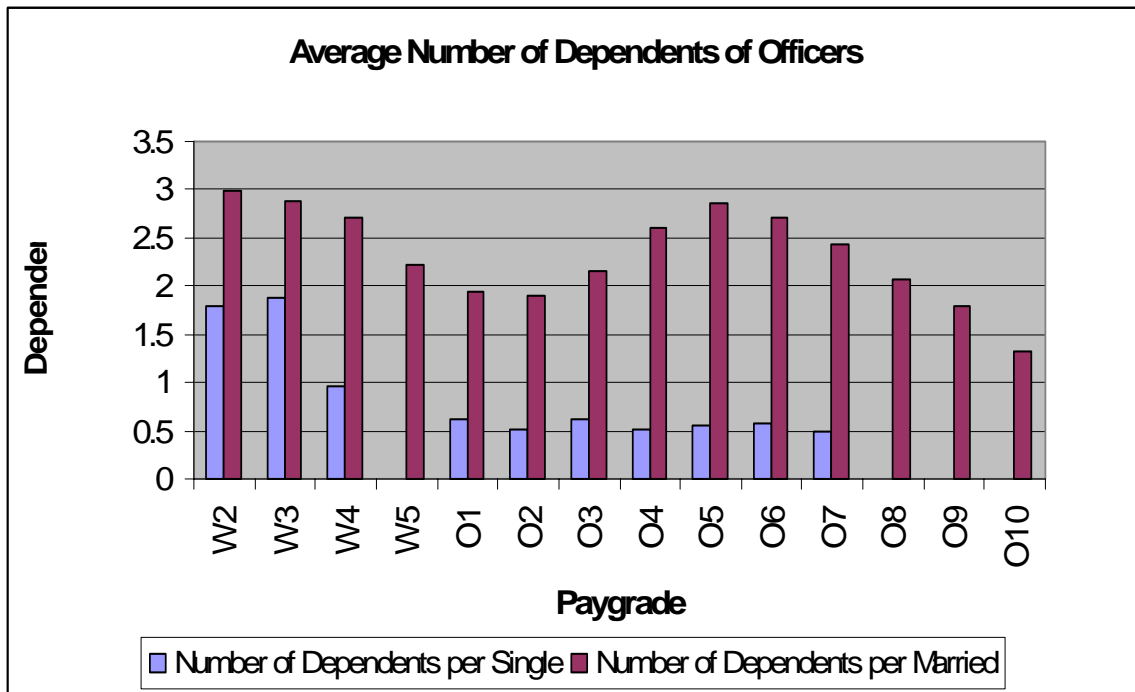


Figure 8. Average Number of Dependents of Officers

V. RESULTS

Determining the average basic pay for both officers and enlisted has yielded expected results (Figures 9 & 10). As one progresses from a lower rank to higher, the pay increases as well. As mentioned previously, basic pay is influenced only by rank and years of service. Although not influenced by dependents or marital status, basic pay was used in the calculation of total compensation received for each of the three categories (married, single and single with dependents). Furthermore, the average basic pay will be used to compare the gain in pay from entering marriage or claiming a dependent with the gains from promoting to the next higher paygrade.

