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**The Effect of Deployment Frequencies of the Military Divorce
Rate**

21 March 2011

by

Lt. Stacy J. Arenstein, USN

Advisors: Dr. Yu-Chu Shen, Assistant Professor,
Dr. Elda Pema, Assistant Professor, and
Philip Candreva, Senior Lecturer
Graduate School of Business & Public Policy

Naval Postgraduate School

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Prepared for: Naval Postgraduate School, Monterey, California 93943



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ABSTRACT

The primary goal of this research is to investigate whether the length and frequency of deployments affect the likelihood of divorce. The study uses data from the Contingency Tracking System (CTS) and the Active Duty Military Personnel file. The sample includes all active duty Navy and Marine Corps members from 2000 to 2009. Three models of divorce are estimated, each with a different control for the stress of deployment on the family: length of deployment, number of deployments, and a combination of both. The results suggest that in the general active duty population, the frequency of deployments instead of the length of deployments induces the greatest level of marital conflict.

In addition to investigating the divorce effects for the entire population of Navy and Marine Corps personnel, the study also focuses attention on a selected sample of individuals with complete marital and deployment histories—this group tends to be younger and at the early stage of marriage. For this group, the number of days deployed was a positive and significant predictor of divorce rates for both Navy and Marine Corps enlistees. Additionally, the study shows that the length of the deployment also induced a significant amount of marital conflict.



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LIST OF ACRONYMS AND ABBREVIATIONS

AF	Afghanistan
AFQT	Armed Forces Qualification Test
BAH	Basic Allowance for Housing
CNA	Center for Naval Analysis
CTS	Contingency Tracking System
DEERS	Defense Eligibility Enrollment Reporting System
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DoN	Department of the Navy
EDIPN	Unique Scrambled ID
EOD	Explosive Ordnance Disposal
FAO	Foreign Area Officer
FSA	Family Separation Allowance
FY	Fiscal Year
GWOT	Global War on Terror
HFP	Hostile Fire Pay
HR	Human Relations
IDP	Imminent Danger Pay
IZ	Iraq
JAG	Judge Advocate General
Metlife	Metropolitan Life Insurance Company
MidE	Middle East
MOS	Military Occupational Specialty
NCS	National Comorbidity Survey
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OPTEMPO	Operational Tempo
PAO	Public Affairs Officer
PDA	Personal Digital Assistant



PTSD	Post-Traumatic Stress Disorder
RDT&E	Research, Development, Testing, and Evaluation
ROI	Return On investment
R&R	Rest and Relaxation
SpecOps	Special Operation
SpecWar	Special Warfare
SUB	Submariner
SWO	Surface Warfare Officer
UIC	Unit Identifying Codes
USN	United States Navy



I. INTRODUCTION

A. PURPOSE

The welfare of the military family has a direct effect on the military member's ability to perform his or her job. Presidential Study Directive 9 is dedicated to improving the life of the military family. President Obama stated, "With millions of military spouses, parents and children sacrificing, ... the readiness of our Armed Forces depends on the readiness of military families" (Swift, 2011). The statement acknowledges that when military families are supported, the military member can focus a greater amount of his or her efforts on military tasks. The United States depends on military members collectively to ensure the country's national security. Over 50% of the military is married, and thus, the well-being of the military family greatly affects the level of the national security provided by the military (DoD, 2008). According to a January 24, 2011, White House press release , the initiative is not only intended to strengthen the military family, but it is also intended to "help ensure the U.S. military recruits and retains America's best" (The White House, 2011).

Funding for programs that support military families is part of defense spending. The defense budget is part of the nation's discretionary spending, which has recently been under constant scrutiny for budget cuts. Of the four main congressional categories of defense spending—(1) military personnel; (2) operations and maintenance; (3) procurement; and (4) research, development, testing, and evaluation (RDT&E)—the category of military personnel is consistently the second most expensive. Military personnel salaries and bonuses are two of the major outlays from the military personnel account, which also pays for a recruit's housing and travel to training (Jones & McCaffery, 2008). Recruits frequently receive bonuses for enlisting, in addition to receiving a salary during basic training. The investment in a military recruit can be considered as the recruit's salary, enlistment bonus, travel to training, recruit housing, and basic training costs. Initially, a recruit's return on investment (ROI), where the return is



the recruit's contribution to military productivity (national security), is negative. The longer a recruit stays in the military, the greater his or her contribution to national security, and therefore, a recruit's ROI becomes increasingly positive. Since retention decisions are often influenced by family considerations, improving the well-being of military families can increase the time that the recruit remains in the military, thus increasing the ROI on the initial costs of recruiting and training. Attracting the most qualified applicants for military service and retaining them beyond their first term would more efficiently utilize funding provided in the military personnel account.

As the American working-class demographic changes from baby boomers to Generation X and Generation Y, it is important to consider what each worker values. Metlife's eighth annual survey of employee benefits (Metlife, 2010) found that baby boomers, Generation X, and Generation Y employees felt that work-life programs contributed to 53%, 61%, and 68%, respectively, of the loyalty they felt toward their employer (Metlife, 2010).

The research presented in this thesis is intended to increase understanding of specific military work-family cohesion factors. Knowing key triggers that precipitate a change in a member's marital status will allow for the tailoring of future personnel policy by the respective Services. Successful personnel policies will increase the attractiveness of the military as a career field and, therefore, increase retention and fiscal responsibility by increasing the ROI of recruits, family welfare programs, and the bonuses required to attract qualified applicants.

B. BACKGROUND

According to the *Population Representation in the Military Services Fiscal Year 2008 Report* (DoD, 2008), 52.23% of all active enlisted members, 68.62% of active Navy officers, and 65.55% of active Marine Corps officers are married. The above statistics show that at some point, over half of the military force has



made the decision to marry. Marrying increases the number of significant demands on a member's time by nearly 100%.

Prior to the decision to marry, an adult is primarily held accountable for the completion of work requirements. Consider the case of a person who has moved out of his or her parent's house. A person living on his or her own is responsible for providing for his or her own food and shelter, which is facilitated by a job. By meeting the required responsibilities of a job, an individual can meet these two basic human needs, making the fulfillment of a job's requirements a high priority for the worker. The decision to marry increases the prominence of family commitments, putting family commitments potentially in conflict with work commitments. The amount of time in a day does not increase after marriage; however, a married person is expected to meet both work and family requirements.

Many factors play a part in the successful fulfillment of both roles; understanding an employer's requirements and, separately, a spouse's requirements, and the alignment and conflicts of both, helps ease the strain between work and family roles. Military deployments increase the time a member spends at work and, therefore, decreases the time a member spends with his or her family, as well as his or her ability to perform family requirements. The military attempts to lessen the work-family conflict surrounding deployment by providing the member with time prior to and after deployment in which the member is not required to fulfill his or her everyday work role. Is there a point at which no amount of time off from work can compensate for the demands of frequent deployments?

Since 2003, the United States has been engaged in two conflicts: Operation Enduring Freedom (OEF) in Afghanistan and Operation Iraqi Freedom (OIF) in Iraq. Both operations have required a large manpower component. From 2001 to the present, the largest end strength of Navy personnel was in 2002, with 383,108 members (United States Navy [USN], 2006). The number of Navy



personnel has steadily decreased since 2002, culminating in an end strength of 324,000 in 2010 (DoD, 2010).

Figure 1 depicts the end strength of all active duty members for each Service by fiscal year (FY). The steady decline of the Navy's end strength and the relatively constant end strength of the Marine Corps are graphically displayed. The increased Operational Tempo (OPTEMPO), due to the concurrence of OIF and OEF and the decrease in personnel, increases each military member's individual burden. The likelihood of deploying one or more times, or for longer periods of time, is higher with every reduction in end strength.

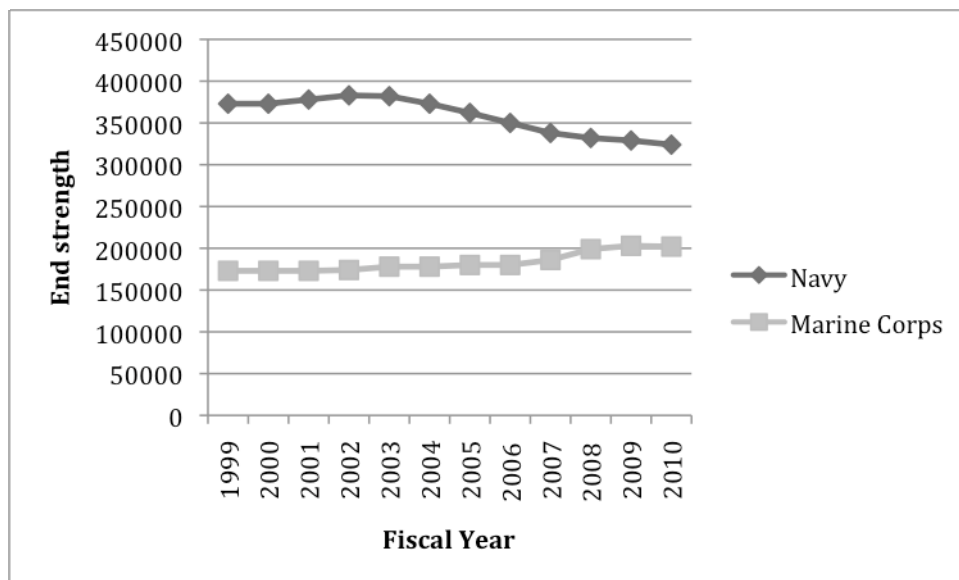


Figure 1. Active Duty End Strength, FY1999–FY2010
(DoD, 2010)

C. RESEARCH QUESTION

The primary goal of this research is to analyze the effect of deployment on a member's probability of divorce. More specifically, the focus of this research is to determine if a change in a member's status from married to divorced is preceded by different deployment characteristics than those of a member who stays married. Variables representing deployment locations, deployment length, and number of deployments were used to capture the deployment effect. General



demographic information—such as age at the time of marriage, gender, race, religion, spouse’s military status, occupations, and cohort year—were also included in the models to control for additional factors that may influence marital conflict.

The secondary aim of this research is to estimate the cost of divorce to the military. To capture the impact of divorce on the military, a model is developed that accounts for the number of days of work lost due to divorce. Results from the model are represented in days per year, percentage of worker productivity, and monetary compensation.

D. ORGANIZATION OF STUDY

This thesis is divided into three main sections. The first section includes a review of relevant literature and theories about the factors that increase the likelihood of marriage and divorce. The concept of role conflict (conflict between job and family) serves as the framework for the analysis of increased marital conflict due to deployment, which is a precursor to divorce. This section also discusses role conflict within the military structure.

The second section, consisting of Chapters III–V, presents deployment and demographic data furnished by the Defense Manpower Data Center (DMDC) to quantitatively analyze the effect of deployment in support of OEF or OIF on a member’s marital status.¹ The data included all active duty officers and enlistees in the Navy and Marine Corps. The multivariate analysis was conducted separately for Navy officers, Navy enlistees, Marine Corps officers, and Marine Corps enlistees.

The third section (Chapters VI and VII) presents the results from the multivariate analysis to estimate the opportunity and monetary costs of divorce to the military. A summary of findings and conclusions ensues.

¹ The information provided by DMDC is not available to the public due to the Privacy Act Of 1974. Data can be requested from DMDC and released pending DoD approval.



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II. LITERATURE REVIEW

A. CHAPTER OVERVIEW

Divorce is the result of irreconcilable conflict between spouses. Hogan and Seifert (2009) showed that military members have a greater incentive to marry than their civilian counterparts. The military incentive in turn, may have greater incidence of future marital conflict. Conflict between spouses is a manifestation of the inability to comply or adjust to the expectations of one's significant other. The role of a spouse in a marriage is defined by such expectations.

A married military member fills at least two roles, soldier and spouse, and the demands of those roles may conflict. An increasingly prevalent form of role conflict is the interference of work with family, or work-family conflict. Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) defined role conflict as a "simultaneous occurrence of two (or more) sets of pressures such that compliance with one would make more difficult compliance with the other" (p. 19). Advances in technology such as e-mail, cell phones, laptops, and smart phones have increased the ability of work-related tasks to interfere with a worker's home life and vice-versa (Major, Fletcher, Davis, & Germano, 2008). Increased connectivity when workers are at home decreases the amount of time available for the family. Military members are subject to the same encroachment of work on family time due to technology as civilians. Since 2003, Operational Tempo (OPTEMPO) has increased for military members, requiring additional time to be spent at work preparing for deployments, supporting deployments, or on deployment.

Members of the military are more likely to marry than their civilian counterparts because of additional incentives such as living off-base, increased take-home pay, and spousal benefits. Considering the recent increase in the time the military demands of its members, it is reasonable to expect members of the military to have a higher rate of marriage and a higher rate of marital conflict than the civilian population. Marital conflict has a strong impact on both spouses'



physical and mental health. A Service member's health directly impacts his or her ability to perform assigned tasks, as well as his or her choice to continue with military service. Due to the connection between a Service member's quality of life and his or her ensuing personal and professional choices, it is critical to understand what consequences an increased OPTEMPO may have in the current and future interconnected environments of work and family.

In this chapter, the theoretical basis for work interference with family will be reviewed, as well as the military factors that incentivize marriage. Furthermore, studies that incorporate time spent at work as a factor that represents work interference with family will be reviewed. The article "Work/Family Fit as a Mediator of Work Factors on Marital Tension: Evidence from the Interface of Greedy Institutions" (Pittman, 1994) and the study *Families Under Stress: An Assessment of Data, Theory, and Research on Marriage and Divorce in the Military* (Karney & Crown, 2007) form the basis and justification for further exploration of increased work interference with family as it relates to marital distress.

B. BACKGROUND ON WORK INTERFERENCE WITH FAMILY

Work interference with family and family interference with work are two related role conflicts; the word preceding interference signifies what aspect of life the conflict is coming from, and the word after signifies what part of life the conflict is interfering with. (Forthofer, Markman, Cox, Stanley, & Kessler, 1996).

A work-interference-with-family conflict is one in which an aspect of work is interfering with family life. The work environment is such that the hours a person spends at work are increasing along with his or her connectivity to work through e-mail or a personal digital assistant (PDA) device (Major et al., 2008). These factors increase the possibility of work-interference-with-family. Studies suggest that work-interference-with-family is more common than family-interference-with-work (Major et al., 2008). However, experiencing conflict from one direction increases the likelihood of experiencing both work-interference-



with-family and family-interference-with-work. In the military, the advent of technology is increasing the military's interference with the family life of its members, similar to the way technology is affecting work interference with family in the civilian sector.

To understand the basic way that one role can interfere with another role, Carlson, Derr, and Wadsworth (2003) broke the conflict into three categories: time-based, strain-based, and behavior-based conflict. Time-based conflict occurs because time spent in one role limits the time that can be spent in another (Greenhaus & Beutell, 1985). A greater number of hours spent at work or on deployment limits the time available to spend with family. It also limits the ability of a nondeployed spouse to be employed, or if he or she is employed, it limits the time available to spend with the couple's children. The military's engagement in both Afghanistan and Iraq without increasing its force requires members to spend more time deployed.

Each role comes with a set of requirements. Work requirements are predominately defined by the employer, whereas family requirements are predominately defined by a spouse or by the military member. Regardless of the defined requirements, which will vary by person, when the requirements of one role impede the accomplishment of the requirements of the other role, the result is strain-based conflict (Greenhaus & Beutell, 1985). Strain-based conflict could arise out of low spouse support, which would be an example of family-interference-with-work.

In the final category, behavior-based conflict occurs when the behavior expected in one role makes it difficult to behave the expected way in the other role (Greenhaus & Beutell, 1985). The Army conducted a study showing an increase in moderate and severe physical aggression from military members returning from deployment; because aggressive behavior is not desirable in marriage, this creates behavioral conflict between spouses (McCarroll, 2000). Additionally, military members suffering from Post-Traumatic Stress Disorder



(PTSD) often find it difficult to behave with the same level of intimacy that their spouse desires, which can also be a source of behavioral conflict.

When workers are not able to balance their work and family roles, they have a greater risk of suffering from increased levels of stress and stress-related illness, lower life satisfaction, higher rates of family strife, violence, divorce, and substance abuse (Hobson, Delunas, & Kesic, 2001). Workers experiencing stressful levels of role conflict can manifest this stress in the following ways: higher rates of absenteeism and turnover, reduced productivity, decreased job satisfaction, lower levels of organizational commitment and loyalty, and rising healthcare costs (Hobson et al., 2001; Rodgers & Rodgers, 1989).

A consequence of work-interference-with-family is divorce. Although there is no single formula or predictor to explain why couples divorce, what is known is that stress increases when a spouse is unable to meet family needs. Prolonged stress has been linked to frustration, which can be linked to conflict, and conflict that cannot be resolved is linked to divorce (Clarke-Stewart & Brentano, 2006). Holding all other factors constant, Bramlett and Mosher showed in a 2002 study the following two characteristics that increase the probability of a divorce: the younger a person is at the time of marriage and the lower the level of education upon entering into the marriage (Clarke-Stewart & Brentano, 2006).

Based on the definition of role conflict provided by Kahn et al. (1964) and on the changing dynamics of both work and family life, it is reasonable to expect a higher instance of work-family conflict in the military than in the civilian population. Because marriages fail when the conflict exceeds acceptable levels for one or both of the spouses, it is logical to conclude that excessive work-interference-with-family could be a causal factor for divorce.

C. MILITARY MARRIAGE INCENTIVE

The military incentivizes marriage. Consider the traditional military marriage, in which a member of the military marries a civilian. Upon registering the marriage with the military, the member's basic allowance for housing (BAH)



increases, and, as a junior enlistee, he or she is then given the option to live off-base or in family housing. How much the BAH increases depends on the prior situation of the member. If the member is an E-3, junior enlisted, living on-base, his or her monthly BAH pay will increase by \$626.40 per month (DoD, 2009). Stated another way, an E-3 living on base receives a 32% pay increase just for getting married. For military members who are already living off-base, the BAH pay only increases by \$158.40 per month, which equates to a 6.5% pay incentive (DoD, 2009). Moreover, after the marriage, the couple has the ability to live in base family housing and the spouse can shop tax-free at the Exchange and Commissary. For members of the military getting ready to deploy, an additional incentive to marry is so that the spouse can have access to all of the benefits if something should happen to the member on deployment. Also, when a military member is separated from his or her family, he or she receives a separation allowance of \$250 per month, as long as the couple was co-located prior to deployment.

Active duty members in their early 20s are more likely to be married than their civilian counterparts (Hogan & Seifert, 2009). While this could be due to the direct marriage premium built into the military compensation scheme, it could also be that members of the military may have stronger preferences to marry. Since people self-select into the military, it is likely that they differ from the civilian population in their unobserved preferences toward marriage. A comparison between the civilian sample and military service that does not provide marriage incentives (e.g., the National Guard) found no significant difference in the likelihood of marriage between the two groups (Hogan & Seifert, 2009). The average age of an E-3 is 18-22. The 18–22-year-old active duty military age group has the largest marriage incentive, as shown in the example of an E-3 who is living on base. Hogan and Seifert (2009) found that military members in their early 20s were three times as likely to marry than their civilian counterparts. The age group that has the greatest incentive to marry in the military is also at the highest risk for divorce because marriages that take place prior to the age of 26



have a 29% greater chance of ending in divorce (Clarke-Stewart & Brentano, 2006).

Positive predictors of divorce are not limited to age. People with lower levels of education and with criminal records are also at a higher risk for divorce (Clarke-Stewart & Brentano, 2006). The selection process imposed by the military mitigates the highest of these risk factors by requiring minimum levels of education and waivers for criminal activity. That being said, the majority of the military members are young at the time of marriage and, if enlisted, generally have less than a college level of education. An additional factor that accounts for the type of stress that comes with a military job should be considered: Ruger, Wilson, and Waddoups (as cited in, Karney & Crown, 2007) conducted a study in 2002 and found that experience in military combat from 1930–1984 increased the risk of subsequent marital dissolution by 62%.

D. WORK INTERFERENCE WITH FAMILY AND MARITAL TENSION

Marital tension is difficult to study empirically because in the absence of divorce, there is no universal indication of marital tension. Studies have looked at marital tension by conducting personal interviews with spouses or by using previously collected data such as the National Comorbidity Survey (NCS). Divorce, a product of marital tension, could be a proxy for measuring if a marriage experienced tension, but divorce would not capture all the marriages experiencing tension.

As sighted in Pittman's work (1994) several studies have found conflicting evidence on the effect of work hours on marital stress: some indicating that more work hours increase marital stress, some indicating that more work hours reduce stress, and some finding no relationship between the two. Pittman (1994) surveyed 407 U.S. Army males and their wives to determine the effect of work hours on marital tension. He postulated the following:

The most abstract and proximate mediator of the effects of work factors on marital qualities is the perception of fit between these two role domains (Pittman & Orthner, 1988a, b; Rice et al. 1985). If



the spheres of work and family “fit,” it can be assumed that the demands of the two roles are relatively consistent with each other, which would minimize the experience of strain or that the demands of each are offset by the benefits acquired. (p. 185)

To test the above hypothesis, Pittman (1994) used two “greedy institutions” (p. 186): the family and the military. Pittman deemed both the family and the military to be greedy because of the demands each institution requires of their members. Pittman (1994) used the 407 survey responses in his study to create eight factors of spousal perceptions, four male and four female. In addition to these variables, he also included the husband’s work hours, the wife’s occupational status, and the socioeconomic status of the couple.