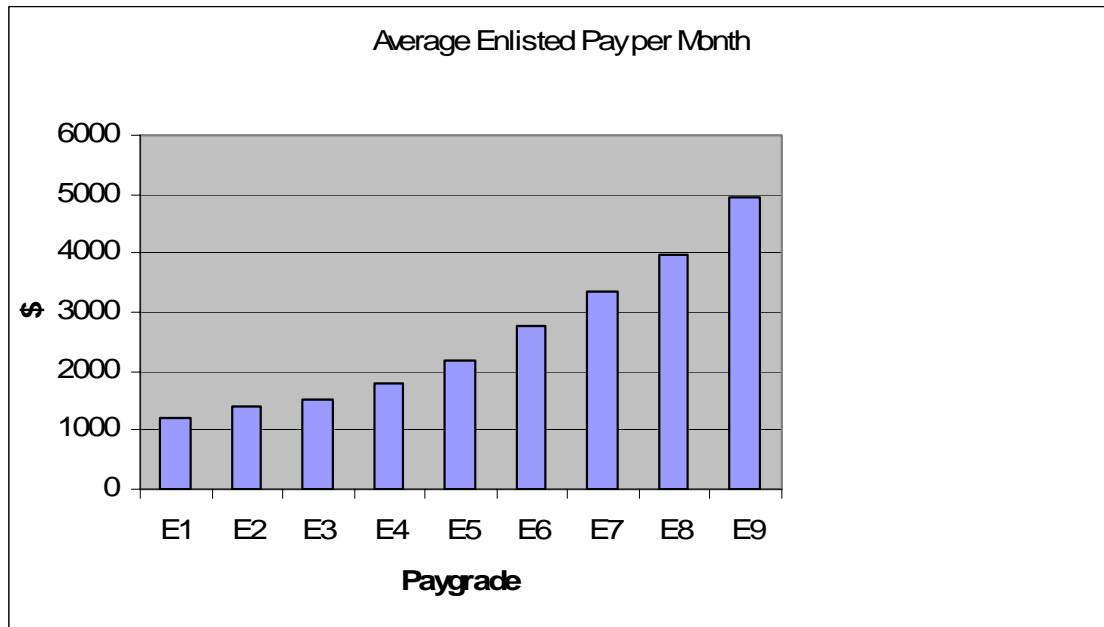


Figure 9. Average Enlisted Pay Per Month

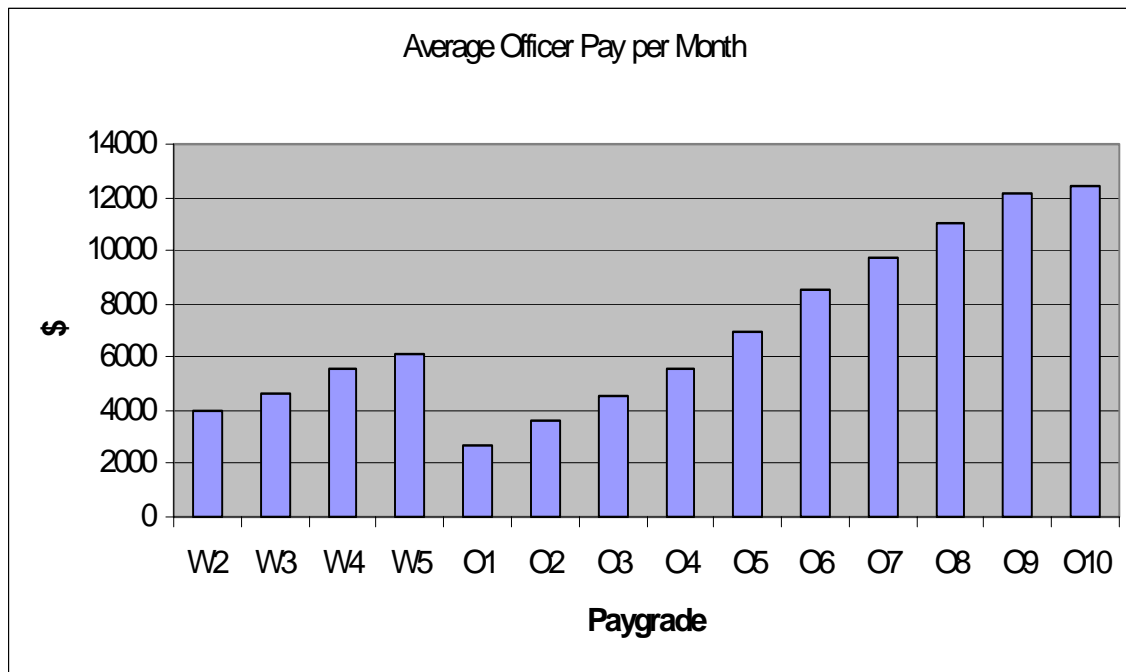


Figure 10. Average Officer Pay Per Month

The Total BAH paid to each group, which is affected by paygrade, location and marriage/dependency, is shown in tables 6 through 8. With the exception of the E-6 paygrade, the total amount of BAH paid to married enlisted personnel exceeds the amount paid to single or single with dependents. This observation would be expected considering that all Navy personnel from E-1 to E-4 are typically required to live in government provided quarters unless they are married. Officers, however, have the option to reside in off-base housing regardless of paygrade. As such, one would expect the BAH expenditure for single and married officers to be similar. Surprisingly, this trend was not observed. The only paygrades with similar BAH expenditures were W-5, O-1 and O-2. One possible reason for this observation is that by O-3, married personnel account for 67 percent of their paygrade. This level rises to 67 percent for O-4 and continues to rise to 100 percent for O-10. With married service members being a considerable majority within these paygrades, they should correspondingly account for the majority of expenditures.

	E1	E2	E3	E4	E5	E6	E7	E8	E9
Total Married	770507	2329177	15073666	21621960	39290151	4647810	24086142	7786435	3907920
Total Single with dependants	14140	105140	1142841	2379628	5301199	4785889	1969182	564750	208717
Total Single	191222	590144	3985322	10053440	20486857	7223960	1678598	400209	162646

Table 6. Total BAH Paid to Each Paygrade (Enlisted)

	W2	W3	W4	W5
Total Married	627464	381470	35962	2163141
Total Single with dependants	126655	23430	0	1195278
Total Single	27469	22718	876	2743550

Table 7. Total BAH Paid to Each Paygrade (Warrant Officers)

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
Total Married	2163141	4011085	15918643	13213798	10288220	5239108	101881	73349	29479	2442
Total Single with dependants	1195278	961169	2171676	682461	392231	199120	4766	0	4884	0
Total Single	2743550	3100262	5032381	1756032	867872	401347	9383	7326	0	0

Table 8. Total BAH Paid to Each Paygrade (Officers)

Another way to consider the expenditures for BAH would be the average amount of BAH spent on an individual service member for any given paygrade. The trend among individual enlisted service members average BAH remains fairly constant throughout each paygrade (Figure 11). Married service members received, on average, the highest BAH followed by single members with dependents and single service members receiving the least. The only observed exception was E-5 where single personnel with dependents received a slightly higher BAH than married. However, the paygrades for which the differences in compensation between each group are greatest were E-1 to E-4. As mentioned earlier, this is likely due to the common command policy of not allowing single junior enlisted to live in private quarters. As such, averaging the total BAH spent on a junior enlisted paygrade allocates the BAH paid to a few members over a large

population that does not receive BAH. This results in an average single BAH that is far less than the average married BAH. For similar reasons, the average BAH paid to single enlisted with dependents is also far lower than for married junior enlisted. Despite having a dependent, these personnel are not likely to live off-base and are likely to be entitled only to a partial BAH. Thus, a more accurate measure of the average BAH gains realized from marriage would likely be from paygrades E-5 and up, since these enlisted personnel typically have the option to choose private quarters (Figure 12). The average increase from a single BAH to Married BAH ranges from 10 to 21 percent. The average increase in BAH from claiming dependents ranges from 7 to 16 percent.

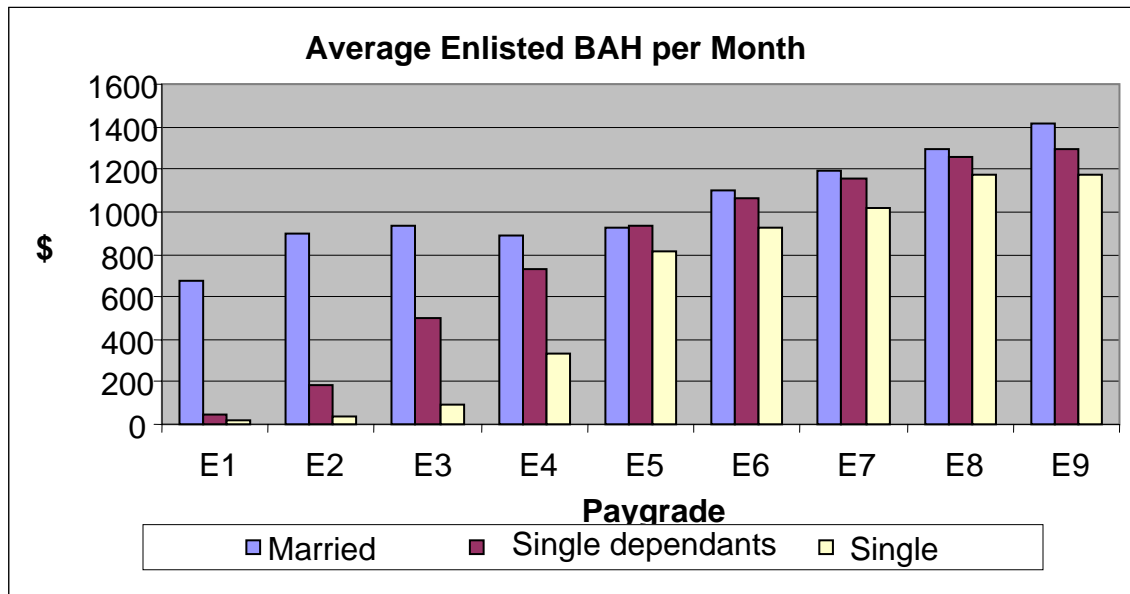


Figure 11. Average Enlisted BAH Per Month

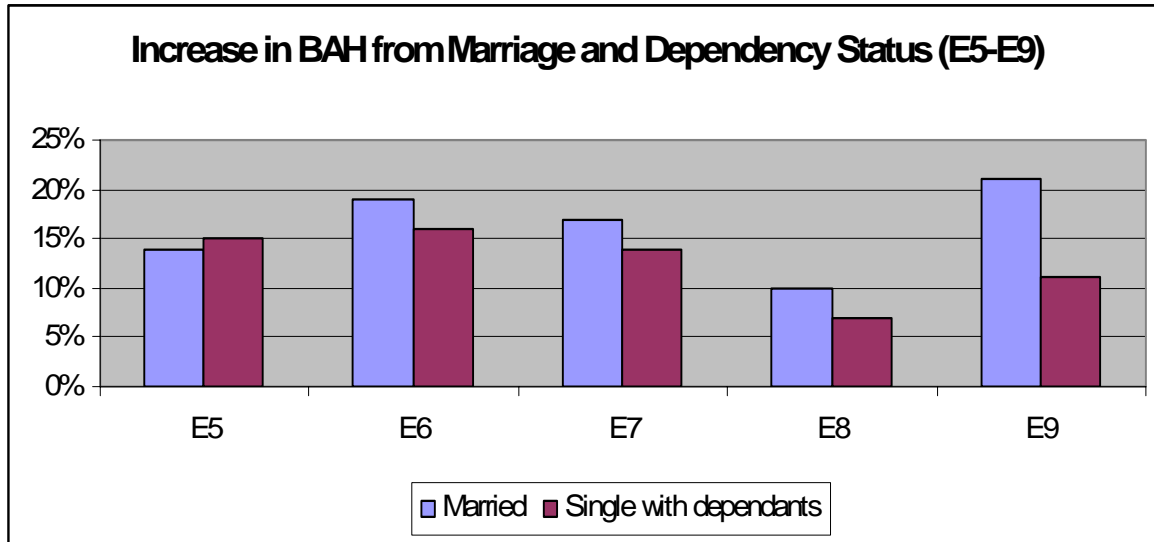


Figure 12. Increase in BAH from Marriage and Dependency Status (E5-E9)

Similar to the trends in enlisted BAH for paygrades E-5 through E-9, the average officer BAH differences remain constant from O-1 through O-6 (Figure 13). The accuracy of the average BAH for all warrant officers (W-2 through W-5) and Admirals (O-7 through O10) is questionable because the population is small. In addition, these paygrades also have an extremely high proportion of married personnel. As such, the individual increase in BAH due to marriage or claiming a dependent would be best represented by evaluating the BAH differences from O-1 through O-6. A single officer who weds can expect an 11 to 18 percent increase in BAH. An officer who claims a dependent can expect an increase of 6 to 14 percent increase in BAH.