The survey used three questions to measure the military member’s spouse’s “satisfaction with husband’s regular work hours, satisfaction with his time in the field, and satisfaction with the time required for temporary duty assignments” (Pittman, 1994, p. 190). It is pertinent to note that the majority of the 407 surveys that were returned were from wives who were in their 30s, were married an average of 8.2 years, were in their first marriage, had children, and were White. Statistically, some factors that put a marriage in a high-risk category for divorce are marrying prior to the age of 26, having less than a bachelor’s degree, and being African American (Clarke-Stewart & Brentano, 2006). These statistics are mentioned to underscore the possible self-induced bias Pittman’s survey may have captured.

Within the Pittman (1994) survey, the factor for the wife’s satisfaction with the time a military member spends at work was lower than that of the husband’s: 8.95 and 9.92 on a scale of 3 to 15, respectively. The scores indicate that in this sample, both the husband and the wife were moderately satisfied with the amount of time the military member spent at work (Pittman, 1994). Spouses who found the military to fit and/or further their family goals had an overall higher satisfaction rating when asked how they felt about the amount of time their Service member spent at work. The variable used to capture the husband’s time spent at work was average work hours. Both the husband and the wife estimated



the number of hours the husband worked in a normal week, and Pittman (1994) used the average of these two estimates in the model.

The LISREL 7 method of analysis shows an increase in the military member's work hours to be consistent with a decrease in the spouse's satisfaction with the member's time spent at work. This could suggest that for families, there is a point at which the time required by the military surpasses the benefits of having a member of the family in the military—decreasing a spouse's satisfaction with the member's time spent at work. The question in the case of the global war on terror (GWOT) is as follows: as the time required of the military member increases, are military families able to endure the time, strain, and behavioral conflict exacerbated by separation?

E. METHODS OF OPTEMPO'S MEASUREMENT AND FINDINGS

There are several studies that examined the effect of a military member's time commitment on different aspects of his or her life during different conflicts. Typical areas of study were a member's retention, family conflict, and mental health. Each study used a variable that attempted to measure the time commitment required in excess of normal working hours. In the case of the military, this is most pronounced during deployments. Prior to 2001, most studies that examined deployment used military pay files to determine if a member was deployed. The studies prior to 2001 defined deployment based on a variable indicating hostile fire specialty pay, family separation pay, or some combination of the two.

As of 2001, the military started maintaining the Contingency Tracking System (CTS) database, which houses all of the information about a member's deployments in support of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). The advent of the CTS database allowed researchers to look at deployments in support of the GWOT with a greater level of precision; however, the CTS data does not include deployments that are not in support of



GWOT. The next section discusses Karney and Crown's 2007 study, which used the CTS database.

1. *Families Under Stress: An Assessment of Data, Theory and Research on Marriage and Divorce in the Military*

In 2007, RAND (Karney & Crown, 2007) published a study titled *Families Under Stress: An Assessment of Data, Theory, and Research on Marriage and Divorce in the Military*. The study considered previous research and data from FY1996 to the last quarter of FY2005 for all Services, active and reserve (Karney & Crown, 2007). Data analysis focused on whether the military divorce rate was different from the national divorce rate and on whether the divorce rates were rising as the demands for the military increased (OPTEMPO).

According to the RAND study (Karney & Crown, 2007), the military does not seem to be suffering from a higher than normal divorce rate. In an analysis of the divorce rate in the military, RAND found that from FY2001–FY2005 in all Services but the Navy, the divorce rate had a positive trend, meaning the divorce rate was decreasing. RAND defined the divorce rate as number of divorces over total married members for a FY. The divorce rate in the Navy spiked after FY2001 but had decreased by FY2005 (Karney & Crown, 2007). As of FY2005, RAND assessed that the divorce rate in the military was at an approximate norm for the military because it was similar to the divorce rate in the military in FY1996. Thus, by FY2005, it appeared as though the increased OPTEMPO from the GWOT did not impact the divorce rate. RAND's aggregate analysis of the divorce rate may have allowed the nondeployed members to compensate for the deployed members; therefore, a more in-depth analysis was conducted in this thesis.

In its 2007 study, RAND used a survival analysis technique to gain a more in-depth examination of the cost of OPTEMPO on military families. To account for the direct impact of deployment on military members, RAND used longitudinal data for members whose entrance into marriage could be observed within the data set. In the multiple-spell discrete-time survival analyses, the following



demographic variables were included to account for other factors that influence marital stability: gender, age at marriage, race, and children. The number of days deployed and the square of the number of days deployed were jointly used to account for the length of deployment (Karney & Crown, 2007, p. 149).

The study found that on average, active military members who were female and younger at the time of marriage increased the chances the marriage would end in divorce. Families that did not have children were also at a higher risk for divorce. Results indicating that children reduced the risk of divorce, the reduction in likelihood of divorce was more pronounced in the enlistee models. Blacks had a higher probability of divorce compared to Whites. The military race variable had a smaller magnitude but the same sign as civilian population studies (Karney & Crown, 2007). Controlling for demographic characteristics, the study found that the deployment variable was significant for all active duty members except Army officers. However, the study found the deployment effect to be negative for active duty Navy and Marine Corps officers and enlistees and Army enlistees. The study found that Air Force officers and enlistees were the only categories where the deployment variable was positive and significant, thus increasing the probability of divorce.

RAND remarked that the findings in this study ran counter to the expectation that increased deployments would increase the divorce rate. Role conflict and the potential impacts of increased work time requirements (discussed earlier in the chapter) are compelling arguments that suggest a negative effect of increased OPTEMPO on marriage.

It must be noted, however, that this study is the most comprehensive in this area. Prior studies of marital conflict in the military were based on data obtained from surveys and focus groups, which may have been unrepresentative of the entire population of military personnel. One concern with the RAND study is that the data stopped in 2005. It may be the case that, since 2005, the same military members have deployed again, putting an additional strain on their families through an additive total-time-deployed factor. For some



families, this additional strain may outweigh the benefits of staying married. In this thesis, a longer time period was used to observe the effect of deployments on divorce, as well as controls for multiple deployments (a characteristic that was missing in the RAND study).

F. CONCLUSION

To date, only the 2007 RAND study has examined the increased demands the GWOT has put on the military and its subsequent effect on a member's marital status. RAND assessed the likelihood of divorce for military members based on the length of time a member was deployed; however, the study only covered the time period from 2001–2005 (Karney & Crown, 2007). The following chapters looking at a military member's likelihood of divorce, extending the time period of the previous RAND study to encompass deployments using data up to September 2009 for the Navy and Marine Corps. The extension of the data introduces more multiple long-term deployments and their effects.



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III. DATA DESCRIPTION

The Defense Manpower Data Center (DMDC) provided all the data in this study from two main databases. The following chapter discusses each database and the study's limitations. Section A covers the data sources, and Section B discusses the limitations of the data.

A. DATA SOURCES

Upon request, the DMDC extracted and provided deployment and demographic information for each member of the Navy and Marine Corps from the Contingency Tracking System (CTS) and the Active Duty Military Personnel File, for all active duty members from 2000 to 2009.

1. Contingency Tracking System

The Contingency Tracking System (CTS) provides deployment information on all members who deployed in support of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Each entry in the CTS represents one unique deployment per member, so a Service member who was deployed multiple times would have multiple entries in the CTS. The first entry of the CTS data pull is September 11, 2001, and, for the purposes of this study, the last entry is July 1, 2010, when the extraction of the CTS portion of the data was completed by DMDC. A unique scrambled ID (EDIPN) identifies each Service member. There are a total of 2,650,593 unique entries in the CTS, which includes both active and reserve officers and enlisted members in the U.S. Navy and Marine Corps. The entries are associated with 589,850 unique Service members.

2. Demographic File

With the help of the DMDC, the demographic information for this study was drawn from the Active Duty Military Personnel File, the Active Duty Military Pay File, and the Defense Eligibility Enrollment Reporting System (DEERS). The



demographic data contains an entry for each member (as identified by their unique EDIPN) per quarter. All active duty Navy and Marine Corps personnel are included in the data. The inclusion of all available members provides Navy and Marine Corps population data instead of the Navy and Marine Corps sample data. Demographic variables included in the data are as follows: branch of Service, gender, birth date, race, faith, marital status, number of dependents, education level, Armed Forces Qualification Test (AFQT) score, pay grade, rate or military occupational specialty (MOS), and Service of spouse. The DMDC provided a snapshot of the members' information quarterly from October 31, 2000–September 30, 2009.

B. DATA RESTRICTIONS AND LIMITATIONS

The goal of this thesis is to look at how the OPTEMPO of the Navy and the Marine Corps has affected the members' marital statuses by contributing to the conflict between work and family roles to such an extent that divorce results. Although the data provided essential information to conduct the analysis, there are several data limitations to keep in mind.

First, although the CTS is the only data source at this time that tracks deployments, its data does not capture all deployments; instead, it only tracks deployments that are in support of OIF and OEF. In addition, even though a 20-30% of the Navy and Marine Corps members are deploying in support of OIF and OEF, there are non- OIF and OEF deployments that the CTS does not capture. For example, deployments to the Pacific are not be accounted for in the CTS database.

The CTS data is a good alternative to prior methods of deployment tracking. Previous studies that included members' deployment time as a factor used members' pay files to determine if members were deployed (Pilgrim, 2008). By looking at when a member receives special pay, it can be determined if the member is on deployment. The special pays used to determine if a member is deployed are Family Separation Allowance (FSA) and Hostile Fire Pay/Imminent



Danger Pay (HFP/IDP). Using pay data to determine a member's deployment status accounts only for members who are on deployment or are on unaccompanied orders for 30 or more days and who have a dependent, or for members who are on orders or deployed to a hostile fire or imminent danger area.

FSA is only applicable for members who live predominately with their spouse; if a spouse lives in a separate city (as a geographic bachelor), the Service member will not receive this pay. The expectation of deploying shortly after transferring to a new command is frequently reason enough to keep a member's family at the previous duty station till after deployment. When FSA was used members that are geographic bachelors are excluded from the analysis. Many deployments, such as deployments to Germany, do not receive HFP/IDP. In the Navy, members embarked on ships do not receive HFP/IDP till crossing a specific latitude and longitude. Members not receiving HFP/IDP while deployed or only receiving it part of the time are excluded from the analysis. Both the CTS and the pay method for determining deployments are lacking. By using the CTS data, it is possible to assess the total effects of OIF and OEF, which includes geographic bachelors, and members who may be deployed to locations other than hostile or imminent-danger areas.

Second, the record of marital status from DMDC is subject to recording error. To determine a change in the marital status of a Service member, this thesis relied on the information provided in the demographic file regarding members' change in marital status, or lack thereof, from quarter to quarter. The off-the-shelf data that the DMDC compiled is only as good as the information that was initially put into each database. In some limited cases, entries are miscoded or simply missing. Furthermore, because the data is quarterly, if a member married and then divorced and remarried within the span of the quarter, it would look as if the member was married the entire time. This scenario is probably very unlikely, and so the measurement error is negligible. In the demographic file there were missing values for some individuals. For this analysis, the members who had missing values were not included.



C. UNRESTRICTED AND RESTRICTED SAMPLE DEFINITION AND JUSTIFICATION

Merging the CTS and demographic data created what this thesis will refer to as the unrestricted data set. The unrestricted data set included only married members, since married members are the ones at risk of divorce. The created data set represented a cross section of all active duty members during 2000–2009, regardless of when they joined the Service or when they married. As a result, the unrestricted data set did not contain information on the member’s age at the time of marriage, length of marriage, and years of marriage. Since these variables are strong predictors of divorce, the analysis also identified a subsample (hereafter referred to as the restricted sample) including all married members whose entire deployment and marriage history can be observed. This included enlistees who entered and completed four years of service during 2000–2009 and officers who completed 5–10 years of service during the same time period.



IV. VARIABLE DEFINITIONS AND DESCRIPTIVE STATISTICS

This chapter expounds on Chapter III by defining each variable included in the quantitative models and by presenting descriptive statistics of the data. The dependent variable is defined in Section A, followed by the independent variables in Section B. Section C discusses the descriptive statistics.

A. DEPENDENT VARIABLE

1. Marital Status Outcomes

The dependent variable for this study was a military member's divorce status, which will be referred to as *divorced* in the following discussion. *Divorced* is a binary variable that in this study was assigned a value of 1 if the member was divorced and 0 if the member's status was other than divorced. The divorced variable was taken from the quarterly demographic entry created for the marital status of each member. Marital status had the following possible values: annulled, divorced, interlocutory, legally separated, married, never married, widowed, and missing. An individual is considered to be divorced if the marital status is any of the following four categories: annulled, divorced, interlocutory, or legally separated.

A marriage that is going through an annulment, divorce, interlocutory, or legal separation indicates significant conflict. To analyze the effect of deployments on marital conflict, this study combined all four categories into one variable that represented overall marital conflict leading to marital dissolution. Karney and Crown (2007) also used the same definition for their marital dissolution variable. To eliminate as many missing marital status values as possible, the following steps were taken in the order listed:

1. If marital status was missing for the current quarter but not missing for the previous quarter, the current quarter's missing value was replaced with the previous quarter's value.



2. If marital status was missing for the current quarter but not missing for the subsequent quarter, the current quarter's missing value was replaced with the subsequent quarter's value.
3. If the first known marital status was *never married* but there were missing marital status values prior to the first known marital status, all prior missing marital status values were replaced with *never married*.

The marital status variable also had a number of erroneous entries. Many of the errors originated after a member's marital status changed from *married* to *legally separated*. The marital status directly following the coding of *legally separated* was generally coded as *never married*. To eliminate erroneous coding of *never married*, if a member was previously married, all *never married* marital status values were change to *divorced*.

B. INDEPENDENT VARIABLES

The independent variables in this study consisted of demographic data and OIF and OEF deployment data. Demographic information includes gender, race, rank, occupation, religion, number of dependents, and spouse's military status. The demographic variables, a subset of the independent variables, were included to control for factors other than work-family conflict that contribute to marital conflict. Deployment information representing a member's length of deployment, location of deployment, and number of deployments were included to capture the part of marital conflict that results from work-family conflict, the element of interest in this study.

1. Deployments While Married

In this study, deployment information from the CTS database was recorded as one entry per deployment in support of OIF or OEF. This database allows any deployment made in support of OIF or OEF to be recorded, no matter the length of the deployment. Some Service members of the sample went on more than 10 deployments in a nine-year time span. It was crucial to have variables that accounted for the length of time and number of times a member



was deployed while married. Simply using the variable number or length of deployments would not have captured all the different stresses to which a military family is exposed.

Stress was introduced in two ways where deployments were concerned: the overall length of the deployment, and the departure and return of a member to the family. The unique characteristics of each deployment phase typically determine the most likely type of conflict experienced. The length of time a member is away dictates the number of previously shared responsibilities the spouse is now solely responsible for—with each additional responsibility, time-based conflicts increase. Prior to deployment, a member and his or her family are at the greatest risk of strain-based conflict. The member is required to complete specific tasks that are critical to the unit's success, and at the same time, he or she is attempting to get the greatest amount of quality time with his or her family prior to deploying, creating strain. Post deployment, the member and his or her spouse is at the greatest risk of behavior-based conflict. During deployment, the Service member experiences a shift in specific role responsibilities and expectations; therefore, once the deployment has ended, both the member and his or her spouse must reestablish role responsibilities and expectations.

CTS data for each member was assigned a quarterly deployment beginning and end date based on the total time the member was deployed. From the quarterly deployment dates, the number of days a member was deployed per quarter was generated. The quarterly CTS data was then paired with the demographic data. Total time deployed while married was found by adding all quarterly total days deployed while a member was married. Similarly, the analysis uses the number of times a member has been deployed. A value of 1 represents the first deployment while married and so on until the member's final recorded deployment while married.



2. Deployment Location

The CTS data set used in this study contained all deployments in support of OIF or OEF. Deployments that support OIF and OEF are not limited to a location in Afghanistan and Iraq. Each Service defines “in support of” differently, resulting in widely varying deployment locations that include expected locations such as Afghanistan, Iraq, and Pakistan as well as unexpected locations such as Germany and Diego Garcia. For this analysis, location dummies for Afghanistan (AF), Iraq (IZ), and the Middle East (MidE; includes countries other than Afghanistan and Iraq) were created using the country location identifier provided in the CTS data.

3. Gender

The data set used in this study included a binary variable capturing a Service member’s gender.

4. Race

The analysis controlled for race and ethnicity via the following binary variables: White, Black, Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and unknown.

5. Rank

All of the possible rank values were grouped into seven binary variables for simplicity: three variables for the enlisted ranks and four variables for officers and warrants. The variables were as follows: E1–E3, E4–E6, E7–E9, W1–W5, O1–O3, O4–O5, and O6–O10.

6. Dual Military

Dual military status was recognized if both spouses were in the military. Dual military status is a binary variable, and in this study it was assigned a value of 1 if the member’s spouse was also in the military.



7. Number of Dependents

The number of dependents a member had was represented by a numeric value. This variable does not exclusively represent children. Dependents are defined as anyone who is financially dependent upon the military member and could include a spouse, children, and parents. In this study, a member did not need to be married to have a dependent quantity greater than zero.

8. Prior Marital Status

A set of binary variables was included to capture a member's first observed marital status. The variables *widowed*, *divorced*, *never married*, and *unknown* had a value of 1 if the member was widowed, divorced, or never married prior to the observed marriage. For married Service members, the aforementioned variables took a value of 0. This set of variables accounted for the effect of a member's prior relationship on the probability of divorce. The unrestricted data set does not observe the entire marriage; therefore, a value of 0 in each of the above variables indicates that the member's marriage started prior to the first observation. When the variables *widowed* or *divorce* have a value of 1 the member is not in their first marriage. In this way, prior marital experiences were partially accounted for.

9. Length of Marriage

In order to generate a variable that captured the length of a member's marriage, the following formula was followed: (year and quarter of the last observation the member was married) – (year and quarter of the first observation the member was married) + 1 = length of a member's marriage. This variable was a proxy for the level of happiness, compatibility, and commitment in the member's marriage (Rosen-Grandon, Myers, & Hattie, 2004). The probability of marriage ending in divorce decreased the longer the member was married.



10. Occupation

There were three different occupational definitions, based on Service and rank, determined by the primary occupational code for each member. Each occupational variable was binary, taking a value of 1 if the member was a part of that occupation and a value of 0 if the member was not. Both officer and enlisted Marine Corps occupations were divided into four categories: combat arms, combat support, combat service support, and aviation. Navy officers were divided into the following occupations based on their billet codes: surface warfare officer (SWO), submariner (SUB), special warfare (SpecWar), special operations (SpecOps), human relations (HR), aviation, explosive ordnance disposal (EOD), public affairs officer (PAO), merchant marine, foreign area officer (FAO), medical, chaplain, judge advocate general (JAG), supply, and other. Navy enlisted members were divided into the following occupations based on their rating: construction, marine engineering, ship maintenance and operations, aviation ground support, logistics and administration, health care, cryptology, ordnance, communications systems, weapons systems and control, and unrated.

11. Faith

The binary faith variable was created to control for religious beliefs that may affect the probability of divorce. For this analysis, a member who reported his or her religion was assumed to have faith and received a value of 1 for this variable.

12. Entry Year Dummies

To capture the different factors that prompted a member to join the military by year, binary entry year dummies were generated for the years 1957–2009. This range accounted of all the possible entry years.

13. Married Year Dummies

To capture the different factors that encouraged marriage by year, binary year married dummies were generated for the years 2000–2009. The dummy



year was given a value of 1 if the member's marriage date was in that year and a value of 0 if it was not.

C. PRELIMINARY DATA ANALYSIS

Table 1 shows the unrestricted and restricted aggregate divorce rates for each subset of this research from January 1, 2001–September 30, 2009: Navy officers, Navy enlistees Marine Corps officers, and Marine Corps enlistees. In all cases, there was a difference between the divorce rate of the total sample and the divorce rate of members who deployed to OIF and/or OEF. A higher divorce rate for deployed members was expected based on the assumption that deployment increases the work-interference-with-family conflict. The Marine Corps data behaved as Pittman (1994) predicted in his “greedy institution” theory, discussed in Chapter II. The Navy data showed a drop in the deployed divorce rate from the sample divorce rate, which does not seem to support Pittman’s theory.

Table 1. Divorce Rate by Service and Deployment Status

	Unrestricted Sample	Unrestricted Sample Size	Restricted Sample	Restricted Sample Size	Unrestricted Sample Not Deployed to OIF/OEF	Restricted Sample Not Deployed to OIF/OEF	Unrestricted Sample Deployed to OIF/OEF	Restricted Sample Deployed to OIF/OEF
Navy Officers	17.91%	66211	11.13%	4186	19.66%	12.83%	16.26%	8.59%
Navy Enlistees	15.81%	163971	7.49%	9218	16.21%	8.44%	14.37%	6.38%
Marine Corps Officers	7.44%	13715	4.52%	487	7.09%	4.84%	8.08%	4.18%
Marine Corps Enlistees	8.33%	108732	6.02%	16572	8.09%	6.90%	8.76%	5.42%



This lower deployed divorce rate may be because only about 20% of the Navy sample is deploying in support of OIF/OEF, as shown in Tables 2–5, compared to the approximately 30% of the Marine Corps sample. Stated another way, OIF/OEF may represent a larger increase in OPTEMPO for the Marine Corps than for the Navy and thus have a more significant impact on divorce rates. Figures 2–9 show the divorce and deployment rate by year for the restricted and unrestricted data in each of the four data sets. The divorce rate by dividing the number of divorces by the number of married members per year. The deployment rate is the average number of days deployed per member per year.

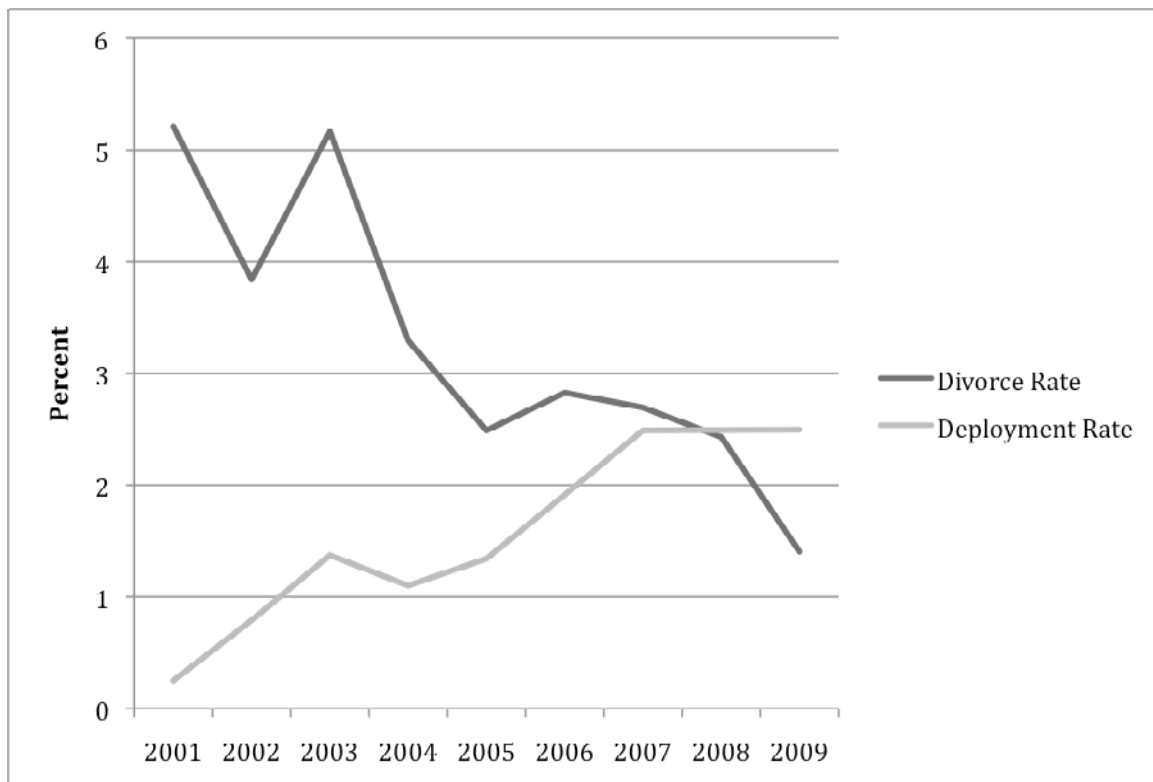


Figure 2. Unrestricted Sample of Navy Officer Divorce and Deployment Rates per Year



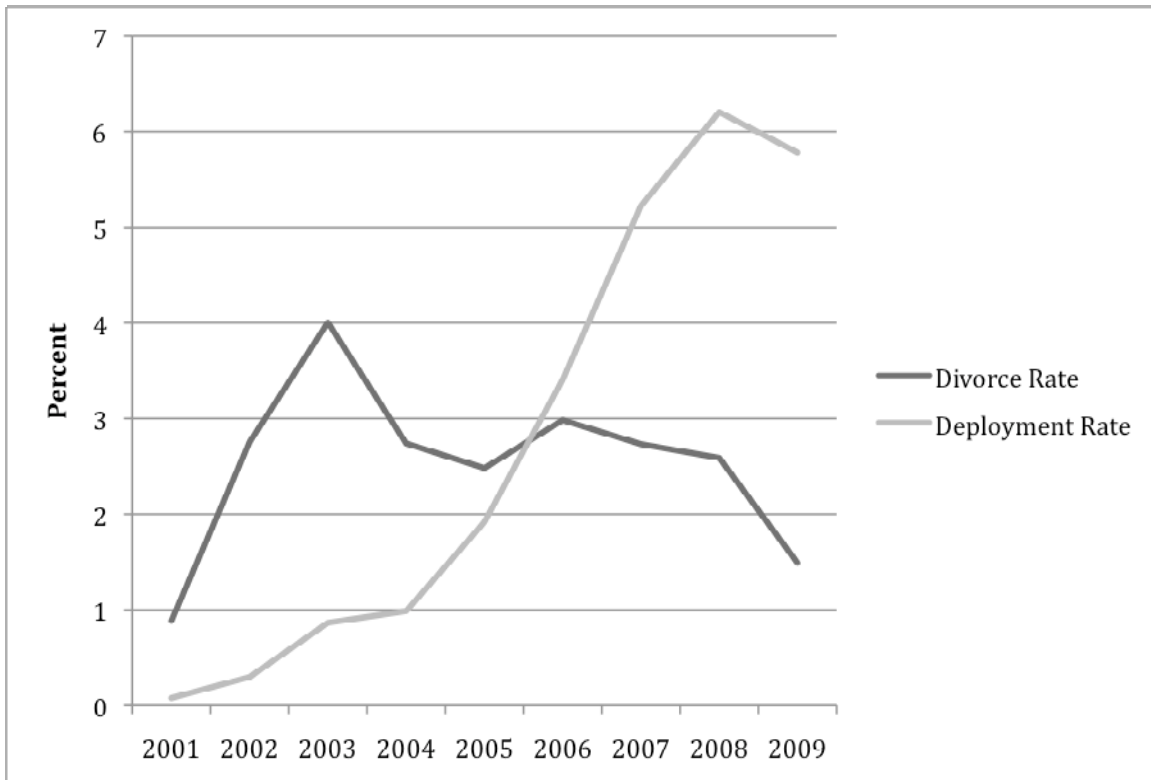


Figure 3. Restricted Sample of Navy Officer Divorce and Deployment Rates per Year

The deployment rates accurately represent the known deployment increase in 2003, when OIF began, and in 2007, during the surge in deployments to Iraq. It is interesting to note that the yearly divorce rate for the unrestricted and restricted samples of Navy officers and the unrestricted Navy enlistees has decreased since 2003 and 2001, respectively, which may be indicative of the military’s enhancement of family support activities. However, the restricted sample of Navy enlistees showed an increase in the divorce rate.



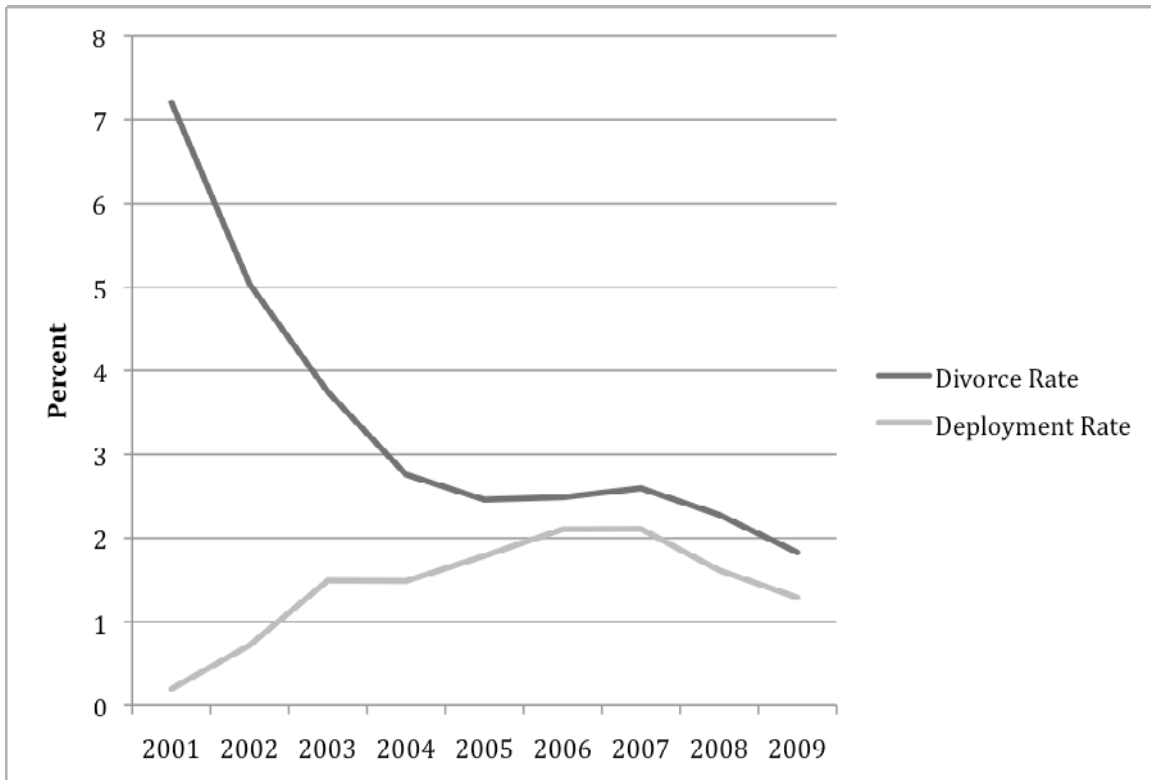


Figure 4. Unrestricted Sample of Navy Enlistee Divorce and Deployment Rates per Year



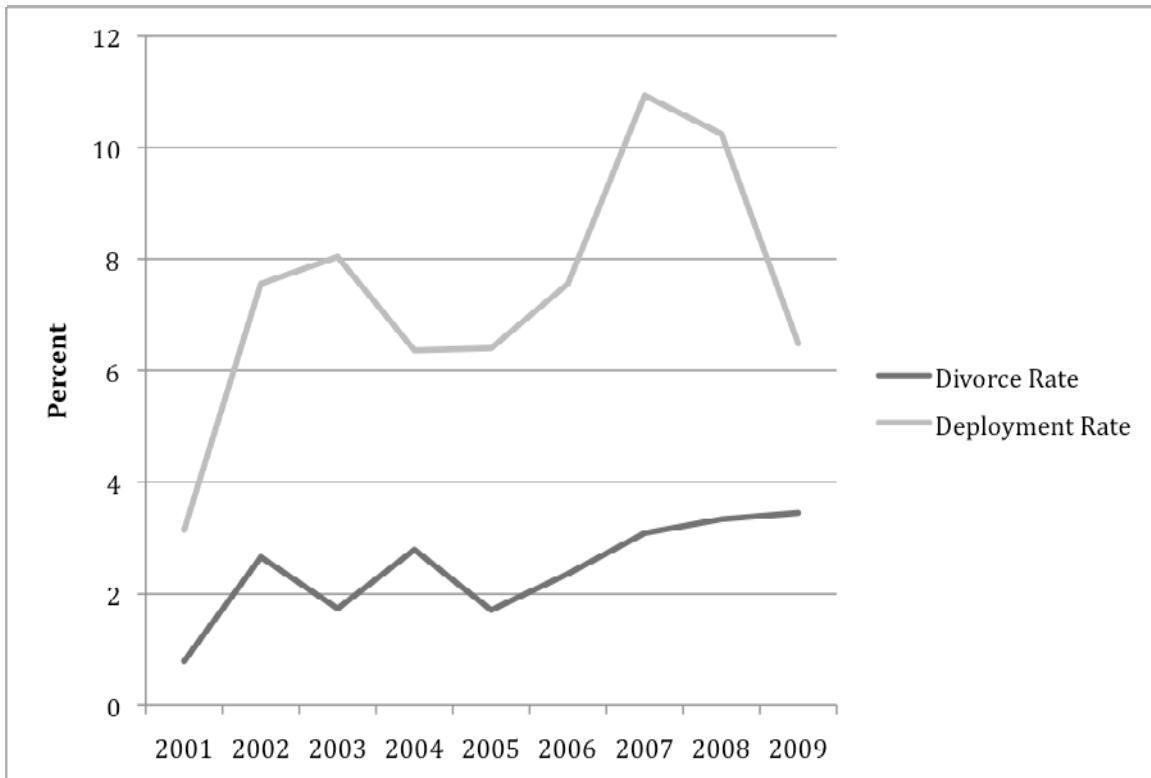


Figure 5. Restricted Sample of Navy Enlistee Divorce and Deployment Rates per Year

Figures 6, 8, 9, and 10, which depict the Marine Corps officer and enlistee divorce and deployment rates, show the yearly divorce rate to be relatively constant, while the deployment rate increased dramatically in 2003 when the OIF began. Figure 7, which depicts the restricted Marine Corps officer data, shows more variation in the divorce rate. The increased variation implied that in the unrestricted sample, members who entered the Marine Corps prior to 2000 have a more stable divorce rate than members who entered the Marine Corps after 2000. Additionally, the restricted sample was made up of younger individuals and, therefore, fewer total marriages, creating more volatility with an increase in the number of divorces. The restricted Marine Corps enlistee sample showed a sharp decline in the deployment rate.



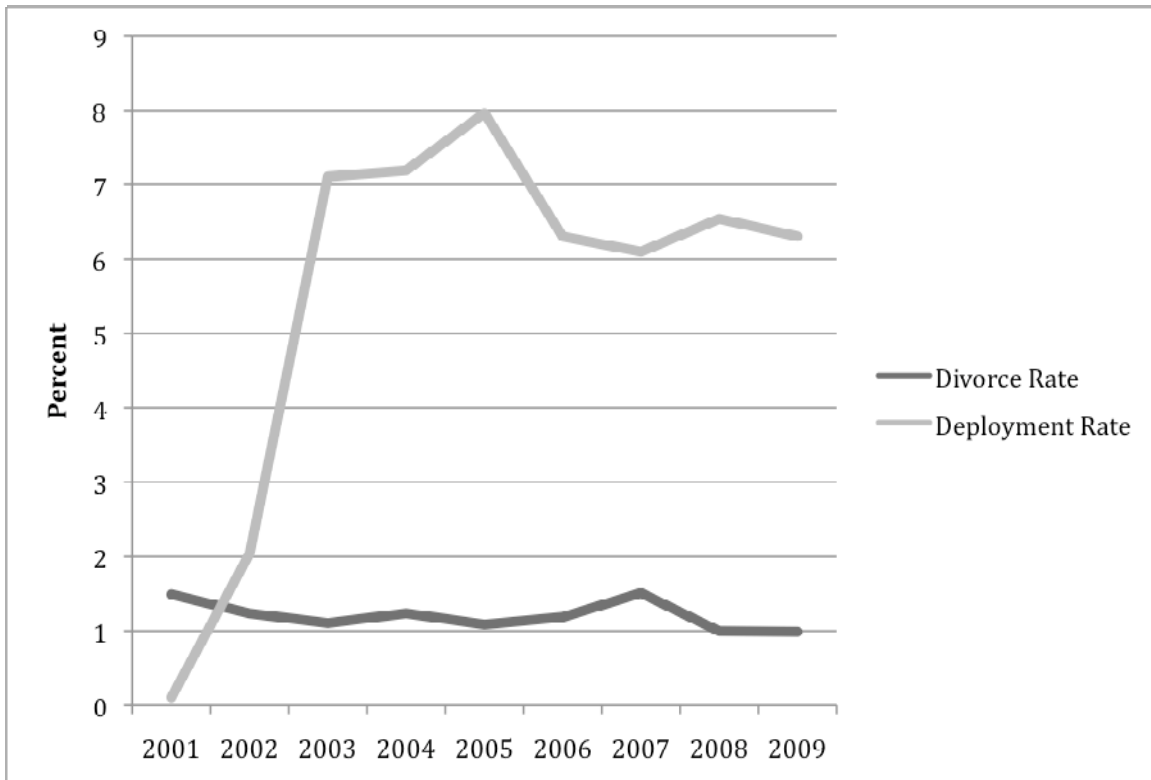


Figure 6. Unrestricted Sample of Marine Corps Officer Divorce and Deployment Rates per Year



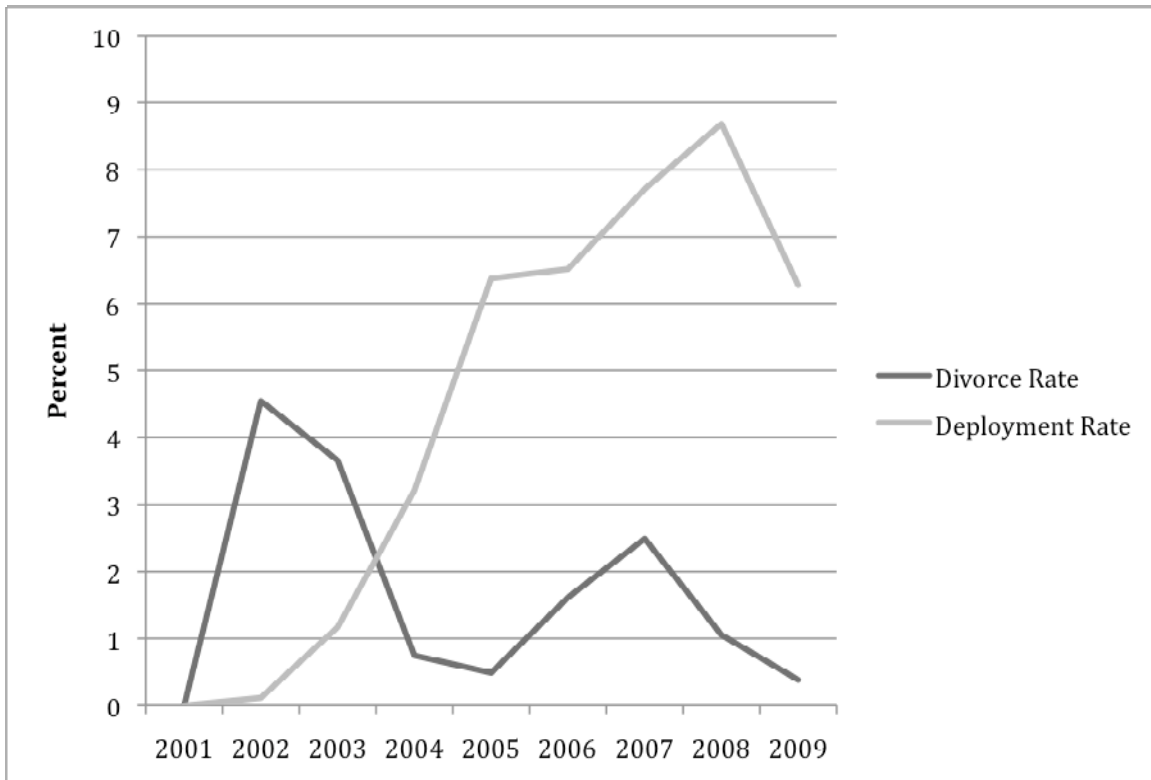


Figure 7. Restricted Sample of Marine Corps Officer Divorce and Deployment Rates per Year

The unrestricted Marine Corps enlistee divorce rate was relatively stable; however, it did increase approximately one year after the major increases in the deployment rate.