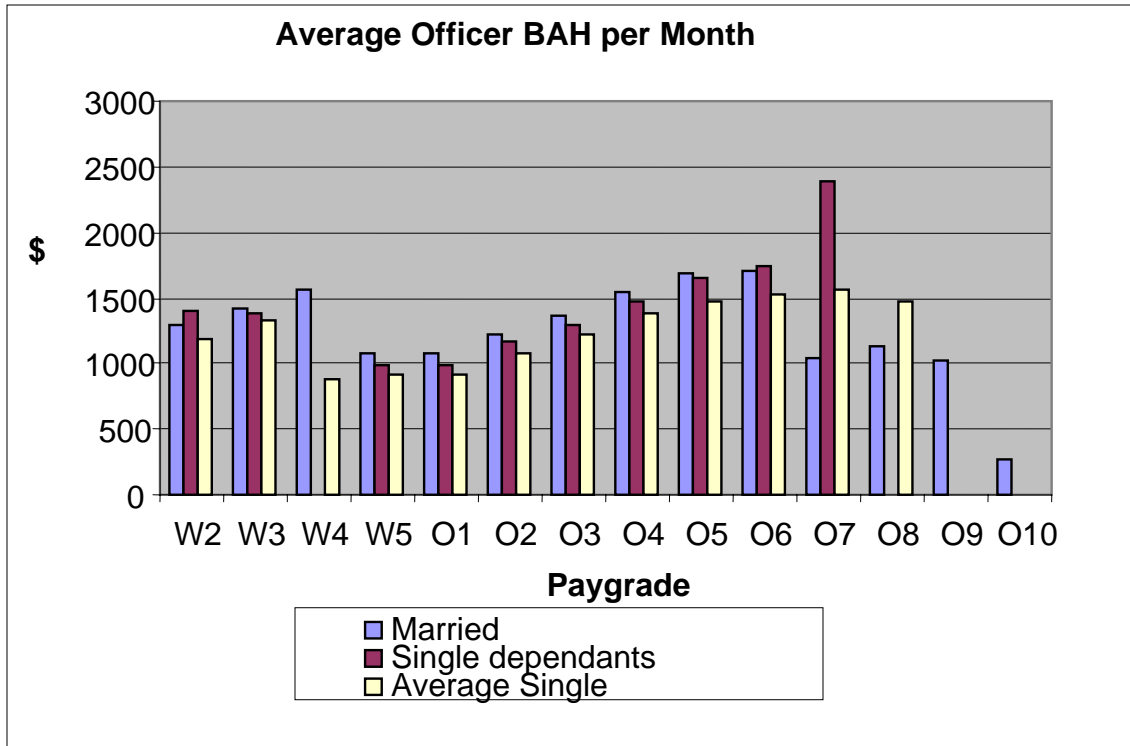


Figure 13. Average Officer BAH Per Month

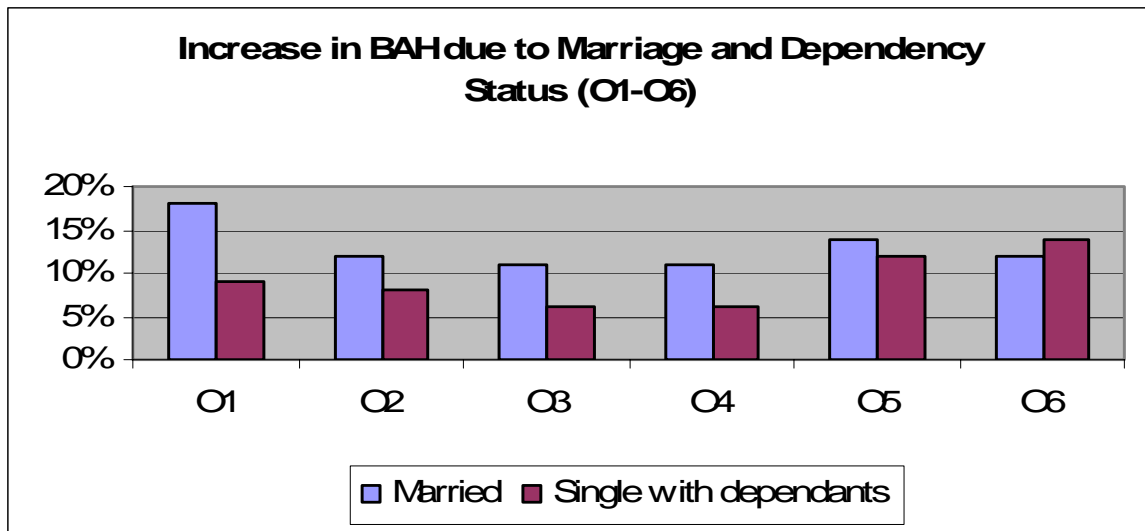


Figure 14. Increase in BAH due to Marriage and Dependency Status (O1-O6)

The compensation received through Family Separation Allowance is not as large as BAH or medical, nor is it a regular monthly pay. Nonetheless, a considerable amount of funds is spent each month for FSA. During February 2005, the Navy paid \$7,394,974 in Family Separation Allowance. This is also important since the vast majority of this pay is received primarily by married personnel and members with dependents (Figure 15). The average E-1 FSA was \$66 (married), \$1.50 (single with dependents) and \$0.50 (single). Progressing from paygrades E-1 through E-9, the average FSA decreases for married personnel and increases for single personnel with dependents. However, the average FSA for single personnel stays relatively constant from E-1 through E-9. Determining the average officer FSA resulted in similar problems as seen when determining the average BAH. The small number of warrant officers and admirals and the homogeneously married population create problematic results (Figure 16). For paygrades O-1 through O-6, the differences in average FSA among married, single with children and single members follows the similar pattern as seen with enlisted FSA.