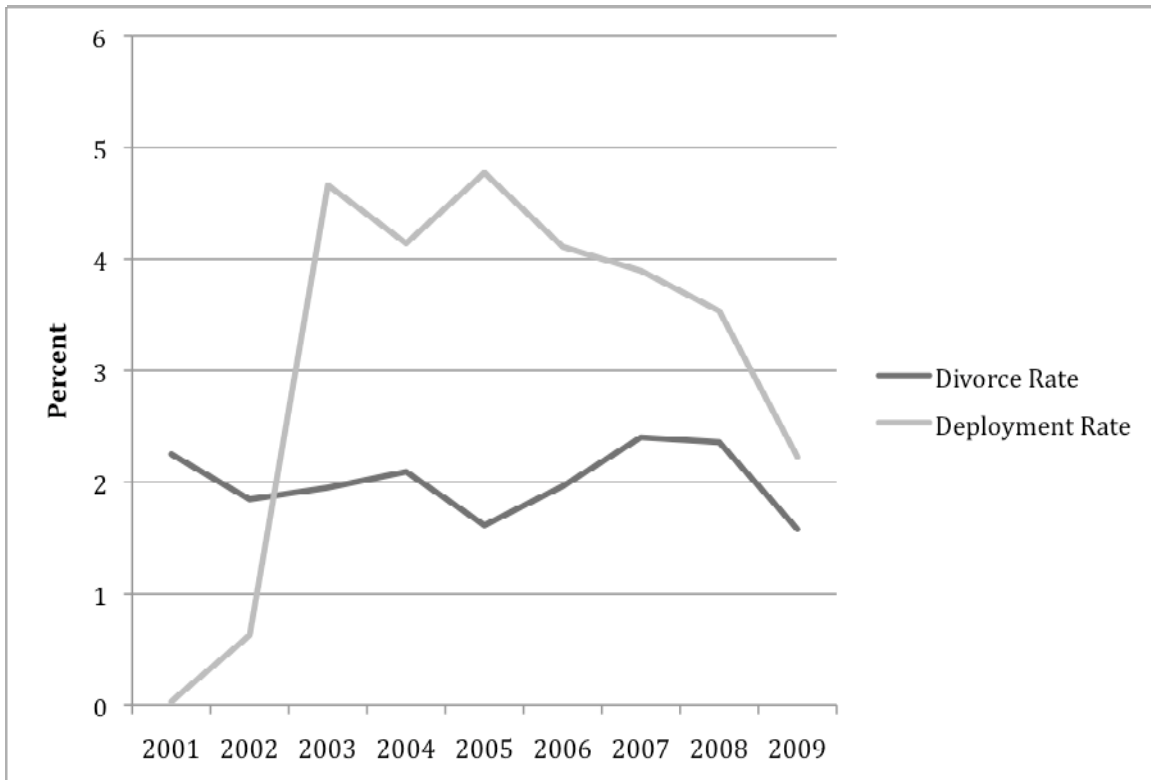


Figure 8. Unrestricted Sample of Marine Corps Enlistee Divorce and Deployment Rates per Year



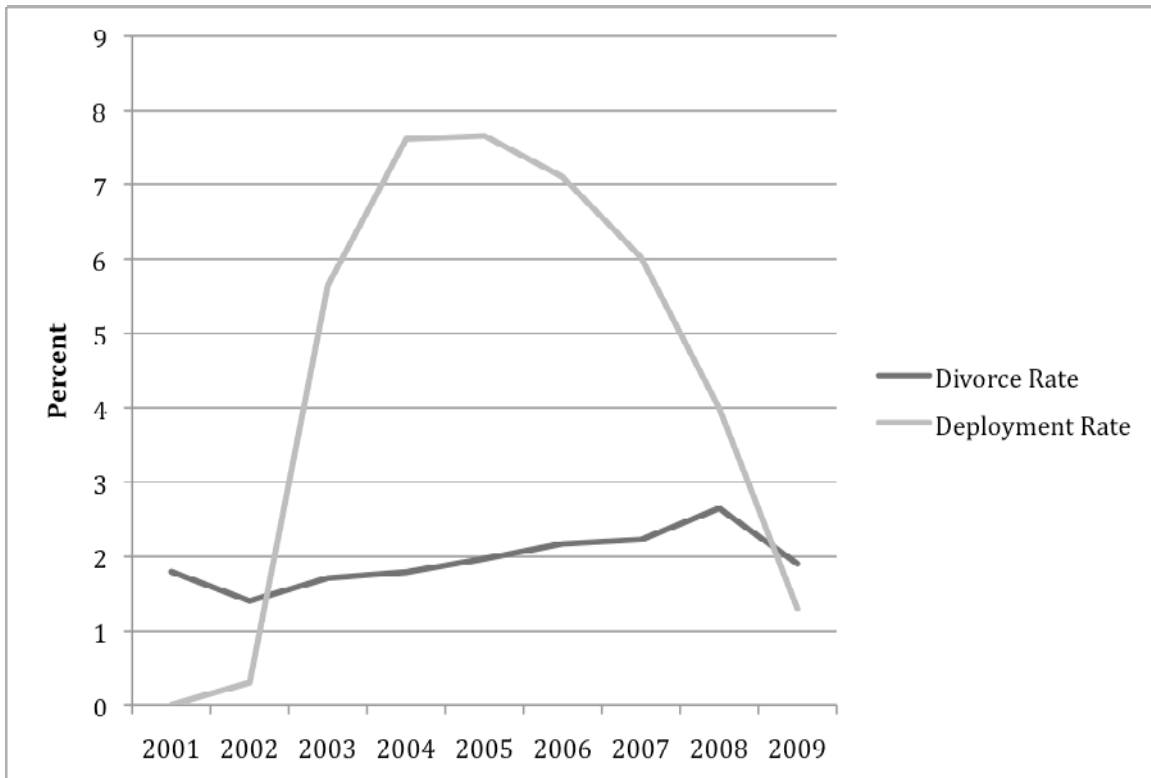


Figure 9. Restricted Sample of Marine Corps Enlistee Divorce and Deployment Rates per Year

Tables 2–5 provide the summary statistics for each of the four subsets of data. Each table includes the unrestricted and restricted data. The first column within each table gives the dependent variable name. The unrestricted and restricted sample columns represent the percentage of the sample made up by each dependent variable.

In Table 2, 19.92% and 37.7% of the members in the unrestricted and restricted sample respectively went on one deployment. In Tables 2-5 the third and fifth columns give the divorce rate by variable for the restricted and unrestricted sample. The divorce rate for the dependent variable deployed to OIF/OEF in Table 2, 16.26%, is found by dividing the members who deployed and divorced by the total number of members who deployed.

It is important to note that not all of the marriages in the samples were first-time marriages. Because this study only focused on the period 2000–2009,



there were some members who may have been on their second or third marriages during these years. A member's previous marital history was captured under the heading of Initial Observed Marital Status. Table 2 shows that 39% of the sample was already married at the first observation in the data set. Notice that in the unrestricted samples, a higher percentage of individuals were married during the first observation. This is important to keep in mind because it means that there was no way of knowing when these marriages began or what military experiences (including deployments) these Service members had prior to 2000. Additionally, assuming that members were married at the start of this research means that the calculation for age at the time of marriage is skewed. Age at the time of marriage was calculated as the first year and quarter the marriage was observed. Notice that for the unrestricted sample, the average age at the time of marriage was 37, whereas for the restricted sample, age at the time of marriage was 28.

Table 2 specifically shows descriptive statistics for Navy officers and the divorce rate for each individual variable. The sample was 80% male, which was expected because 85% of the total Navy officer population is male (DoD, 2008). Another defining characteristic of the sample is the fact that 74% of the Navy officers in the data were White; this is also in keeping with the total Navy officer population, which is 82% White (DoD, 2008). Tables 3–5 exhibit similar characteristics for the male and White demographic variables. Under the category of occupation, it is interesting to note that divorce rates varied with occupation. One of the lowest divorce rates in the sample was for the human relations (HR) occupation, at 9%. Traditionally, the HR occupation had less demanding training and deployment cycles than other occupational specialties. Fewer deployments and less time away from family may result in a lower level of work-interference-with-family conflict and, consequently, in a lower divorce rate.

Table 2. Descriptive Statistics and Divorce Rate by Variable for Navy



Officers

Dependent Variables	Unrestricted Sample	Unrestricted Sample Divorce Rate By Variable	Restricted Sample	Restricted Sample Divorce Rate By Variable
Deployment Characteristics				
Deployed to OIF/OEF	22.50%	16.26%	40.04%	8.59%
Not deployed to OIF/OEF	72.50%	19.66%	59.96%	12.83%
Number of Deployments				
1 deployment	19.92%	17.16%	37.70%	8.81%
2 deployments	1.54%	9.88%	1.60%	4.48%
3 deployments	0.48%	9.43%	0.36%	6.67%
Greater than 3 deployments	0.55%	7.40%	0.38%	6.25%
Length of Deployment				
1–90 days	3.93%	19.74%	5.83%	10.25%
91–180 days	4.66%	13.04%	8.77%	8.45%
181–365 days	9.29%	8.73%	19.76%	5.68%
Greater than 365 days	3.32%	4.51%	4.90%	3.90%
Location of Deployment				
Afghanistan	1.69%	8.39%	3.03%	7.87%
Iraq	4.17%	13.40%	8.62%	8.59%
Middle East other than Afghanistan or Iraq	5.72%	14.03%	10.22%	8.41%
Demographic Characteristics				
Gender				
Female	13.54%	23.78%	19.11%	18.13%
Male	81.46%	18.04%	80.89%	9.48%
Race				
White	74.85%	18.96%	82.90%	10.12%
Black	4.94%	23.52%	4.52%	12.70%
Asian	3.22%	22.05%	6.71%	15.66%
Hawaiian and Pacific Islander	0.17%	29.46%	0.26%	18.18%
American Indian/Alaskan Native	0.85%	28.52%	1.46%	13.11%
Rank				
O1–O3	49.85%	19.21%	98.06%	10.82%
O4–O5	36.14%	20.33%	1.74%	26.03%
O6–O10	8.11%	9.76%	0.02%	0.00%
WO1–WO5	0.91%	22.13%	0.00%	0.00%
Dual Military				
Spouse is in the military	3.64%	15.62%	9.44%	9.11%
Dependents				
No dependents	6.41%	34.40%	10.89%	13.38%
1 dependent	25.53%	21.16%	45.51%	12.13%
2 dependents	18.15%	17.51%	19.28%	8.43%
3 dependents	27.16%	16.26%	15.24%	10.97%
Greater than 3 dependents	17.74%	15.27%	9.08%	9.47%
Occupation at Time of Marriage				
SWO	13.71%	18.49%	10.73%	6.68%



SUB	5.35%	13.73%	8.29%	4.03%
SpecWar	0.76%	21.76%	0.48%	10.00%
SpecOps	0.53%	21.55%	0.24%	0.00%
HR	0.37%	8.94%	1.27%	1.89%
Aviation	21.97%	14.56%	21.00%	6.83%
EOD	5.86%	21.53%	6.12%	15.63%
PAO	0.67%	31.29%	0.57%	16.67%
Merchant Marine	1.59%	14.30%	1.91%	7.50%
FAO	0.01%	0.00%	0.02%	0.00%
Medical	21.26%	19.63%	23.96%	14.26%
Chaplain	1.42%	18.40%	1.72%	22.22%
JAG	2.10%	16.37%	2.82%	11.02%
Supply	5.41%	25.15%	5.40%	17.70%
Other	14.00%	23.54%	15.31%	14.66%
Faith				
Member chose to record religion	2.60%	1.34%	11.66%	0.20%
Initial Observed Marital Status				
Divorced	4.25%	23.02%	1.05%	27.27%
Married	37.48%	21.49%	11.35%	21.05%
Never Married	51.52%	16.87%	79.19%	9.71%
Widowed	0.08%	12.00%	0.00%	0.00%
Unknown	1.68%	10.95%	8.24%	8.41%
Age at Time of Marriage	37	36.60	28	30.34
Sample Size	66211	11861	4186	466

In Table 3, as in each of the descriptive statistic tables, the divorce rate for females, 21%, was higher than each respective Service's divorce rate. Since females in the military are in a nontraditional female job, the role conflict experienced in female military marriages may be much higher than that experienced in male military marriages.



Table 3. Descriptive Statistics and Divorce Rate by Variable for Navy Enlistees

Dependent Variables	Unrestricted Sample	Unrestricted Sample Divorce Rate By Variable	Restricted Sample	Restricted Sample Divorce Rate By Variable
Deployment Characteristics				
Deployed to OIF/OEF	21.65%	14.37%	46.27%	6.38%
Not deployed to OIF/OEF	78.35%	16.21%	53.73%	8.44%
Number of Deployments				
1 deployment	20.47%	14.65%	45.14%	6.34%
2 deployments	0.81%	8.97%	0.92%	8.24%
3 deployments	0.20%	10.49%	0.11%	0.00%
Greater than 3 deployments	0.18%	10.42%	0.10%	11.11%
Length of Deployment				
1–90 days	3.01%	16.57%	6.51%	6.50%
91–180 days	4.61%	15.56%	12.31%	5.73%
181–365 days	11.19%	11.62%	24.64%	6.12%
Greater than 365 days	2.42%	7.47%	2.58%	3.36%
Location of Deployment				
Afghanistan	0.63%	7.51%	0.39%	8.33%
Iraq	3.49%	9.60%	1.43%	9.09%
Middle East other than Afghanistan or Iraq	4.99%	10.22%	2.86%	9.47%
Demographic Characteristics				
Gender				
Female	17.87%	21.57%	18.00%	14.04%
Male	82.13%	14.56%	82.00%	6.05%
Race				
White	59.37%	16.76%	62.77%	7.57%
Black	14.92%	19.75%	22.49%	6.22%
Asian	6.35%	22.20%	4.49%	7.49%
Hawaiian and Pacific Islander	0.32%	15.50%	0.53%	4.08%
American Indian/Alaskan Native	2.99%	17.25%	6.44%	8.92%
Rank				
E1–E3	26.32%	14.60%	74.82%	8.31%
E4– E6	67.05%	16.79%	25.04%	4.98%
E7–E9	6.63%	10.73%	0.01%	0.00%
Dual Military				
Spouse is in the military	5.97%	17.31%	14.82%	7.47%
Dependents				
No dependents	9.56%	26.51%	12.25%	10.45%
1 dependent	31.59%	16.23%	50.31%	7.81%
2 dependents	23.34%	14.57%	24.54%	6.41%
3 dependents	21.74%	13.60%	9.43%	5.18%



Greater than 3 dependents	13.77%	13.02%	3.47%	6.25%
Occupation at Time of Marriage				
Construction	8.22%	15.55%	1.42%	8.40%
Marine engineering	8.03%	13.36%	8.44%	3.21%
Ship maintenance and operations	10.11%	16.54%	9.28%	5.50%
Aviation ground support	16.46%	14.69%	17.53%	4.89%
Logistics and administration	21.33%	19.07%	11.15%	9.14%
Health care	9.09%	15.88%	1.26%	15.52%
Cryptology	2.95%	18.27%	1.71%	7.59%
Ordnance	3.34%	18.35%	2.55%	2.55%
Communications systems	1.96%	15.90%	1.61%	3.38%
Weapons system and control	3.90%	15.35%	0.56%	15.38%
Faith				
Member chose to record religion	34.82%	17.47%	90.17%	7.19%
Initial Observed Marital Status				
Divorced	5.53%	18.06%	0.60%	16.36%
Married	27.46%	17.81%	5.60%	16.28%
Never married	66.65%	14.84%	93.53%	6.90%
Widowed	0.10%	16.17%	0.01%	0.00%
Unknown	0.26%	6.35%	0.12%	0.00%
Age at Time of Marriage	31	30.57	23	23.15
Sample Size	163971	25926	9218	690

In Table 4, the divorce rate for dual military couples, 15.13%, was higher than the sample average, 7.44%. In these cases, both spouses were at risk of deploying, which increased the chance of role conflict and divorce. However, the Navy samples shown in Tables 2 and 3 did not have a higher divorce rate for dual military couples than the sample average. The difference between dual military couples' divorce rates suggests fundamental differences in how orders are assigned in the Navy and Marine Corps.



Table 4. Descriptive Statistics and Divorce Rate by Variable for Marine Corps Officers

Dependent Variables	Unrestricted Sample	Unrestricted Sample Divorce Rate By Variable	Restricted Sample	Restricted Sample Divorce Rate By Variable
Deployment Characteristics				
Deployed to OIF/OEF	35.73%	8.08%	49.08%	4.18%
Not deployed to OIF/OEF	64.27%	7.09%	50.92%	4.84%
Number of Deployments				
1 deployment	33.66%	8.27%	46.82%	4.39%
2 deployments	1.63%	5.38%	2.05%	0.00%
3 deployments	0.30%	2.44%	0.00%	0.00%
Greater than 3 deployments	0.15%	5.00%	0.21%	0.00%
Length of Deployment				
1–90 days	2.40%	10.64%	4.72%	4.35%
91–180 days	4.94%	8.57%	5.13%	0.00%
181–365 days	13.77%	6.83%	25.26%	4.88%
Greater than 365 days	14.33%	6.77%	13.55%	1.52%
Location of Deployment				
Afghanistan	2.55%	5.71%	5.13%	8.00%
Iraq	16.25%	6.73%	31.42%	3.92%
Middle East other than Afghanistan or Iraq	8.10%	7.02%	12.11%	3.39%
Demographic Characteristics				
Gender				
Female	5.34%	14.05%	5.95%	10.34%
Male	94.66%	7.07%	94.05%	4.15%
Race				
White	82.11%	7.45%	72.90%	5.63%
Black	4.45%	12.13%	3.49%	0.00%
Asian	1.74%	8.37%	4.31%	4.76%
Hawaiian and Pacific Islander	0.35%	29.17%	0.41%	0.00%
American Indian/Alaskan Native	3.86%	7.74%	11.91%	1.72%
Rank				
O1–O3	48.41%	9.10%	100.00%	4.52%
O4–O5	37.98%	6.24%	0.00%	0.00%
O6–O10	6.34%	2.41%	0.00%	0.00%
WO1–WO5	7.26%	7.13%	0.00%	0.00%
Dual Military				
Spouse is in the military	3.47%	15.13%	8.21%	12.50%
Dependents				
No dependents	31.02%	2.05%	8.21%	7.50%
1 dependent	25.81%	12.20%	60.99%	5.39%
2 dependents	13.94%	9.78%	18.07%	2.27%
3 dependents	17.59%	8.13%	9.24%	2.22%
Greater than 3 dependents	11.64%	7.45%	3.49%	0.00%



Occupation at Time of Marriage				
Combat arms	22.71%	7.61%	17.04%	4.82%
Combat support	6.30%	9.14%	5.13%	4.00%
Combat service support	26.88%	8.16%	21.36%	1.92%
Aviation	28.42%	6.98%	18.48%	5.56%
Faith				
Member chose to record religion	94.13%	7.23%	83.37%	3.94%
Initial Observed Marital Status				
Divorced	7.85%	8.27%	1.03%	0.00%
Married	54.43%	8.00%	11.91%	6.90%
Never married	36.68%	6.34%	82.34%	4.49%
Widowed	0.17%	0.00%	0.00%	0.00%
Unknown	0.87%	13.33%	4.72%	0.00%
Age at Time of Marriage	36.36	33.13	25.56	24.70
Sample Size	13715	1021	487	22

The unrestricted Marine Corps enlistee sample (Table 5) shows that fewer than 1% of married Marines went on more than three deployments. The divorce rate for members who went on more than three deployments was 10% higher than the aggregate sample divorce rate. This suggests that completing more than three deployments puts an excessive strain on the family role, resulting in marital conflict and divorce



Table 5. Descriptive Statistics and Divorce Rates by Variable for Marine Corps Enlistees

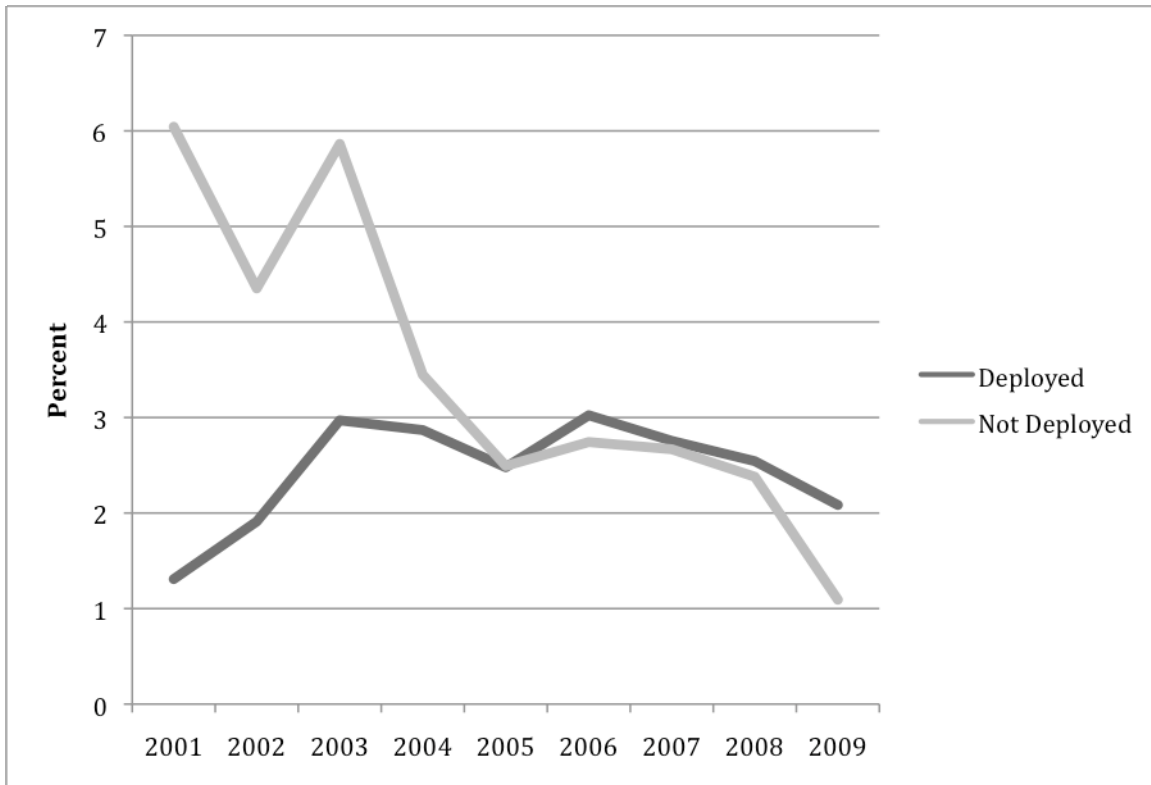
Dependent Variables	Unrestricted Sample	Unrestricted Sample Divorce Rate By Variable	Restricted Sample	Restricted Sample Divorce Rate By Variable
Deployment Characteristics				
Deployed to OIF/OEF	35.38%	8.76%	59.16%	5.42%
Not deployed to OIF/OEF	64.62%	8.09%	40.84%	6.90%
Number of Deployments				
1 deployment	34.30%	8.78%	57.89%	5.46%
2 deployments	0.96%	8.13%	1.24%	3.40%
3 deployments	0.10%	8.18%	0.02%	0.00%
Greater than 3 deployments	0.02%	10.00%	0.00%	0.00%
Length of Deployment				
1–90 days	2.54%	9.67%	4.35%	6.38%
91–180 days	8.04%	8.00%	12.34%	5.72%
181–365 days	17.11%	8.39%	31.32%	5.09%
Greater than 365 days	7.39%	6.78%	10.86%	3.78%
Location of Deployment				
Afghanistan	1.04%	7.78%	1.33%	5.91%
Iraq	16.21%	8.86%	30.58%	5.47%
Middle East other than Afghanistan or Iraq	6.10%	6.53%	9.03%	4.54%
Gender				
Female	7.21%	16.95%	9.25%	15.72%
Male	92.79%	7.66%	90.75%	5.03%
Race				
White	66.75%	9.20%	78.60%	6.07%
Black	8.44%	9.62%	0.92%	61.44%
Asian	1.77%	11.57%	2.17%	6.41%
Hawaiian and Pacific Islander	0.42%	10.87%	0.62%	6.86%
American Indian/Alaskan Native	1.72%	11.99%	2.33%	6.22%
Rank				
E1–E3	46.11%	10.23%	75.67%	7.44%
E4–E6	50.06%	6.86%	24.21%	1.50%
E7–E9	3.83%	4.59%	0.00%	0.00%
Dual Military				
Spouse is in the military	6.98%	16.49%	11.86%	10.18%
Dependents				
No dependents	8.38%	12.17%	6.58%	4.03%
1 dependent	48.52%	8.95%	61.86%	6.75%
2 dependents	25.39%	6.98%	23.45%	5.20%
3 dependents	12.38%	6.69%	6.41%	4.61%
Greater than 3 dependents	5.33%	6.77%	1.69%	3.93%
Occupation at Time of Marriage				
Combat arms	31.46%	6.71%	35.19%	3.50%



Combat support	14.20%	7.42%	13.57%	5.29%
Combat service support	34.85%	8.94%	36.61%	6.13%
Aviation	14.40%	8.93%	7.12%	7.46%
Faith				
Member chose to record religion	92.83%	8.21%	90.13%	5.80%
Initial Observed Marital Status				
Divorced	2.83%	9.42%	0.69%	5.26%
Married	19.23%	8.83%	3.11%	16.89%
Never married	77.91%	8.16%	96.06%	5.65%
Widowed	0.02%	7.69%	0.01%	0.00%
Unknown	0.01%	0.00%	0.01%	0.00%
Age at Time of Marriage	24.66	23.62	21.99	21.41
Sample Size	108732	9052	16572	998

Figure 10 highlights the difference in divorce rates for members of the unrestricted sample who deploy and those who do nondeploy. The data from 2001 to 2003 showed an increase in the divorce rate of both deployed and nondeployed members. The increase for not deployed members from 2002–2003, may capture the effect of deployments not included in the CTS database that still increase because of the attacks on 9/11. After 2003, the nondeployed divorce rate steadily decreased while the deployed divorce rate vacillated from 0.02–0.03. The unrestricted sample of Navy officers in Figure 2 showed an overall decreasing trend when both deployed and nondeployed Service members were combined into one divorce rate. Figure 10 reveals that the decreasing trend in the divorce rates for nondeployed members overshadowed the divorce rate for deployed members.



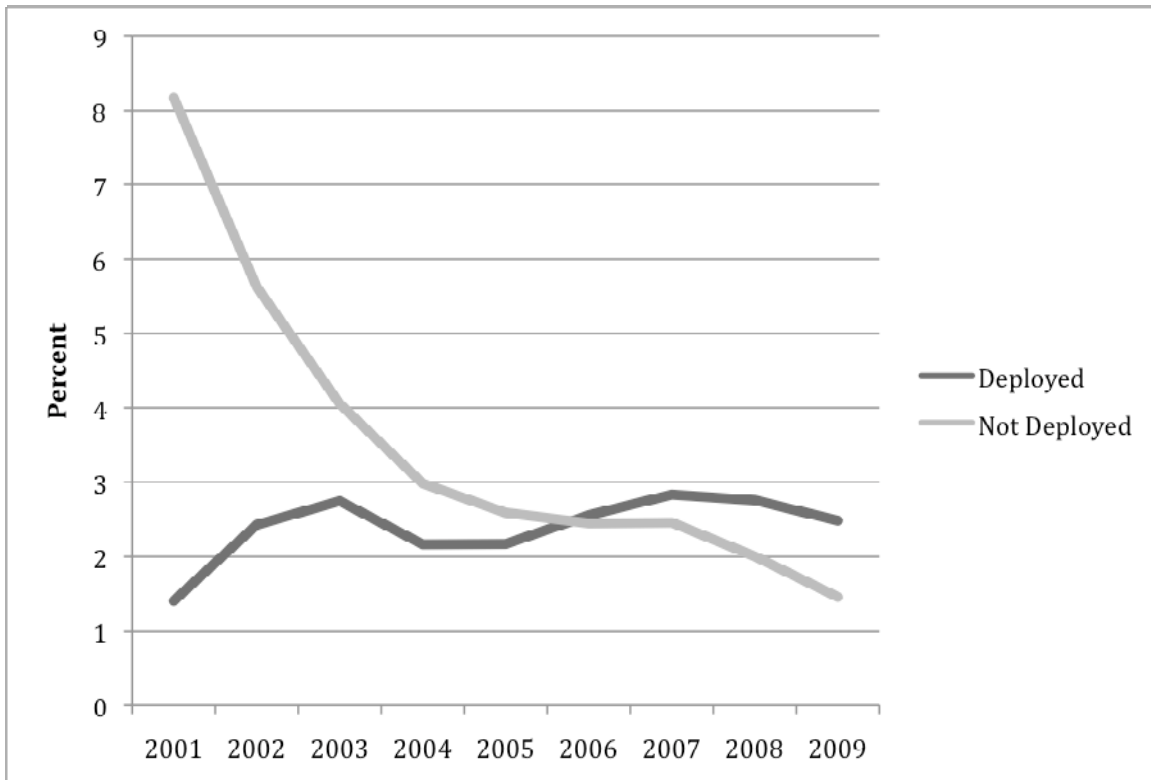


Note. The data for 2009 only covers until September 30, 2009.

Figure 10. Unrestricted Sample of Navy Officers Deployed and Nondeployed Divorce Rate

Figure 11 shows the unrestricted Navy enlistee divorce rate for deployed and nondeployed members. Similar to Figure 10, Figure 11 shows a deployed divorce rate that increased from 2001–2003 and then vacillated from 0.02–0.03, while the nondeployed divorce rate decreased. Figure 4 shows a decreasing trend in the divorce rate for the entire unrestricted sample of Navy enlistees, masking the difference in the divorce rate for deployed and nondeployed Navy enlisted members.



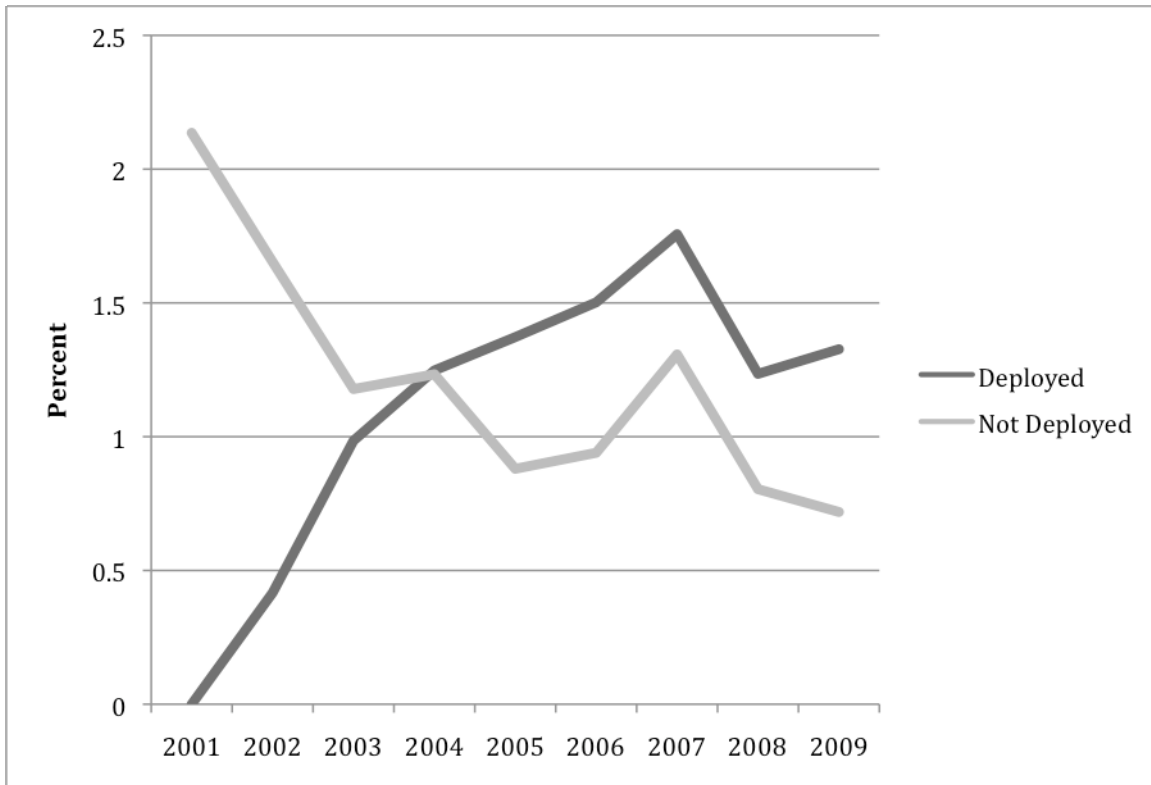


Note. The data for 2009 only covers until September 30, 2009.

Figure 11. Unrestricted Sample of Navy Enlistees Deployed and Nondeployed Divorce Rate

Figure 12 shows the unrestricted Marine Corps officer divorce rate for deployed and nondeployed members. As seen with the unrestricted Navy data sets, the unrestricted Marine Corps officer deployed divorce rate was greater than the nondeployed divorce rate, which decreased. Figure 6 shows a decreasing trend in the divorce rate for the entire unrestricted Marine Corps officer sample, masking the difference in the divorce rate for deployed and nondeployed Marine Corps officer members. It is interesting to note the spike in both the deployed and nondeployed divorce rate in 2007, which corresponds to the surge of operations in Iraq. Figure 6 and 7, which depict the deployment rate, show a relatively steady rate for the unrestricted sample and an increasing trend for the restricted sample from 2006–2008. This may suggest that in anticipation of increased deployments or in preparing to deploy, marriages experienced a greater level of conflict.



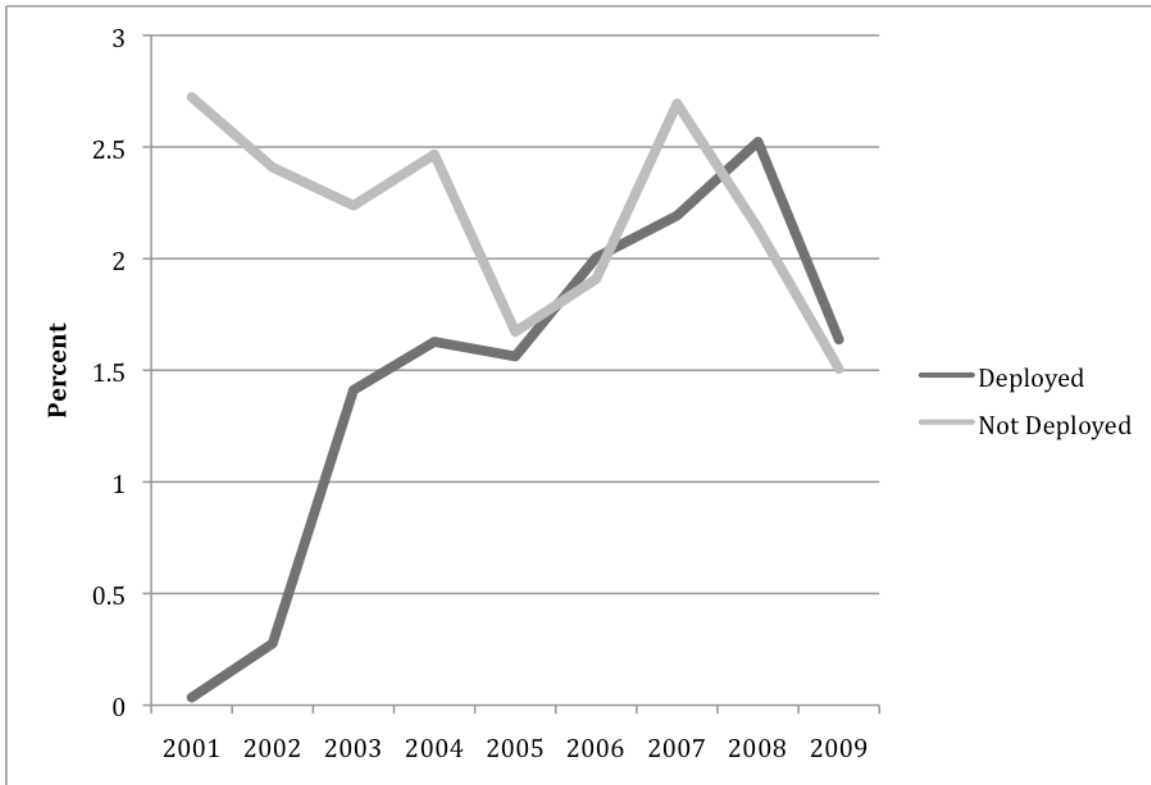


Note. The data for 2009 only covers until September 30, 2009.

Figure 12. Unrestricted Sample of Marine Corps Officers Deployed and Nondeployed Divorce Rate

Figure 13 shows the unrestricted Marine Corps enlistee divorce rate for deployed and nondeployed members. Unlike Figures 10, 11 and 12, Figure 13 depicts a nondeployed divorce rate that fluctuated from 2001–2009, spiking in 2009. Based on Figure 8, which depicts the aggregate unrestricted Marine Corps enlistee divorce rate, the nondeployed divorce rate still overshadowed the divorce rate trend; however, unlike the other samples, this trend was not decreasing.





Note. The data for 2009 only covers until September 30, 2009.

Figure 13. Unrestricted Sample of Marine Corps Enlistees Deployed and Nondeployed Divorce Rate

D. SUMMARY

Chapter IV defined each variable and reviewed the initial descriptive statistics for the four unrestricted and restricted data sets—Navy officers, Navy enlistees, Marine Corps officers, and Marine Corps enlistees. Based on the difference between the sample divorce rate and the Service divorce rate, the hypothesis that deployment to OEF/OIF is affecting the divorce rate appeared to be supported. However, the divorce rate comparisons in this section do not take into account other intervening factors, such as demographics and work requirements proxied by rank and occupation. The next section investigates whether the observed differences in divorce rates between deployed and nondeployed populations are causal.



V. MODEL SPECIFICATION AND MULTIVARIATE ANALYSIS

This chapter discusses the multivariate models specification and the results of the regression analysis. Section A presents the theoretical model selected. Section B presents the empirical estimates obtained from probit models.

A. MODEL SPECIFICATION

The dependent variable *divorced* was a binary variable. To predict the probability of divorce, probit models were used. A probit model is a maximum likelihood estimator that uses the standard normal density to approximate the probability of success as a function of observed variables. The probit model only allowed the predicted probabilities to vary between 0 and 1, which is an advantage over a standard linear probability model in which predicted probabilities can be greater than 1 or less than 0. The theoretical model is as follows:

$$P(\text{divorce} = 1|x) = \Phi(\beta_0 + x\beta). \quad (1)$$

The model states that the probability of divorce is a function of the vectors of each of the independent variables included on the right-hand side of the equation.

To determine if a member's marital status changed due to an increase in OPTEMPO, the monthly panel data were collapsed into one entry per person.²

1. General Models

A member's ability to be successful in marriage is shaped by a myriad of factors. A member's maturity, upbringing, family experiences, education, salary, prior marital history, and other roles he or she is responsible for, in addition to being a spouse, will all contribute to the success or demise of a marriage. Not all

² A panel logit model was considered, which did not require collapsing the data; however, not enough EDIPNs were both deployed and divorced. The resultant small sample size made the panel logit model impractical for this data set.



factors are measurable. Three probit models were estimated both on the unrestricted and the restricted samples. All models had the following common control variables: deployment location, gender, number of dependents, spouse in the military, prior marital status, rank, race, occupation, year of entry into the military, and faith. Estimation for the restricted samples included the variables controlling for the length of marriage, age at the time of marriage, and date of marriage.³

The main difference across the three models was the way in which deployments were hypothesized to influence divorce. Similar to other studies, the analysis in the first model provided an estimate of the probability of divorce as a function of the number of deployments. However, the number of deployments may not have been an accurate measure of the time that the member spent away from home. The number of deployments in the CTS data set recorded anything from one day to 365 or more days as a deployment. This means that if just the number of deployments were used, a person who deployed three times for 60 days each time would count the same as a member who deployed three times for 14 days each time. Both members would have spent time away from their families but not for the same length of time. The variable number of days deployed did not alone indicate the length of each deployment. Two members could both be deployed for 60 days, but one member could have two 30-day deployments and the other could have six 10-day deployments. To ensure that the amount of time deployed was captured in a way that represented the strain it exerted on a member's family role, the models were run to vary how the strain of deployment was accounted for. Specifically, each model included the following:

- Model 1: total days deployed was the key variable of interest and was controlled for because it captured time-based strain conflict—one of the elements in work-interference-with-family conflict (Greenhaus & Beutell, 1985).

³ This information could not be determined accurately for the unrestricted data set and thus was not included for the unrestricted sample.



$$P(\text{divorce} = 1|x) = \Phi(\beta_0 + \beta_1 \text{ total days deployed} + \beta_2 \text{ control variables} + e). \quad (2)$$

- Model 2: number of separate deployments was the key variable of interest and was controlled for because in role conflict, which work-interference-with-family conflict is a type of, there are three categories of conflicts: time-based, strain-based, and behavioral-based (Greenhaus & Beutell, 1985). The variable for the number of deployments did not measure the length of deployment; it only measured if a member departed and then returned. The act of getting ready to deploy and then returning from deployment induced strain-based and behavioral-based conflict.

$$P(\text{divorce} = 1|x) = \Phi(\beta_0 + \beta_1 \text{ number of deployments} + \beta_2 \text{ control variables} + e). \quad (3)$$

- Model 3: months deployed and number of separate deployments were the key variables of interest. Including both months deployed, and the number of separate deployments accounted for the three different types of conflict a member and his or her family might experience.

$$P(\text{divorce} = 1|x) = \Phi(\beta_0 + \beta_1 \text{ months deployed} + \beta_2 \text{ number of deployments} + \beta_3 \text{ control variables} + e). \quad (4)$$

Each of these three models were estimated separately for the four samples—Navy officers, Navy enlistees, Marine Corps officers, and Marine Corps enlistees—and updated with the corresponding occupations for each.

B. MULTIVARIATE ANALYSIS

Tables 6–13 present the marginal effects from the probit estimations for both the unrestricted and restricted samples (full results and probit coefficients appear in the appendices). The following model analysis presented in Tables 6–13 focuses on the key variables that described a member’s deployment. In each table, three sets of results are presented. The first column of each table only includes variables that account for the length of a member’s deployment. The second column only includes variables that account for the number of deployments. The third column accounts for both the length of deployment and



number of deployments. The tables present data for Navy officers first, followed by Navy enlistees, Marine Corps officers, and finally Marine Corps enlistees.

1. Navy Officers

Table 6 presents the results for the unrestricted sample of Navy officers. Results from the restricted sample appear in Table 7. In the unrestricted model, the variables representing number of days deployed and number of months deployed were negative and statistically significant at the 1%. At the onset of this research, the number of days a member deployed was thought to be a contributing factor to the marital stress—specifically the time-based conflict component. The negative coefficient suggests that time-based conflict is something that military families are able to adapt to. The number of months deployed while married can be interpreted in the following way: for each month deployed while married, the probability of divorce decreases by 0.03 percentage points. A member deployed for six months decreases his or her probability of divorce by 0.18 percentage points.

The second column in Tables 6-13, shows the results of the second model where deployment length variable is replaced by the number of deployments variable. The variable representing more than one deployment while married was negative and statistically significant at the 1% level (Table 6). According to the second column of Table 6, a Navy officer who went on more than one deployment was 0.074 percentage points less likely to divorce than a Navy officer who did not deploy.

The third column in Tables 6-13, results of the third model, includes variables that account for both the length of deployment and number of deployments. This is intended to capture the stress on a marriage from pre- and post-deployment transitions, while accounting for length of deployment (total time apart from spouse). In the third column months deployed was negative and significant at the 1% level, and 1 to 3 or more deployments while married were positive and significant at the 1% level. Between two members deployed for the



same length of time, the member who was deployed two times while married increased his or her likelihood of divorce by 0.224 percentage points. As displayed in Figure 14 after the second deployment, the marginal effect of three or more deployments decreased, even though it remained positive.

Diminishing returns shown in Figure 14 suggests that spouses in marriages that survived two deployments developed a coping method for the conflict created by deployments. Deployment location variables representing Afghanistan, Iraq, and the Middle East varied in significance and sign (positive and negative) but were included in all the models to control for the conditions of the deployment and potential work stress on the deployed spouse.

Table 6. Unrestricted Sample of Navy Officers Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	-0.032*** (0.007)		
91–180 days deployed while married	-0.084*** (0.005)		
181–365 days deployed while married	-0.128*** (0.004)		
Greater than 365 days deployed while married	-0.153*** (0.003)		
Number of months deployed while married			-0.030*** (0.001)
1 deployment while married		-0.003 (0.005)	0.142*** (0.008)
Greater than 1 deployment while married		-0.074*** (0.008)	
2 deployments while			0.224***



married			(0.026)
3 deployments while married			0.185***
			(0.042)
Greater than 3 deployments while married			0.105***
			(0.036)
Deployed to Afghanistan	-0.020	-0.092***	-0.056***
	(0.014)	(0.008)	(0.011)
Deployed to Iraq	0.062***	-0.047***	0.016
	(0.011)	(0.007)	(0.010)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.053***	-0.037***	-0.008
	(0.009)	(0.007)	(0.008)
Observations	61775	61775	61775

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

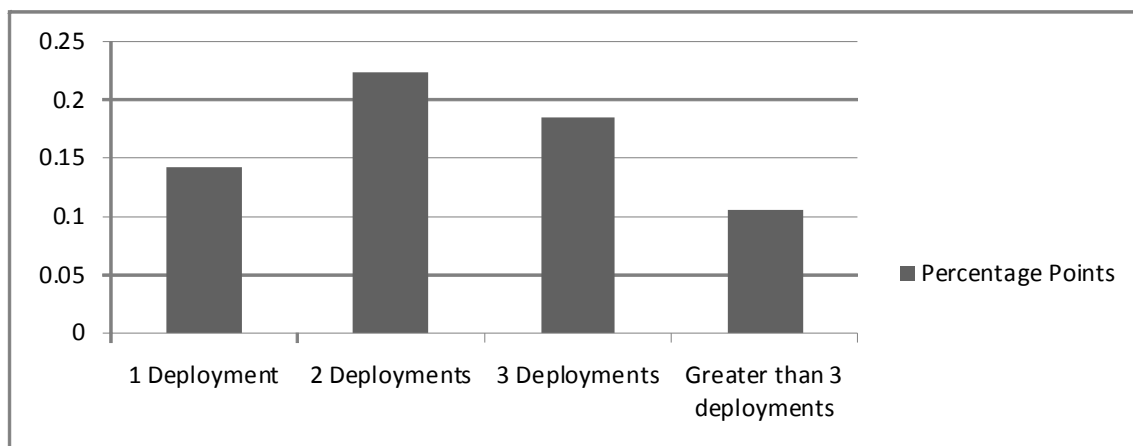


Figure 14. Summary of Marginal Effects of Deployment for Unrestricted Sample of Navy Officers Model

The restricted sample size was 3,579, approximately 5% of the unrestricted sample. Due to the decreased sample size, there were fewer individuals who experienced deployments and subsequent divorces; this caused many of the previous significant variables to no longer be significant. However, the restricted model's marginal effects were more precise than the unrestricted model. The restricted model had the advantage of controlling for a greater



majority of a member’s marital and deployment history. The restricted model included the following additional variables: length of marriage, age at the time of marriage, and year of marriage.