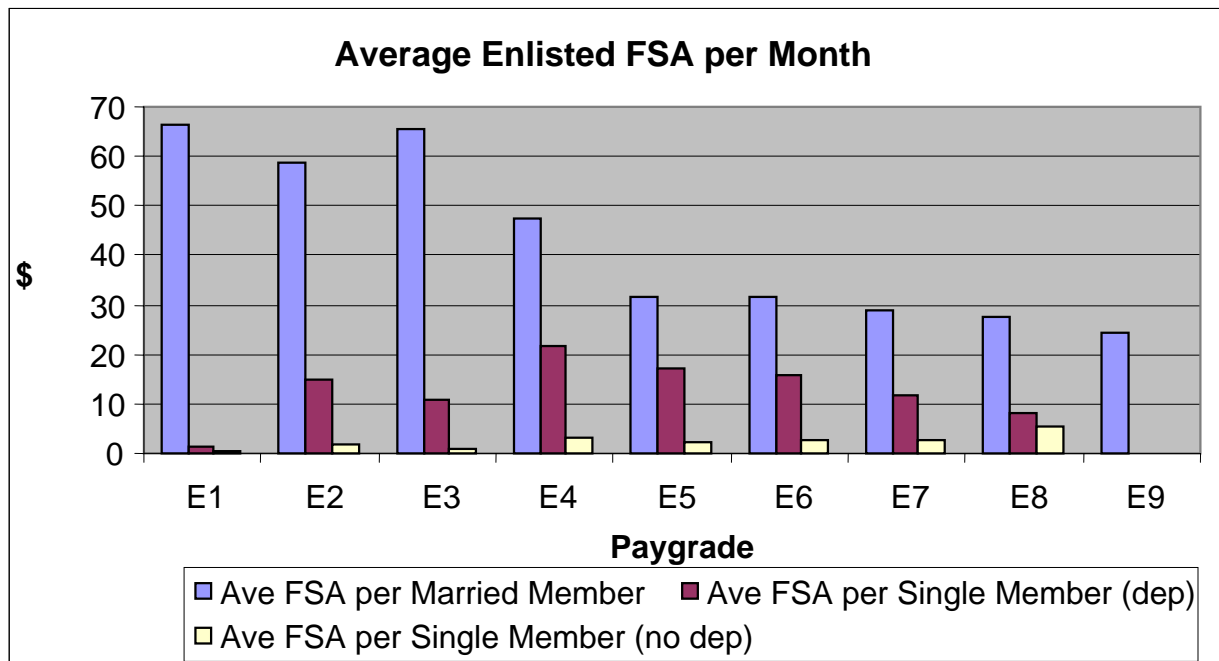


Figure 15. Average Enlisted FSA Per Month

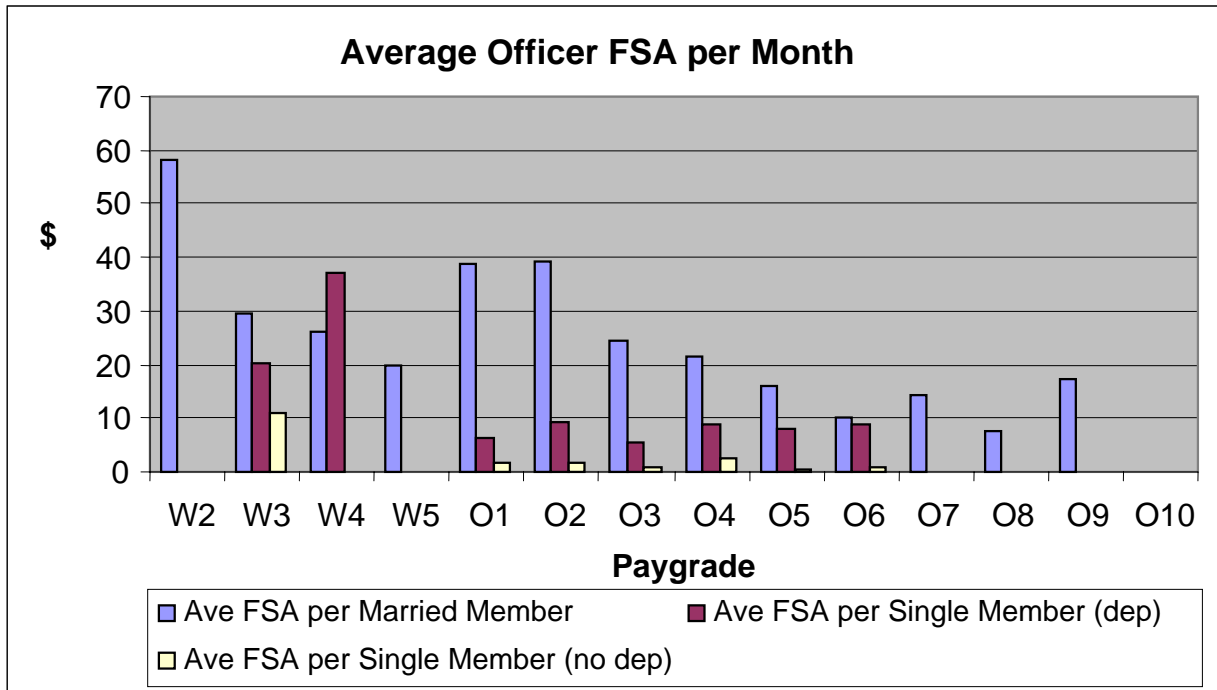


Figure 16. Average Officer FSA Per Month

The average increases in BAH, FSA and medical compensation were combined with the average base pay to determine the realized premium from marriage or claiming a dependent (Figures 17 & 18). Analyzing, the data for enlisted premium from E-5 to E-9 reveals a marriage premium ranging from 7 to 10 percent. The enlisted premium realized by claiming dependents ranges from 5 to 10 percent. The premiums among naval officers are slightly lower than for enlisted personnel. From O-1 to O-6, the premium from marriage is between 4 and 7 percent. In addition, the dependency premium for officers ranges between 4 and 9 percent.