In the third model, results displayed in column three, the number of months a member was deployed and one deployment while married were still statistically significant at the 10% and 1% level, respectively. A member who deployed one time was 0.042 percentage points more likely to divorce than a member who did not deploy. Stated another way, Navy Officers who deployed once increased their likelihood of divorce by 37%. Additionally, the marginal effects of one deployment while married in the second and third model, results in column two and three, were positive and significant, 0.026 and 0.042, respectively (Table 7). Both aforementioned variables were positive and significant, just as in the unrestricted model. The similarities between the unrestricted and restricted models affirm that the results of the unrestricted model are valid.

Table 7. Restricted Sample of Navy Officers Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	0.022		
	(0.022)		
91–180 days deployed while married	0.021		
	(0.019)		
181–365 days deployed while married	0.006		
	(0.013)		
Greater than 365 days deployed while married	0.016		
	(0.026)		
Number of months deployed while			-0.003*



married			(0.001)
1 deployment while married		0.026**	0.042***
		(0.012)	(0.015)
Greater than 1 deployment while married		0.039	0.091
		(0.046)	(0.074)
Deployed to Afghanistan	0.004	-0.003	0.002
	(0.021)	(0.018)	(0.020)
Deployed to Iraq	0.007	-0.004	0.002
	(0.016)	(0.013)	(0.015)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.023	0.013	0.016
	(0.017)	(0.015)	(0.016)
Observations	3579	3579	3579

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

2. Navy Enlistees

Table 8 presents the marginal effects from probit models using the unrestricted sample of Navy enlistees. Table 9 presents the results from models using the restricted sample. In Table 8, the coefficient of the variables that represented 91–180 days deployed, 181–365 days deployed, greater than 365 days deployed, and number of months deployed were negative and statistically significant at the 1% level. This was similar to the results obtained using the unrestricted sample of Navy officers.

In the second model, a member who went on one deployment, 0.005 percentage point increase, was 3.27% more likely to divorce than a member who did not. When the number of months a member was deployed was controlled for, the marginal effect of one deployment increased to 0.072 percentage points. In the third model, the variables 1 deployment while married through 3 deployments while married were positive and statistically significant at the 1% level, and greater than three deployments was positive and statistically significant at the 10% level. Respectively, this represented a 45%, 44%, 55%, and 36% increased likelihood of divorce than that of the member who was not deployed. Figure 15



illustrates the diminishing return of number of deployments. For Navy enlistees, the effect of deployments on the likelihood of divorce decreased after three deployments.

Table 8. Unrestricted Sample of Navy Enlistees Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	-0.007 (0.005)		
91 –180 days deployed while married	-0.015*** (0.004)		
181–365 days deployed while married	-0.041*** (0.003)		
Greater than 365 days deployed while married	-0.078*** (0.005)		
Number of months deployed while married			-0.012*** (0.001)
1 deployment while married		0.005* (0.003)	0.072*** (0.005)
Greater than 1 deployment while married		-0.038*** (0.008)	
2 deployments while married			0.070*** (0.016)
3 deployments while married			0.087*** (0.031)
Greater than 3 deployments while married			0.056* (0.029)
Deployed to Afghanistan	-0.047*** (0.010)	-0.071*** (0.009)	-0.050*** (0.010)



Deployed to Iraq	-0.015*** (0.006)	-0.050*** (0.004)	-0.026*** (0.005)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.027*** (0.005)	-0.058*** (0.004)	-0.037*** (0.004)
Observations	163525	163525	163525

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

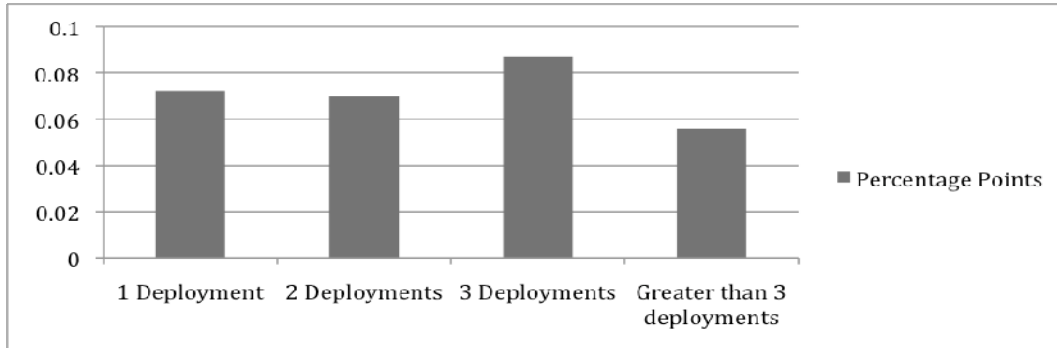


Figure 15. Unrestricted Sample of Navy Enlistees Model Marginal Effects of Deployment

Table 9 presents the estimates from the restricted sample of Navy enlisted personnel. Deploying 181–365 days and going on one deployment were both positive and statistically significant at the 5% level in the first and second model, respectively. For a Navy enlistee who deployed 181-365 days, he or she was 15% more likely to divorce than a member who did not deploy. The marginal effect of one deployment, 0.008 percentage points, increased the likelihood of divorce by 10% in the second model. This was a 7% increase in the likelihood of divorce from the unrestricted model discussed previously.

The third model is further confirmation that the signs of the third unrestricted model are valid, since number of days deployed was negative and number of deployments was positive, as seen in the Table 8 coefficients. The restriction of this sample to members whose total military service was observed for approximately four years limits the number of members who divorced to 690 (about 7.5% of the original data). Of the members who divorced, only 251 also



deployed one or more times (2.7% of the original data). The average length of marriage in the restricted data set was 2.4 years. The fact that being deployed a quarter to half of the members total married time increased the likelihood that a member would divorce is consistent with the role conflict discussed in Chapter 2.

Table 9. Restricted Sample of Navy Enlistees Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	-0.001		
	(0.006)		
91–180 days deployed while married	0.000		
	(0.005)		
181–365 days deployed while married	0.012**		
	(0.005)		
Greater than 365 days deployed while married	0.010		
	(0.014)		
Number of months deployed while married			0.000
			(0.001)
1 deployment while married		0.008**	0.007
		(0.003)	(0.005)
Greater than 1 deployment while married		0.040	0.039
		(0.030)	(0.033)
Deployed to Afghanistan	-0.014	-0.014	-0.014
	(0.013)	(0.013)	(0.013)
Deployed to Iraq	0.006	0.006	0.006
	(0.013)	(0.013)	(0.013)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.017	0.015	0.015
	(0.012)	(0.011)	(0.012)
Observations	9193	9193	9193



Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

3. Marine Corps Officers

Table 10 presents marginal effects from the probit models for the unrestricted sample of Marine Corps officers. Table 11 presents the same estimates for the restricted sample. In Table 10, the variables measuring length of deployment were all negative and statistically significant at the 1% level. The coefficients representing 181–365 and greater than 365 days, -0.018 and -0.016, equated to a 24% and 22% decrease in the likelihood of divorce, respectively. The fact that the number of days deployed had such a strong impact on the likelihood of divorce reinforced the difference between the stress exerted by the length of deployment and the act of going on deployment. One deployment while married was positive and statistically significant at the 1% level for the third model; this was consistent throughout the previously presented unrestricted results. In the third model, Marine Corps officers who deployed on time were 32% more likely to divorce. The Afghanistan, Iraq, and Middle East coefficients were negative but vary in significance. The negative sign of the deployment location coefficients may indicate that Marine Corps officers deployed closer to combat had a greater satisfaction in his or her time spent at work. A greater satisfaction with time spent at work could translate to less work-family conflict, as suggested by Pittman’s (1994) work on greedy institutions.

Table 10. Unrestricted Sample of Marine Corps Officers Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	0.016 (0.015)		
91–180 days deployed while married	-0.005 (0.009)		
181–365 days deployed	-0.018***		



while married			
	(0.006)		
Greater than 365 days deployed while married	-0.016**		
	(0.007)		
Number of months deployed while married			-0.001***
			(0.000)
1 deployment while married		0.010	0.024***
		(0.006)	(0.007)
Greater than 1 deployment while married		-0.012	
		(0.015)	
2 deployments while married			0.009
			(0.022)
3 deployments while married			-0.034
			(0.029)
Greater than 3 deployments while married			0.001
			(0.063)
Deployed to Afghanistan	-0.012	-0.022**	-0.016
	(0.012)	(0.011)	(0.012)
Deployed to Iraq	-0.005	-0.020***	-0.013**
	(0.007)	(0.006)	(0.006)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.001	-0.014*	-0.003
	(0.009)	(0.007)	(0.009)
Observations	13111	13111	13111

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

The restricted Marine Corps officers' marginal effects are presented in Table 11. None of the key variables' coefficients were statistically significant.

Table 11. Restricted Sample of Marine Corps Officers Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	-0.001		
	(0.001)		
181–365 days deployed while married	-0.003		
	(0.005)		



Greater than 365 days deployed	-0.003		
	(0.005)		
Number of months deployed while married			-0.000
			(0.000)
1 deployment while married		0.000	0.001
		(0.003)	(0.001)
Deployed to Afghanistan	0.314	0.158	0.364
	(0.234)	(0.151)	(0.296)
Deployed to Iraq	0.015	0.003	0.008
	(0.021)	(0.006)	(0.014)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.010	0.001	0.005
	(0.022)	(0.006)	(0.013)
Observations	284	289	289

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

4. Marine Corps Enlistees

The unrestricted Marine Corps enlistees models' marginal effects are presented in Table 12, and the restricted results are in Table 13. In the unrestricted model, the coefficient of the variables that represent 91–180 days deployed, 181–365 days deployed, greater than 365 days deployed, and number of months deployed were negative and statistically significant at the 1% level. For the significant coefficients in the previous sentence, Marine Corps enlistees were 17%, 16%, and 34% less likely to divorce. One deployment while married was positive and statistically significant at the 1% level for the second and third model. In the second model, the .008 percentage points increase for one deployment equated to a 10% increase in the likelihood of divorce. In the third model, the coefficients for the number of deployments increased through greater than 3 deployments, as displayed in Figure 20. The increase represents an increase in the likelihood of divorce for the unrestricted Marine Corps enlistee sample each time he or she went on an additional deployment, by 26% and 43%⁴. A lack of diminishing returns, as seen in the other unrestricted models, indicated that at no

⁴ Only the statistically significant coefficients were interpreted.



point did enlisted Marines develop a coping method for the stress of transitioning to deployment on the family.

The Afghanistan, Iraq, and Middle East coefficients vary in sign and significance. In Model 1 and Model 2, the variable representing a deployment to Iraq was positive and significant at the 1% level. The fact that the Iraq location coefficient was negative contradicts the unrestricted Marine Corps officer models, representing a possible difference in the way Marines officers and enlistees view deployment to areas closer to combat.

Table 12. Unrestricted Sample of Marine Corps Enlistees Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	0.003 (0.005)		
91–180 days deployed while married	-0.014*** (0.003)		
181–365 days deployed while married	-0.013*** (0.003)		
Greater than 365 days deployed while married	-0.028*** (0.003)		
Number of months deployed while married			-0.002*** (0.000)
1 deployment while married		0.008*** (0.002)	0.022*** (0.003)
Greater than 1 deployment while married		0.005 (0.009)	
2 deployments while married			0.036*** (0.012)
3 deployments while married			0.056 (0.038)
Greater than 3 deployments while married			0.104



			(0.105)
Deployed to Afghanistan	0.023**	0.003	0.013
	(0.010)	(0.008)	(0.009)
Deployed to Iraq	0.024***	0.003	0.011***
	(0.004)	(0.003)	(0.003)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.000	-0.016***	-0.009**
	(0.004)	(0.003)	(0.004)
Observations	108081	108081	108081

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

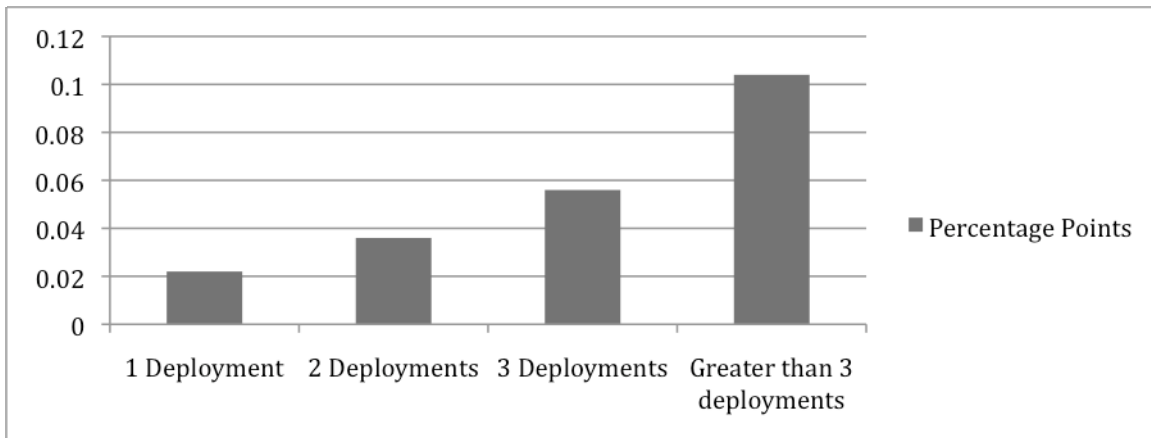


Figure 16. Unrestricted Sample of Marine Corps Enlistees Model Marginal Effects of Deployment

The restricted Marine Corps enlistees' marginal effects for the variables representing 91–180 days deployed, 181–365 days deployed, and greater than 365 days deployed were positive and statically significant at the 5% level. Stated in terms of likelihood, a Marine Corps enlistee was 8.7%, 8.9%, and 14.5% more likely to divorce than a nondeployed member. This and the restricted Navy enlistee model (Table 9) were the only models to have positive and significant coefficients for a variable representing length of deployment. The length of deployment variable may have captured an inability of enlisted members to maintain a marriage over long periods of separation. It could be the case that enlistees' spouses were ill equipped to manage the additional role responsibilities while the Service member was deployed. The coefficient may represent a lack of maturity or communication skills by one or both members of the marriage, which



would correspond to the younger age group and level of experience that the restricted enlistee samples captured. The variable representing one deployment while married was also positive and significant at the 1% level, likely also capturing a lack of enlisted Marines' ability to cope with separation from their spouse.

Table 13. Restricted Sample of Marine Corps Enlistees Marginal Effects

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1–90 days deployed while married	0.003		
	(0.004)		
91–180 days deployed while married	0.005**		
	(0.003)		
181–365 days deployed while married	0.005**		
	(0.002)		
Greater than 365 days deployed while married	0.009**		
	(0.004)		
Number of months deployed while married			-0.000
			(0.000)
1 deployment while married		0.005***	0.006***
		(0.001)	(0.002)
Greater than 1 deployment while married		0.003	0.004
		(0.007)	(0.008)
Deployed to Afghanistan	0.003	0.003	0.004
	(0.006)	(0.006)	(0.006)
Deployed to Iraq	0.005**	0.005**	0.005**
	(0.002)	(0.002)	(0.002)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)
Observations	16331	16331	16331

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.

The results from the third unrestricted model were robust in that when the control variables of the third model were altered, the key variables showed little



to no variation. The third unrestricted model was chosen for robustness testing because this model accounted for the length of deployments and the number of deployments a member completed during his or her marriage. To test the robustness, five additional models were estimated; the key variables were the same throughout the models.

The control variables varied for each model in the following order: an additional variable was added to represent if a member left the military, and both rank and occupation variables were taken at the last observation instead of at the first observation, singularly and then jointly included in the models. This process was repeated for all four samples: Navy officers, Navy enlistees, Marine Corps officers, and Marine Corps enlistees. Results of the regressions are presented in Appendices I–J. The key variables' coefficients varied on average 0.01 percentage point or fewer.

The control variables had the following trends throughout the different data sets and models. Female members had a positive coefficient, meaning females were more likely to divorce than males. This is in keeping with the RAND study on military divorce (Karney & Crown, 2007). In general, a greater number of dependents decreased the likelihood of divorce.⁵ Members in their first marriage had a negative coefficient and thus were less likely to divorce than members who had previously been married. Marrying at a younger age increased the likelihood of divorce. Members who married prior to age 25, had previously been married, and or who were married without children were all known to be at a higher risk of divorce—the models controlled for this and the data behaved as expected (Clarke-Stewart & Brentano, 2006). Occupation variables varied and cannot concisely be summarized. An exception to this is in the restricted sample Navy Officers marginal effects, where the only significant occupation was HR. Having an HR occupational code decreased the likelihood of divorce.

⁵ In general, a dependent value greater than one means that the family has children.



C. SUMMARY

All members who were married during 2000–2009 are at risk of divorce. In the unrestricted models, each of these at-risk members was included in the regression. In the unrestricted models, the data was limited in that the date of marriage for members who were married prior to 1999 could not be determined. Thus, an accurate length of marriage and age at the time of marriage could not be determined. By restricting the data to four years of observed service for the enlistee sets and 5–10 years of observed service for the officer sets, a member's date of marriage could be determined, and thus, age at the time of marriage and length of marriage could be factored into the regression accounting for more of the previously unobservable factors. However, the restricted sample can only capture individuals who are young and still at a very early stage of marriage.

The effects of deployment on divorce rates vary somewhat, depending on whether one examines the general active duty population (the unrestricted sample) or the younger/early-marriage sample (the restricted sample). In the unrestricted sample, after controlling for months of deployment, the number of deployments while married was consistently significant and positive across six out of the eight models. This suggests that in the general active duty population, the length of the deployment is not as great a factor in creating marital conflict as the actual act of deploying. The unrestricted data set was large enough to have a significant number of members who deployed on more than one deployment. As the number of deployments increased in most cases, so did the coefficient representing the likelihood of divorce. In the Navy officer and enlistee models, the coefficients did not increase linearly and appear to peak at two and three deployments, respectively—this could suggest that beyond a certain threshold, families that are still intact adjust and accept the frequent separation. Additionally, families that have the most difficult time with deployment and separation likely divorced after the first deployment, thus removing them in follow-on deployment analyses. Even if families adapted to deployment, the divorce rate for deployed members was still higher than that of the divorce rate for nondeployed members.



However, in the restricted Navy and Marine Corps enlistee models, the number of days deployed in the first model was positive and significant—the largest effect occurred in the 181–365 days category for the Navy and at the greater than 365 days category for the Marine Corps. The results suggest that in the restricted data set, where the overall length of marriage was shorter and the average age of the sample was younger, longer separation from a spouse and the act of deploying caused significant marital conflict. It is clear, based on these results, that deployments do increase a member’s marital conflict.



VI. MILITARY COST OF DIVORCE

A. RELEVANCE

In the field of labor economics, companies are assumed to be maximizers, generally trying to produce more with less. Companies that are maximizers strive to maximize their profits by increasing revenue from production or decreasing the cost of production.

The military can also be thought of as a company that is trying to produce more with less. Instead of producing a profit, the military is trying to increase national security with a fixed or decreasing budget. The military is heavily reliant on manual labor. For the military to increase national security, maximizing military members' productivity would be a logical part of the process. Increasing worker productivity effectively increases the military's budget without actually expanding the one that Congress set. When worker productivity is increased, the military increases the amount of labor accomplished per wage. Conversely, if worker productivity is lost, less labor is accomplished per wage.

B. THEORETICAL MODEL

All companies strive to increase worker productivity. However, there are some practical problems that prevent the development of a universal formula for increasing worker productivity. The first problem is that each worker has a different set of preferences that make up his or her most productive work environment. The second problem is that if a company could set the right environment, how would worker productivity be measured? In most companies, worker productivity is—at least in part—a subjective measure made by one or more supervisors. However, absenteeism is measurable, and studies have shown that worker productivity within a company environment is directly linked to worker absenteeism. This leads to the conclusion that changes in worker absenteeism would have an effect on worker productivity. In the case of the



military worker, physical absenteeism is not tolerated, but absenteeism by way of decreased productivity or refusal to complete work in a timely manner occurs.

Marital tension can lead to more than worker absenteeism. Divorced adults have consistently been found to have higher incidences of depression, anger, anxiety, loneliness, suicide, decreased immune system, and earlier death (Clarke-Stewart & Brentano, 2006). Although some divorces are amicable, most divorces still induce a level of stress on the divorcing people—the majority of studies have found that there is a transition period for all divorces in which the worker is more likely to suffer from the above-mentioned conditions. It is important to note that the impact of a divorce is different for men and women. Over 80% of the military's members are male, and men are more likely to find the initial separation more difficult to handle than women, who sometimes have more persistent problems such as depression (DoD, 2008; Clarke-Stewart & Brentano, 2006).

In the study “Associations Between Marital Distress and Work Loss in a National Sample,” Forthofer et al. (1996) found that marital distress was positively associated with work loss. The study combined metrics for work loss due to cutbacks and absenteeism with marital quality data from the National Comorbidity Survey (NCS). The number of workdays lost was estimated through two questions that assessed if the respondent was able to conduct normal tasks within the last 30 days. Results from the work-loss questions were coupled with a question assessing marital conflict (Forthofer et al., 1996). Only employed and married respondents were considered in the population; this resulted in a sample of 1,431 men and 1,138 women (Forthofer et al., 1996).

Forthofer et al. (1996) separated the analysis of men and women in their study. For women, they found no statistical significance between marital distress measures and work loss. However, in the male sample, they found that marital distress had an increased and significant effect on work loss (Forthofer et al., 1996). The study concluded that gender and marital duration had a significant effect on marital distress in predicting workdays lost. The following variables



were additionally shown insignificant in predicting workdays lost due to marital distress: socio-demographic, parenting, and job demand, which led the researchers to conclude that work loss due to marital distress was stable across a number of previously considered significant factors.

As noted earlier, males are the most affected by marital distress. Within the male population of their study, Forthofer et al. (1996) evaluated different lengths of marital duration. They found marital duration to be the only factor that significantly interacted with marital distress. They concluded, based on the results of interacting marital distress and marital duration, that men with a marital duration of 0–10 years suffer from the greatest effects of marital distress (Forthofer et al., 1996).

In the study by Forthofer et al. (1996), a male with a marital duration of 0–10 years had a slope coefficient for marital distress of 1.34. The variable marital distress was measured in standard deviations from the mean marital distress of the population. A male who was married for two years experiencing one standard deviation of marital distress greater than the mean missed 1.34 days more of work per month than the standard married male worker (Forthofer et al., 1996). The measure in this study, marital distress, does not actually track the divorce of a couple but only accounts for the distress that is experienced before, during, and after a marriage.

C. PRACTICAL APPLICATION

Because the practical application in this study looks at divorce instead of at marital distress, two standard deviations above normal marital tension were used to represent divorce. At two standard deviations, according to the Forthofer et al. (1996) study, a male would experience 2.64 days of work loss per month. The trauma of a divorce is different for every person, and thus, the severity and duration of a divorce's effect also varies. For the purpose of analysis, four months is the average amount of time a male worker continues to experience work loss due to a divorce. Using the aforementioned conditions, the total



potential days of work lost for a male with a marital duration of 0–10 years would be 10.72 days per worker per four months.

Using a standard workday of eight hours and a work month of 20 days, the male in the aforementioned example will work 13.4% less than the average worker per month. Stated another way, this worker will only work 86.6% of the time for which he is being paid; effectively, the worker is being paid for more than he is producing. Even one standard deviation of marital distress would equate to 6.7% work loss per month.

Productivity that is lost can be represented in terms of dollars by using the salary of the worker. The military member is not paid by the hour, so when they are absent from work or fail to perform assigned tasks, they are essentially being paid to do nothing. Stated another way, the military is paying a greater amount for less work. According to the Congressional Budget Office, the median pay for enlisted personnel with 5 years and 10 years of work experience was \$50,000 and \$64,000 in FY2010 dollars (CBO, 2011). Using an average median pay of \$57,000, an enlisted member experiencing divorce would have been overpaid by \$2,546 that year.

In understanding the possible impact of marital distress on workdays lost, it is important to note that the days lost due to marital distress are in addition to other reasons a worker's productivity may decrease. Other causes of work-loss are illness and lack of sleep, both of which can be increased by marital distress. But the employer could change the number of days of work loss expected by offering the employee preventive services like counseling or a flexible schedule that help him or her to reduce marital tension. In the study by Forthofer et al. (1996), the empirical analysis showed that a method of preventive marital interventions could decrease the work lost due to marital distress by 0.29 lost work days per person per month in the subset to which the effect was applied. This would change the number of days of work loss for a male in the process of a divorce to 8.4 days instead of 10.72 days. Furthermore, depending on the preventive marital intervention method, the example male may only experience



one standard deviation of marital distress over four months and altogether avoid divorce, reducing work lost to 4.2 days instead of 10.72 days. The decrease in lost work days is directly correlated to worker productivity. A worker missing 10.72 days over a four-month period versus a worker missing 4.2 days over the same period has the following percent productivity compared to the standard worker: 86.6% versus 94.8%.

In the military, overall effectiveness is measured through mission accomplishment. There is no quantitative metric of singular worker productivity. By using the Forthofer et al. (1996) study on workdays lost due to marital distress, it is possible to estimate the decrease in productivity that the military suffers due to divorces as a result of OIF/OEF. Workdays lost are dependent on the level of marital distress and the number of months over which the distress has occurred, so the model was calculated with an increase of two standard deviations of marital distress over four months, resulting in a coefficient of 10.72 for the number of days lost per year. According to the data provided by the Defense Manpower Data Center (DMDC) from September 11, 2001–September 30, 2009, 9,729 male Navy officers, 19,605 male Navy enlistees, 918 male Marine Corps officers, and 7,724 male Marine Corps enlistees have divorced, giving a total of 37,976 male divorces. Military work lost from divorcing male members is given by the following equation:

$$\text{Military work lost due to marital distress} = (10.72 \text{ days lost per worker per year}) \times (37,976 \text{ workers}). \quad (5)$$

By virtue of military females' self-selection into a primarily male-dominated occupation, it is possible that the females in the military will deal with conflict and marital distress in a similar way to their male counterparts. The number of workers affected by marital distress when female divorces are included will increase from 37,976 to 47,860. Military work lost from divorcing male and female members is given by the following equation:



Military work lost due to marital distress = (10.72 days lost per worker per year)*(47,860 workers) (6)

Equations 5 and 6 result in 407,103 or 513,059 days of military work lost and thus productivity lost due to marital dissolution over the course of eight years, respectively. A clear understanding of the amount of work lost is given when the number of divorces is considered by year.

The total number of enlisted male divorces from September 11, 2001–September 30 was 27,329. Using the same format as Equation 5 and 6, the total days of work lost for enlisted male members is 292,967 days. Applying the FY2010 median compensation rate, divorce cost the Department of the Navy (DoN) \$69,579,634 in lost productivity. This is approximately \$8.7 million per year. If that additional \$8.7 million were to remain in the military’s personnel account, at the median compensation rate of \$57,000, 150 additional enlisted members could be funded.

In 2002, there were 3,441 divorces among male Navy enlisted members. Assuming that over the course of a year, each member was expected to work an average of 20 days per month and 12 months per year, 825,840 days of work should have resulted over the course of a year. However, since these members were experiencing marital distress, as evidenced by a change in marital status to divorced, they would have worked 36,887 fewer days. The members experiencing marital distress lowered the married members’ military productivity by 4.5%. Looking at it another way, the 36,887 days of lost work equates to 154 workers working 240 days per year.

The results from Chapter V show that a married deployed military member has an increased likelihood of divorce. In the unrestricted Marine Corps enlistee sample, 1,016 males divorced in 2007 and 582 had been on one or more deployments during his marriage. Over 50% of the productivity lost due to divorce has also been linked to deployment. The fact that deployment is a



common trait between divorce and lost productivity does not suggest that deployment causes divorce but it is sufficient to conclude that members who are married and deployed suffer from an additional strain. This additional strain not only affects the member who is experiencing the marital conflict but also affects the entire mission capability of the unit. As mentioned earlier, preventative measures such as counseling and flexible work hours were shown by the Forthofer et al. (1996) study to decrease work loss due to marital distress. Further analysis should be conducted to determine what measures are appropriate for deployed and nondeployed military members. It may be the case that something as simple as mandatory premarital counseling could give members the tools necessary to address issues before they are married and then deployed.



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VII. CONCLUSIONS AND RECOMMENDATIONS

In FY2009, the Department of Defense (DoD) recruited 168,900 active duty troops—a number that exceeded the 100% recruiting goal by 3% (Tyson, 2009). The economy and the unemployment rate in FY2009 were credited with the extraordinary recruiting achievement. Recruits in FY2009 had a higher level of education and higher scores on the Armed Forces Qualification Test (AFQT) than previous cohorts, suggesting that the Armed Forces had more applicants than needed and could choose only the best. High unemployment rates have historically been correlated with strong recruiting years (Tyson, 2009).

To fully take advantage of the number of qualified military applicants provided by the FY2009 unemployment rate, the military needs to retain as many trained and qualified members as possible. Over 50% of the enlisted members past the age of 25 are married—20% more than the equivalent civilian population. Therefore, by improving personnel policies that anticipate the needs of married Service members, the military can increase retention and increase the return on initial recruiting and training investments.

Several initiatives have been proposed and implemented in recent years to reduce the stress on the family. A pilot program allows members to take up to three years off. In this program, each month the member is not engaged in active service, he or she will owe two additional months of service (Maze, 2008). If a member were to take a year off to start a family, he or she would be required to return to military service for a minimum of two years following the break. This thesis suggests that reducing the frequency of deployments and increasing deployment length by a month or two (in order to maintain the same readiness) would reduce the stress on the family as measured by divorce rates. Additionally, as the economy continues to recover, alternative job options will increase. The military's continued refinement of personnel policies will be an advantage over competing employers in both recruitment and retention.



It is a mistake simply to look at the overall trend of the Navy and Marine Corps divorce rates and assume that because the aggregate divorce rate is decreasing, there are no underlying issues. Figures 10–13 clearly depict a different divorce rate for members who are deployed to OIF/OEF than members who are not deployed to OIF/OEF. The results of Chapter V confirm that in the general active duty population for the Navy and Marine Corps (i.e., unrestricted models), more frequent separation due to deployments increases the probability of divorce, while longer deployments do not appear to be a major factor in affecting the divorce rate in the unrestricted sample. This analysis confirms the hypothesis that an increased OPTEMPO increases the divorce rate. Additionally, longer deployments appear to adversely affect the younger Navy and Marine Corps enlisted members in their first four years of service and the early stages of their marriage.

In 2007, RAND released a study that looked at the impact of OIF or OEF deployment on military marriages. The RAND study used quarterly demographic summaries from the first quarter of FY1996 to the last quarter of FY2005 (Karney & Crown, 2007). This research used monthly information, more accurately capturing when a change in a member’s demographics occurred. Additionally, RAND’s analysis used the number of days a member was deployed while married, downplaying the stress a member and his or her may family experience from multiple deployments. The three models in this thesis consider number of days deployed, number of deployments, and both variables jointly. Similar divorce rates were found from 2000–2005 between this thesis and the RAND study where the data overlapped, validating that similarly information was analyzed.

RAND found that “service record data from the past ten years do not demonstrate the high rates of marital dissolution that are predicted by the stress hypothesis” (Karney & Crown, 2007, p. xxi). Six of the eight models in this paper that only include the number of days a member was deployed support RAND’s theory that deployments are not increasing the military divorce rate. This thesis



found the coefficient for the number of days deployed variable to be generally negative or insignificant (with the exception of the restricted enlistee samples). However, unlike the RAND study, when both number of deployments, and or number of deployments and length of deployments, were controlled for a positive and significant impact was generally found on the likelihood of a member divorcing.

Research has shown that a factor in divorce is the ability of the divorce-initiating spouse to feel financially stable after the divorce. With the unemployment rate vacillating between 9–10% over the last several years, spouses with no job prospects will be more inclined to stay married. This is not to say that spouses are staying in destructive marriages; rather, it is to say that the role conflict between work and family is lessened because of economic factors. Pittman's (1994) research suggested that the more aligned the military member's job was with family goals, such as financial stability (e.g., providing food and shelter), the less marital conflict the spouse had with increased time spent at work. As future OPTEMPO decisions are made, it is critical to understand how the decision to send units on a deployment over six to seven months may affect work-family conflict in the context of the current economic factors. Understanding that increased marital conflict can negatively affect the military through lower military productivity, decreased interest in the military, and a member's departure from the Service (decreasing the military's ROI) is key when making policy decisions that determine the length and frequency of deployments.

There are a number of questions that this research still leaves unanswered. One of the biggest unanswered issues is that the deployment variables only captured deployments to OIF/OEF. Using unit-identifying codes (UIC), more complete data could be paired to each member, enabling the models to account for all the time spent away from family. Additionally, there are unobservable factors that this research could not account for. A large unobservable factor is spouse information. Although the data did account for dual military couples, it did not show if the spouses in non-dual military couples were



also employed or what the characteristics for that employment were. Future research that uses DMDC data in conjunction with a survey may capture more unobservable factors.

This research looked only at the end state of a marriage; however, it may be the case that members are entering into a marriage shortly before deploying. Accounting for the length of the marriage may cover some of this effect, but a more accurate measure of the time married couples were able to spend together would be the number of days married and not deployed. Finally, it is the practice of all Services to allow a member to return home for rest and relaxation (R&R) if they are deployed for greater than 365 days. A similar study determining if the restorative properties of R&R actually outweigh the potential work-family strain and behavior-based conflict can help determine the most prudent R&R policy.



APPENDIX A. UNRESTRICTED SAMPLE OF NAVY OFFICERS MARGINAL EFFECTS

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	-0.032*** (0.007)		
91 to 180 days deployed while married	-0.084*** (0.005)		
181 to 365 days deployed while married	-0.128*** (0.004)		
Greater than 365 days deployed while married	-0.153*** (0.003)		
Number of months deployed while married			-0.030*** (0.001)
1 deployment while married		-0.003 (0.005)	0.142*** (0.008)
Greater than 1 deployment while married		-0.074*** (0.008)	
2 deployments while married			0.224*** (0.026)
3 deployments while married			0.185*** (0.042)
Greater than 3 deployments while married			0.105*** (0.036)
Deployed to Afghanistan	-0.020 (0.014)	-0.092*** (0.008)	-0.056*** (0.011)
Deployed to Iraq	0.062*** (0.011)	-0.047*** (0.007)	0.016 (0.010)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.053*** (0.009)	-0.037*** (0.007)	-0.008 (0.008)
Control Variables			



Female	0.000 (0.005)	0.006 (0.005)	0.004 (0.005)
Dependent quantity	-0.033*** (0.001)	-0.035*** (0.001)	-0.034*** (0.001)
Married to military spouse	-0.048*** (0.007)	-0.052*** (0.007)	-0.050*** (0.007)
Divorced prior to marriage	0.007 (0.007)	0.008 (0.007)	0.007 (0.007)
Never married prior to marriage	-0.033*** (0.003)	-0.035*** (0.003)	-0.033*** (0.003)
Widow/Widower prior to marriage	-0.068* (0.041)	-0.064 (0.043)	-0.070* (0.039)
W01–W05 when married	0.116*** (0.022)	0.120*** (0.022)	0.111*** (0.022)
O1–O3 when married	0.042*** (0.008)	0.028*** (0.008)	0.037*** (0.008)
O4–O5 when married	0.009 (0.007)	0.010 (0.008)	0.009 (0.007)
Faith	-0.160*** (0.003)	-0.162*** (0.003)	-0.155*** (0.003)
Black	0.034*** (0.007)	0.030*** (0.007)	0.033*** (0.007)
Hawaiian or Pacific Islander	0.081* (0.042)	0.082** (0.042)	0.074* (0.041)
Asian	0.030*** (0.009)	0.028*** (0.009)	0.027*** (0.009)
American Indian/Alaskan Native	0.078*** (0.019)	0.076*** (0.019)	0.077*** (0.019)
SWO	-0.043*** (0.005)	-0.054*** (0.005)	-0.047*** (0.005)
SUB	-0.088*** (0.005)	-0.087*** (0.005)	-0.085*** (0.005)
SpecWar	-0.005 (0.017)	-0.011 (0.017)	-0.007 (0.017)
SpecOps	0.000 (0.020)	-0.010 (0.020)	0.004 (0.020)
HR	-0.113*** (0.012)	-0.109*** (0.014)	-0.106*** (0.013)
Aviation	-0.079*** (0.004)	-0.089*** (0.004)	-0.082*** (0.004)
EOD	-0.015** (0.007)	-0.015** (0.007)	-0.017** (0.006)
PAO	0.049** (0.019)	0.055*** (0.020)	0.047** (0.019)
Merchant Marine	-0.087***	-0.081***	-0.082***



	(0.008)	(0.009)	(0.008)
Medical	-0.048***	-0.050***	-0.045***
	(0.004)	(0.005)	(0.004)
Chaplain	-0.030***	-0.045***	-0.033***
	(0.011)	(0.010)	(0.011)
JAG	-0.062***	-0.061***	-0.059***
	(0.008)	(0.008)	(0.008)
Supply	0.005	0.001	-0.000
	(0.007)	(0.007)	(0.007)
Entry year 1956	0.839***	0.834***	0.844***
	(0.002)	(0.002)	(0.002)
Entry year 1959	0.839***	0.834***	0.844***
	(0.002)	(0.002)	(0.002)
Entry year 1960	0.840***	0.835***	0.845***
	(0.002)	(0.002)	(0.002)
Entry year 1961	0.841***	0.836***	0.846***
	(0.002)	(0.002)	(0.002)
Entry year 1962	0.842***	0.837***	0.846***
	(0.002)	(0.002)	(0.002)
Entry year 1963	0.842***	0.838***	0.847***
	(0.003)	(0.003)	(0.003)
Entry year 1964	0.845***	0.840***	0.849***
	(0.002)	(0.002)	(0.002)
Entry year 1965	0.847***	0.842***	0.851***
	(0.002)	(0.002)	(0.002)
Entry year 1966	0.851***	0.847***	0.856***
	(0.002)	(0.003)	(0.002)
Entry year 1967	0.852***	0.847***	0.857***
	(0.002)	(0.003)	(0.002)
Entry year 1968	0.857***	0.853***	0.862***
	(0.003)	(0.003)	(0.003)
Entry year 1969	0.855***	0.851***	0.860***
	(0.002)	(0.003)	(0.002)
Entry year 1970	0.858***	0.853***	0.862***
	(0.002)	(0.003)	(0.002)
Entry year 1971	0.858***	0.853***	0.862***
	(0.002)	(0.003)	(0.002)
Entry year 1972	0.858***	0.854***	0.862***
	(0.002)	(0.003)	(0.002)
Entry year 1973	0.858***	0.854***	0.863***
	(0.002)	(0.003)	(0.002)
Entry year 1974	0.859***	0.855***	0.863***
	(0.002)	(0.003)	(0.002)
Entry year 1975	0.861***	0.857***	0.865***
	(0.002)	(0.003)	(0.002)
Entry year 1976	0.861***	0.857***	0.866***
	(0.002)	(0.003)	(0.002)
Entry year 1977	0.861***	0.857***	0.866***
	(0.002)	(0.003)	(0.002)
Entry year 1978	0.864***	0.860***	0.869***
	(0.002)	(0.003)	(0.002)
Entry year 1979	0.864***	0.860***	0.869***
	(0.002)	(0.003)	(0.002)



Entry year 1980	0.871*** (0.003)	0.867*** (0.004)	0.875*** (0.003)
Entry year 1981	0.873*** (0.003)	0.869*** (0.004)	0.877*** (0.003)
Entry year 1982	0.873*** (0.003)	0.869*** (0.004)	0.877*** (0.003)
Entry year 1983	0.876*** (0.003)	0.872*** (0.004)	0.880*** (0.003)
Entry year 1984	0.877*** (0.003)	0.873*** (0.004)	0.881*** (0.003)
Entry year 1985	0.883*** (0.003)	0.879*** (0.005)	0.887*** (0.003)
Entry year 1986	0.886*** (0.003)	0.882*** (0.005)	0.889*** (0.003)
Entry year 1987	0.884*** (0.003)	0.880*** (0.005)	0.888*** (0.003)
Entry year 1988	0.884*** (0.003)	0.880*** (0.005)	0.888*** (0.003)
Entry year 1989	0.886*** (0.004)	0.882*** (0.005)	0.890*** (0.003)
Entry year 1990	0.880*** (0.003)	0.876*** (0.005)	0.884*** (0.003)
Entry year 1991	0.876*** (0.003)	0.872*** (0.005)	0.880*** (0.003)
Entry year 1992	0.872*** (0.003)	0.868*** (0.004)	0.876*** (0.003)
Entry year 1993	0.877*** (0.003)	0.873*** (0.005)	0.881*** (0.003)
Entry year 1994	0.876*** (0.003)	0.872*** (0.005)	0.880*** (0.003)
Entry year 1995	0.877*** (0.003)	0.873*** (0.005)	0.881*** (0.003)
Entry year 1996	0.880*** (0.003)	0.876*** (0.005)	0.884*** (0.003)
Entry year 1997	0.881*** (0.003)	0.876*** (0.005)	0.884*** (0.003)
Entry year 1998	0.878*** (0.003)	0.874*** (0.005)	0.882*** (0.003)
Entry year 1999	0.878*** (0.003)	0.874*** (0.005)	0.882*** (0.003)
Entry year 2000	0.874*** (0.003)	0.869*** (0.005)	0.877*** (0.003)
Entry year 2001	0.866*** (0.003)	0.861*** (0.004)	0.870*** (0.003)
Entry year 2002	0.861*** (0.002)	0.857*** (0.003)	0.866*** (0.002)
Entry year 2003	0.853*** (0.002)	0.848*** (0.002)	0.857*** (0.002)
Entry year 2004	0.847*** (0.002)	0.842*** (0.002)	0.851*** (0.002)
Entry year 2005	0.843*** (0.002)	0.838*** (0.002)	0.848*** (0.002)
Entry year 2006	0.841***	0.837***	0.846***