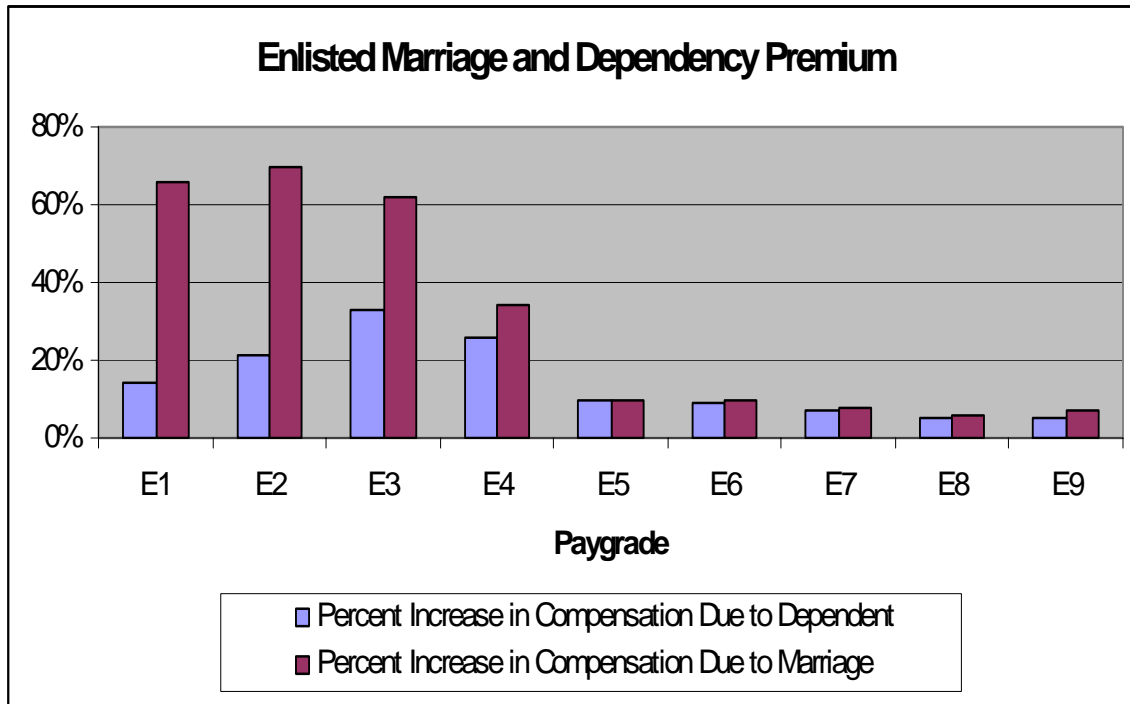


Figure 17. Enlisted Marriage and Dependency Premium

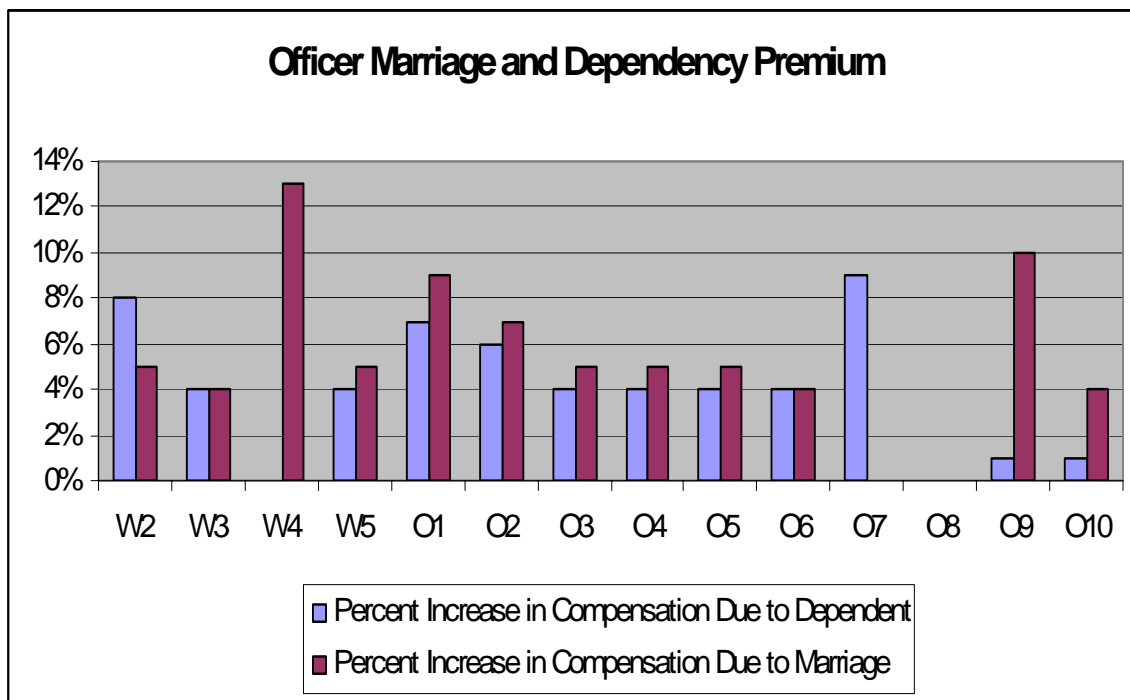


Figure 18. Officer Marriage and Dependency Premium

Out of curiosity, the gains from the marriage premium were compared to the gains from promoting to the next higher paygrade (Figures 19 & 20). Excluding E-1 through E-4, the gains from promotion to the next higher paygrade exceed the premium from marriage. Quite surprisingly, the gains from promoting were at least 50% greater than the gains from marriage. Among officers, from O-1 to O-6, the gains from promotion were immense. Promoting produces gains that were at least 2.5 times as great as the marriage premium.

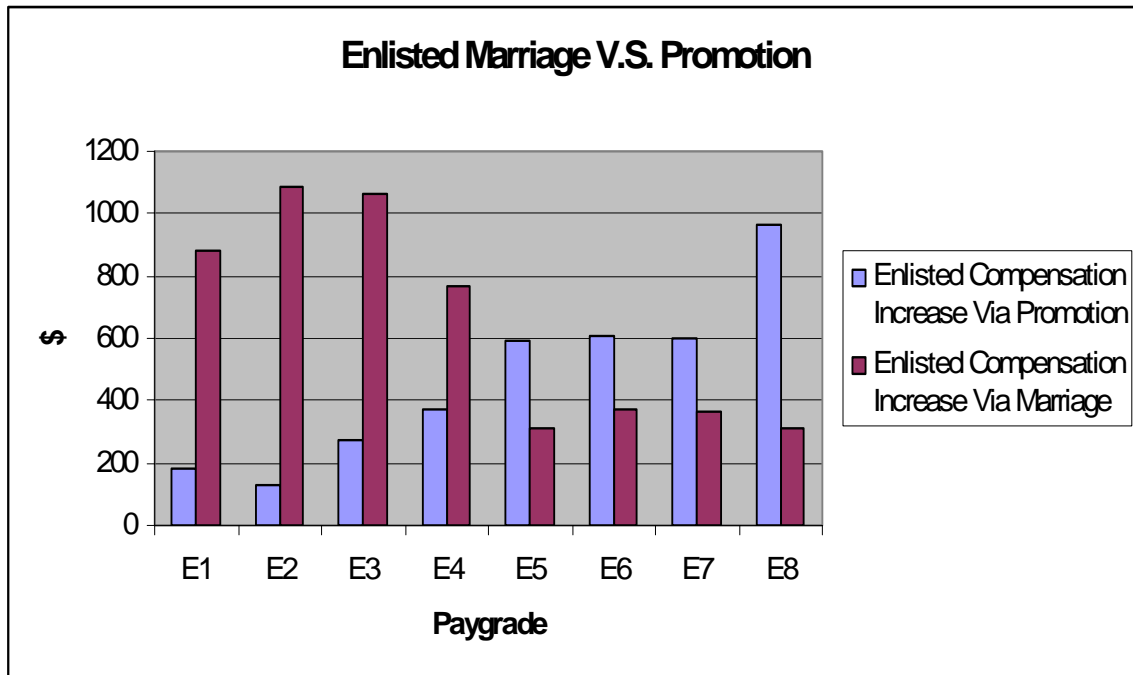


Figure 19. Enlisted vs. Promotion

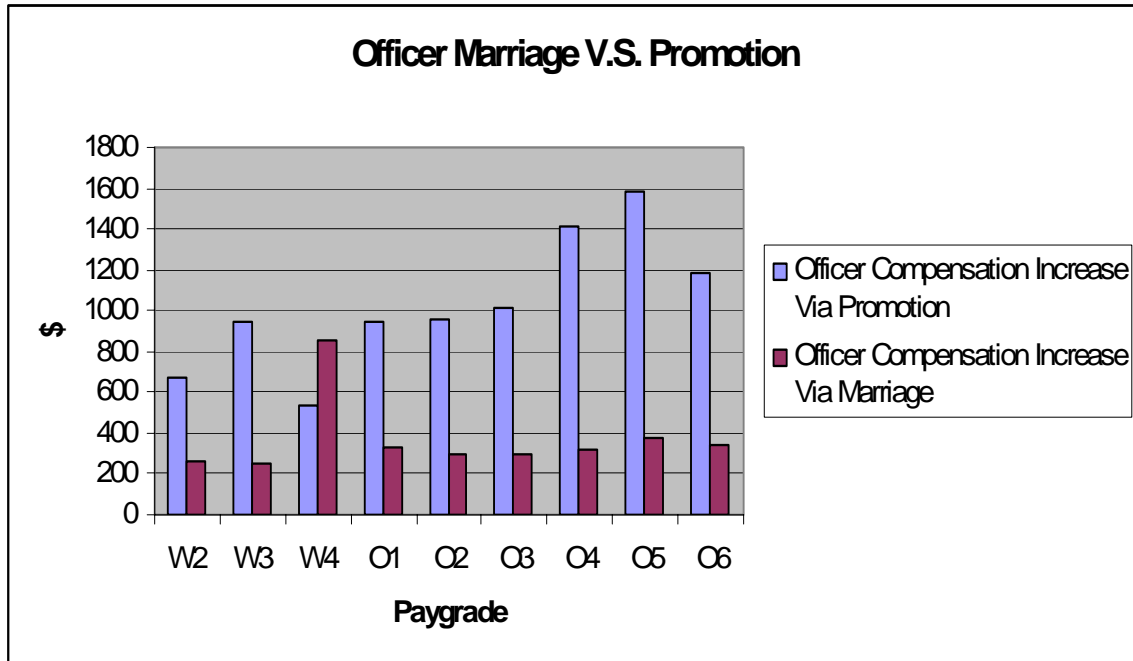


Figure 20. Officer Marriage vs. Promotion

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VI. CONCLUSION

There are two ways to view the marriage and dependency premium: the total cost to the government and the individual's perceived benefits. The cost of the marriage premium to the government can easily be ascertained by multiplying the average gains from marriage and the number of personnel. This produced a total marriage premium cost of \$94,383,395 per month. The original purpose of this study was to find how much the Navy spends toward the marriage premium. However, it quickly became apparent that the Military also pays a similar dependency premium. Using the same method, the total cost of the single with dependents premium was found to be \$9,032,590 per month. These cost to the Navy are solely based on the differences in BAH, FSA and medical coverage. In addition, the estimated cost of additional medical coverage was conservative. Each married sailor or single sailor claiming a dependent was considered to have only one dependent. However, a married couple is likely to have one or more children, which would further increase the cost of additional medical coverage. These estimates are from the Navy's perspective: the additional funds allocated to married and single sailors with dependents. For ranks of E-5 and above and for all officer ranks, both the marriage and dependency premium range between 4 and 10 percent. The marriage premium within the Navy is quite small compared to estimates of the civilian labor market marriage premium ranging between 10 to 40 percent.

A sailor would find additional benefits beyond the increases in BAH, FSA and medical coverage. For example, a junior enlisted sailor might find value not just in the increased BAH entitlement. If he is restricted to living on a ship unless married, he would realize an additional value of marriage by having the option to reside in private housing. Unfortunately, this value would depend on the individual sailor and is harder to quantify. Additionally this study compared the earnings of Navy personnel within each individual paygrade. As such, this study does not capture any portion of the marriage

premium that might occur via a faster rate of promotion. However, a married couple in the Navy might not view the additional pay as an advantage but rather compensation for frequent relocations which would limit the spouses earning opportunity.

VII. RECOMMENDATIONS FOR FURTHER STUDY

Several additional studies on the marriage premium within the Department of Defense can be conducted. It would be interesting to compare the magnitude of the marriage premium within the Navy with other military branches. In addition, one could compare the compensation policies of other militaries with focus on the marriage premium. One could also measure the indirect costs of the marriage premium such as Military Welfare and Recreation services, family services, childcare, education and other benefits primarily used by spouses and dependents. Finally, a study could be conducted to assess possible measures to minimize the marriage premium and the possible effects.

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LIST OF REFERENCES

- Anonymous. (1994). Marriage and deployment: No problem, DoD says. *Marine Corps Gazette*, 78(2), 6.
- Anonymous. (2004). The wages of marriage. *The Atlantic Monthly*, 294(4), 58.
- Audry Light. (2003). *Gender differences in the marriage and cohabitation income premium*. The Ohio State University
- Charles J. Whalen. (2001). Why married men earn more; A new study says it solves the puzzle. *Buisness Week*, (3749), 36.
- Cornwell, Christopher, Rupert, & Peter. (1995). Marriage and earnings. *Economic Review - Federal Reserve Bank of Cleveland*, 31(4), 10.
- Donna Ginther, & Madeline Zavodny. (1998). *Is the male marriage premium due to selection? The effect of shotgun weddings on the return to marriage* No. 97-5a). Atlanta Georgia: Federal Reserve Bank of Atlanta.
- Eng Seng Loh. (1996). Productivity differences and the marriage wage premium for white males. *The Journal of Human Resources*, 31(3), 566-589.
- Hersch, J., & Stratton, L. S. (2000). Household specialization and the male marriage wage premium. *Industrial & Labor Relations Review*, 54(1), 78.
- Hyunbae Chun, & Injae Lee. (2001). Why do married men earn more: Productivity or marriage selection. *Economic Inquiry*, 39(2), 307-319.
- Korenman, Sanders, Neumark, & David. (1991). Does marriage really make men more productive? *The Journal of Human Resources*, 26(2), 282.
- Linda J. White. (1996). Social science finds: "marriage matters". *The Responsive Community*, 6(3)
- Loh, & Seng, E. (1996). Productivity differences and the marriage wage premium for white males. *The Journal of Human Resources*, 31(3), 566.
- Morin, R. (2001, Nov 11). Shotgun wedding magic. *The Washington Post*, pp. B.05.
- Neumark, David, Korenman, & Sanders. (1994). Sources of bias in women's wage equations: Results using sibling data. *The Journal of Human Resources*, 29(2), 379.
- Pete Long. (1999). Can the corps afford first-term marriages? *Proceedings*, 125(11), 52-54.

Varian, H. R. (2004, Jul 29). Ask not what you can do for marriage; ask what marriage can do for your bottom line. *New York Times*, pp. C.2.

Whalen, C. J. (2001). Why married men earn more. *Business Week*, (3749), 36.

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