	(0.002)	(0.002)	(0.002)
Entry year 2007	0.840***	0.836***	0.845***
	(0.002)	(0.002)	(0.002)
Entry year 2008	0.840***	0.835***	0.845***
	(0.002)	(0.002)	(0.002)
Entry year 2009	0.840***	0.835***	0.844***
	(0.002)	(0.002)	(0.002)
Observations	61775	61775	61775

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



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APPENDIX B. RESTRICTED SAMPLE OF NAVY OFFICERS MARGINAL EFFECTS

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	0.022 (0.022)		
91 to 180 days deployed while married	0.021 (0.019)		
181 to 365 days deployed while married	0.006 (0.013)		
Greater than 365 days deployed while married	0.016 (0.026)		
Number of months deployed while married			-0.003* (0.001)
1 deployment while married		0.026** (0.012)	0.042*** (0.015)
Greater than 1 deployment while married		0.039 (0.046)	0.091 (0.074)
Deployed to Afghanistan	0.004 (0.021)	-0.003 (0.018)	0.002 (0.020)
Deployed to Iraq	0.007 (0.016)	-0.004 (0.013)	0.002 (0.015)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.023 (0.017)	0.013 (0.015)	0.016 (0.016)
Control Variables			
Female	0.046*** (0.017)	0.048*** (0.018)	0.047*** (0.017)
Age at the time of marriage	0.002* (0.001)	0.002* (0.001)	0.002* (0.001)
Years married	-0.102*** (0.013)	-0.102*** (0.013)	-0.099*** (0.013)
Dependent quantity	-0.009** (0.004)	-0.009** (0.004)	-0.009** (0.004)
Married to military	-0.009	-0.009	-0.009



spouse			
	(0.011)	(0.011)	(0.011)
Divorced prior to marriage	-0.001	-0.001	-0.004
	(0.034)	(0.034)	(0.031)
Never married prior to marriage	-0.019	-0.020	-0.020
	(0.015)	(0.015)	(0.015)
O1–O3 when married	0.041***	0.041***	0.040***
	(0.006)	(0.006)	(0.006)
O4–O5 when married	0.956***	0.954***	0.954***
	(0.029)	(0.032)	(0.033)
Faith	-0.034***	-0.034***	-0.033***
	(0.010)	(0.010)	(0.010)
Black	-0.016	-0.016	-0.016
	(0.013)	(0.012)	(0.012)
Hawaiian or Pacific Islander	-0.010	-0.008	-0.007
	(0.051)	(0.054)	(0.054)
Asian	0.003	0.002	0.001
	(0.016)	(0.016)	(0.016)
American Indian/Alaskan Native	-0.012	-0.012	-0.011
	(0.022)	(0.022)	(0.022)
SWO	-0.013	-0.016	-0.014
	(0.013)	(0.012)	(0.013)
SUB	-0.015	-0.014	-0.014
	(0.014)	(0.014)	(0.014)
SpecWar	-0.021	-0.023	-0.024
	(0.029)	(0.026)	(0.023)
HR	-0.032***	-0.031***	-0.031***
	(0.009)	(0.009)	(0.009)
Aviation	-0.011	-0.013	-0.011
	(0.013)	(0.013)	(0.013)
EOD	-0.016	-0.016	-0.015
	(0.013)	(0.013)	(0.013)
PAO	-0.002	-0.002	-0.006
	(0.046)	(0.046)	(0.042)
Merchant Marine	0.046	0.055	0.053
	(0.064)	(0.069)	(0.068)
Medical	-0.007	-0.006	-0.005
	(0.013)	(0.013)	(0.013)
Chaplain	0.033	0.027	0.036
	(0.045)	(0.042)	(0.046)
JAG	-0.009	-0.008	-0.008
	(0.019)	(0.019)	(0.019)
Supply	-0.016	-0.017	-0.014
	(0.013)	(0.012)	(0.013)
Married year 2001	-0.023	-0.022	-0.021
	(0.016)	(0.016)	(0.016)
Married year 2002	-0.050***	-0.049***	-0.048***
	(0.008)	(0.008)	(0.008)
Married year 2003	-0.072***	-0.072***	-0.070***



	(0.012)	(0.012)	(0.012)
Married year 2004	-0.146***	-0.146***	-0.142***
	(0.022)	(0.022)	(0.022)
Married year 2005	-0.167***	-0.167***	-0.163***
	(0.023)	(0.023)	(0.023)
Married year 2006	-0.188***	-0.188***	-0.184***
	(0.024)	(0.024)	(0.024)
Married year 2007	-0.188***	-0.187***	-0.183***
	(0.023)	(0.023)	(0.023)
Married year 2008	-0.203***	-0.202***	-0.198***
	(0.020)	(0.020)	(0.020)
Entry year 2001	0.190***	0.187***	0.183***
	(0.035)	(0.035)	(0.034)
Entry year 2002	0.488***	0.484***	0.475***
	(0.061)	(0.061)	(0.061)
Entry year 2003	0.921***	0.919***	0.916***
	(0.029)	(0.029)	(0.031)
Entry year 2004	0.983***	0.983***	0.983***
	(0.003)	(0.003)	(0.004)
Years as an officer	0.095***	0.094***	0.092***
	(0.013)	(0.013)	(0.013)
Observations	3579	3579	3579

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



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APPENDIX C. UNRESTRICTED SAMPLE OF NAVY ENLISTEES MARGINAL EFFECTS

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	-0.007 (0.005)		
91 to 180 days deployed while married	-0.015*** (0.004)		
181 to 365 days deployed while married	-0.041*** (0.003)		
Greater than 365 days deployed while married	-0.078*** (0.005)		
Number of months deployed while married			-0.012*** (0.001)
1 deployment while married		0.005* (0.003)	0.072*** (0.005)
Greater than 1 deployment while married		-0.038*** (0.008)	
2 deployments while married			0.070*** (0.016)
3 deployments while married			0.087*** (0.031)
Greater than 3 deployments while married			0.056* (0.029)
Deployed to Afghanistan	-0.047*** (0.010)	-0.071*** (0.009)	-0.050*** (0.010)
Deployed to Iraq	-0.015*** (0.006)	-0.050*** (0.004)	-0.026*** (0.005)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.027*** (0.005)	-0.058*** (0.004)	-0.037*** (0.004)
Control Variables			



Female	0.043*** (0.003)	0.046*** (0.003)	0.045*** (0.003)
Dependent quantity	-0.024*** (0.001)	-0.024*** (0.001)	-0.024*** (0.001)
Married to military spouse	-0.032*** (0.003)	-0.030*** (0.003)	-0.031*** (0.003)
Divorced prior to marriage	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)
Never married prior to marriage	-0.040*** (0.002)	-0.040*** (0.002)	-0.040*** (0.002)
Widow/Widower prior to marriage	-0.001 (0.027)	-0.003 (0.027)	-0.002 (0.027)
E1–E3 when married	0.015*** (0.005)	0.013** (0.005)	0.015*** (0.005)
E4–E6 when married	0.013*** (0.004)	0.013*** (0.004)	0.013*** (0.004)
Faith	0.064*** (0.003)	0.056*** (0.003)	0.059*** (0.003)
Black	0.044*** (0.003)	0.043*** (0.003)	0.043*** (0.003)
Hawaiian or Pacific Islander	0.018 (0.017)	0.017 (0.017)	0.018 (0.017)
Asian	0.078*** (0.004)	0.074*** (0.004)	0.075*** (0.004)
American Indian/Alaskan Native	0.033*** (0.006)	0.032*** (0.006)	0.032*** (0.006)
Construction	0.000 (0.004)	0.001 (0.004)	0.000 (0.004)
Marine engineering	-0.020*** (0.004)	-0.020*** (0.004)	-0.020*** (0.004)
Ship maintenance	0.019*** (0.004)	0.020*** (0.004)	0.019*** (0.004)
Aviation ground support	-0.010*** (0.004)	-0.009** (0.004)	-0.011*** (0.004)
Logistics and administration	0.030*** (0.004)	0.032*** (0.004)	0.031*** (0.004)
Health care	-0.014*** (0.004)	-0.011*** (0.004)	-0.012*** (0.004)
Cryptology	0.026*** (0.006)	0.028*** (0.006)	0.027*** (0.006)
Ordnance	0.040*** (0.007)	0.041*** (0.007)	0.040*** (0.007)
Communications systems	-0.015** (0.006)	-0.016** (0.006)	-0.015** (0.006)



Weapons system and control	-0.005	-0.005	-0.005
	(0.005)	(0.005)	(0.005)
Entry year 1958		0.032	
		(0.127)	
Entry year 1959	-0.028		-0.027
	(0.096)		(0.096)
Entry year 1960	0.055	0.094	0.056
	(0.127)	(0.085)	(0.127)
Entry year 1961	0.015	0.050	0.015
	(0.110)	(0.075)	(0.110)
Entry year 1962	0.064	0.103	0.064
	(0.128)	(0.082)	(0.128)
Entry year 1963	0.043	0.080	0.043
	(0.120)	(0.078)	(0.120)
Entry year 1964	0.076	0.117	0.075
	(0.130)	(0.081)	(0.130)
Entry year 1965	0.076	0.117	0.075
	(0.130)	(0.079)	(0.129)
Entry year 1966	0.091	0.133	0.090
	(0.134)	(0.081)	(0.133)
Entry year 1967	0.093	0.135*	0.090
	(0.135)	(0.082)	(0.134)
Entry year 1968	0.081	0.122	0.079
	(0.130)	(0.079)	(0.129)
Entry year 1969	0.111	0.155*	0.111
	(0.139)	(0.083)	(0.139)
Entry year 1970	0.106	0.149*	0.104
	(0.138)	(0.083)	(0.137)
Entry year 1971	0.170	0.217**	0.169
	(0.154)	(0.089)	(0.153)
Entry year 1972	0.150	0.195**	0.150
	(0.149)	(0.087)	(0.149)
Entry year 1973	0.207	0.256***	0.205
	(0.161)	(0.092)	(0.160)
Entry year 1974	0.191	0.240***	0.189
	(0.157)	(0.090)	(0.157)
Entry year 1975	0.223	0.273***	0.221
	(0.163)	(0.092)	(0.162)
Entry year 1976	0.262	0.312***	0.259
	(0.167)	(0.093)	(0.166)
Entry year 1977	0.300*	0.351***	0.298*
	(0.170)	(0.094)	(0.170)
Entry year 1978	0.322*	0.373***	0.319*
	(0.171)	(0.094)	(0.171)
Entry year 1979	0.363**	0.413***	0.360**
	(0.172)	(0.092)	(0.172)
Entry year 1980	0.408**	0.457***	0.405**
	(0.170)	(0.090)	(0.170)
Entry year 1981	0.419**	0.467***	0.415**
	(0.169)	(0.089)	(0.170)
Entry year 1982	0.450***	0.497***	0.446***
	(0.167)	(0.087)	(0.167)



Entry year 1983	0.425** (0.169)	0.473*** (0.089)	0.422** (0.169)
Entry year 1984	0.440*** (0.167)	0.487*** (0.088)	0.435*** (0.168)
Entry year 1985	0.444*** (0.167)	0.491*** (0.088)	0.440*** (0.168)
Entry year 1986	0.431** (0.168)	0.479*** (0.088)	0.428** (0.168)
Entry year 1987	0.422** (0.168)	0.469*** (0.089)	0.418** (0.169)
Entry year 1988	0.409** (0.169)	0.458*** (0.090)	0.406** (0.169)
Entry year 1989	0.414** (0.169)	0.463*** (0.089)	0.411** (0.169)
Entry year 1990	0.390** (0.170)	0.440*** (0.090)	0.388** (0.170)
Entry year 1991	0.391** (0.170)	0.442*** (0.090)	0.388** (0.170)
Entry year 1992	0.355** (0.171)	0.406*** (0.092)	0.353** (0.170)
Entry year 1993	0.287* (0.167)	0.338*** (0.092)	0.286* (0.167)
Entry year 1994	0.244 (0.161)	0.294*** (0.090)	0.244 (0.161)
Entry year 1995	0.285* (0.165)	0.337*** (0.091)	0.285* (0.165)
Entry year 1996	0.300* (0.167)	0.353*** (0.091)	0.300* (0.166)
Entry year 1997	0.301* (0.167)	0.352*** (0.091)	0.299* (0.166)
Entry year 1998	0.282* (0.166)	0.330*** (0.091)	0.278* (0.165)
Entry year 1999	0.276* (0.164)	0.321*** (0.090)	0.271* (0.164)
Entry year 2000	0.260 (0.162)	0.304*** (0.089)	0.254 (0.161)
Entry year 2001	0.253 (0.161)	0.297*** (0.089)	0.247 (0.160)
Entry year 2002	0.245 (0.160)	0.288*** (0.089)	0.238 (0.159)
Entry year 2003	0.209 (0.156)	0.248*** (0.087)	0.200 (0.155)
Entry year 2004	0.193 (0.155)	0.234*** (0.087)	0.186 (0.154)
Entry year 2005	0.160 (0.150)	0.205** (0.086)	0.155 (0.149)
Entry year 2006	0.121 (0.141)	0.172** (0.084)	0.120 (0.141)
Entry year 2007	0.164 (0.152)	0.219** (0.089)	0.162 (0.151)
Entry year 2008	0.106 (0.138)	0.158* (0.084)	0.108 (0.139)
Entry year 2009	0.185	0.240**	0.184



	(0.160)	(0.095)	(0.159)
Observations	163525	163525	163525

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



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APPENDIX D. RESTRICTED SAMPLE OF NAVY ENLISTEES MARGINAL EFFECTS

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	-0.001 (0.006)		
91 to 180 days deployed while married	0.000 (0.005)		
181 to 365 days deployed while married	0.012** (0.005)		
Greater than 365 days deployed while married	0.010 (0.014)		
Number of months deployed while married			0.000 (0.001)
1 deployment while married		0.008** (0.003)	0.007 (0.005)
Greater than 1 deployment while married		0.040 (0.030)	0.039 (0.033)
Deployed to Afghanistan	-0.014 (0.013)	-0.014 (0.013)	-0.014 (0.013)
Deployed to Iraq	0.006 (0.013)	0.006 (0.013)	0.006 (0.013)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.017 (0.012)	0.015 (0.011)	0.015 (0.012)
Control Variables			
Female	0.022*** (0.006)	0.023*** (0.006)	0.023*** (0.006)
Age at the time of marriage	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)
Number of years married	-0.097*** (0.006)	-0.097*** (0.006)	-0.098*** (0.006)
Dependent quantity	-0.004** (0.002)	-0.004** (0.002)	-0.004** (0.002)



Married to military spouse	-0.007**	-0.007**	-0.007**
	(0.003)	(0.003)	(0.003)
Divorced prior to marriage	0.033	0.033	0.033
	(0.034)	(0.034)	(0.034)
Never married prior to marriage	-0.033**	-0.034**	-0.034**
	(0.013)	(0.013)	(0.013)
E1–E3 when married	0.138***	0.139***	0.139***
	(0.021)	(0.021)	(0.021)
E4–E6 when married	0.726***	0.726***	0.726***
	(0.102)	(0.102)	(0.102)
Faith	0.005	0.005	0.005
	(0.005)	(0.005)	(0.005)
Black	-0.006*	-0.006**	-0.006**
	(0.003)	(0.003)	(0.003)
Hawaiian or Pacific Islander	0.009	0.010	0.010
	(0.024)	(0.025)	(0.025)
Asian	-0.009*	-0.009*	-0.009*
	(0.005)	(0.005)	(0.005)
American Indian/Alaskan Native	0.002	0.002	0.002
	(0.006)	(0.006)	(0.006)
Construction	0.018	0.021	0.021
	(0.020)	(0.021)	(0.021)
Marine engineering	-0.008*	-0.008*	-0.008*
	(0.005)	(0.004)	(0.004)
Ship maintenance	-0.006	-0.006	-0.006
	(0.004)	(0.004)	(0.004)
Aviation ground support	-0.007**	-0.007**	-0.007**
	(0.003)	(0.003)	(0.003)
Logistics and administration	-0.000	0.000	0.000
	(0.005)	(0.005)	(0.005)
Health care	0.032	0.034	0.034
	(0.023)	(0.024)	(0.024)
Cryptology	-0.004	-0.003	-0.003
	(0.009)	(0.009)	(0.009)
Ordnance	-0.014***	-0.014***	-0.014***
	(0.005)	(0.005)	(0.005)
Communications systems	-0.010	-0.010	-0.010
	(0.008)	(0.009)	(0.009)
Weapons system and control	0.011	0.012	0.012
	(0.025)	(0.026)	(0.026)
Married year 2001	-0.022***	-0.022***	-0.022***
	(0.002)	(0.002)	(0.002)
Married year 2002	-0.037***	-0.037***	-0.037***



	(0.003)	(0.003)	(0.003)
Married year 2003	-0.127***	-0.127***	-0.127***
	(0.010)	(0.010)	(0.010)
Married year 2004	-0.231***	-0.230***	-0.230***
	(0.017)	(0.017)	(0.017)
Married year 2005	-0.288***	-0.288***	-0.288***
	(0.019)	(0.019)	(0.019)
Married year 2006	-0.174***	-0.174***	-0.174***
	(0.011)	(0.011)	(0.011)
Married year 2007	-0.101***	-0.101***	-0.101***
	(0.006)	(0.006)	(0.006)
Married year 2008	-0.052***	-0.052***	-0.052***
	(0.003)	(0.003)	(0.003)
Married year 2009	-0.031***	-0.031***	-0.031***
	(0.002)	(0.002)	(0.002)
Entry year 2001	0.167***	0.166***	0.166***
	(0.023)	(0.023)	(0.023)
Entry year 2002	0.762***	0.762***	0.762***
	(0.035)	(0.035)	(0.035)
Entry year 2003	0.988***	0.988***	0.988***
	(0.004)	(0.004)	(0.004)
Entry year 2004	0.998***	0.998***	0.998***
	(0.000)	(0.000)	(0.000)
Entry year 2005	0.999***	0.999***	0.999***
	(0.000)	(0.000)	(0.000)
Observations	9193	9193	9193

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



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APPENDIX E. UNRESTRICTED SAMPLE OF MARINE CORPS OFFICERS MARGINAL EFFECTS

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	0.016 (0.015)		
91 to 180 days deployed while married	-0.005 (0.009)		
181 to 365 days deployed while married	-0.018*** (0.006)		
Greater than 365 days deployed while married	-0.016** (0.007)		
Number of months deployed while married			-0.001*** (0.000)
1 deployment while married		0.010 (0.006)	0.024*** (0.007)
Greater than 1 deployment while married		-0.012 (0.015)	
2 deployments while married			0.009 (0.022)
3 deployments while married			-0.034 (0.029)
Greater than 3 deployments while married			0.001 (0.063)
Deployed to Afghanistan	-0.012 (0.012)	-0.022** (0.011)	-0.016 (0.012)
Deployed to Iraq	-0.005 (0.007)	-0.020*** (0.006)	-0.013** (0.006)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.001 (0.009)	-0.014* (0.007)	-0.003 (0.009)
Control Variables			
Female	0.032*** (0.011)	0.034*** (0.012)	0.034*** (0.011)
Dependent quantity	0.000 (0.002)	-0.000 (0.002)	0.000 (0.002)
Married to military spouse	0.048*** (0.015)	0.047*** (0.015)	0.045*** (0.015)



Divorced prior to marriage	-0.004 (0.007)	-0.004 (0.007)	-0.005 (0.007)
Never married prior to marriage	-0.019*** (0.005)	-0.020*** (0.005)	-0.020*** (0.005)
Missing married information prior to marriage	0.023 (0.027)	0.024 (0.027)	0.024 (0.027)
W01–W05 when married	-0.001 (0.018)	0.001 (0.018)	-0.003 (0.017)
O1–O3 when married	0.014 (0.018)	0.015 (0.018)	0.012 (0.018)
O4–O5 when married	-0.015 (0.016)	-0.014 (0.016)	-0.015 (0.016)
Faith	-0.030*** (0.011)	-0.030*** (0.011)	-0.030*** (0.011)
Black	0.026** (0.011)	0.027** (0.011)	0.026** (0.011)
Hawaiian or Pacific Islander	0.212*** (0.067)	0.205*** (0.066)	0.200*** (0.066)
Asian	-0.009 (0.014)	-0.010 (0.014)	-0.009 (0.014)
American Indian/Alaskan Native	0.018 (0.014)	0.018 (0.014)	0.019 (0.014)
Combat arms	-0.006 (0.009)	-0.007 (0.009)	-0.004 (0.009)
Combat support	0.001 (0.011)	0.001 (0.011)	0.002 (0.011)
Combat service support	-0.011 (0.008)	-0.011 (0.008)	-0.009 (0.008)
Aviation	-0.014* (0.008)	-0.013* (0.008)	-0.012 (0.008)
Entry year 1961	0.933*** (0.002)	0.932*** (0.013)	0.933*** (0.013)
Entry year 1966	0.936*** (0.013)	0.935*** (0.017)	0.936*** (0.018)
Entry year 1967	0.924*** (0.024)	0.923*** (0.030)	0.924*** (0.031)
Entry year 1968	0.922*** (0.027)	0.922*** (0.034)	0.922*** (0.035)
Entry year 1969	0.933*** (0.014)	0.932*** (0.018)	0.933*** (0.018)
Entry year 1970	0.933*** (0.013)	0.933*** (0.017)	0.933*** (0.018)
Entry year 1971	0.940*** (0.005)	0.940*** (0.007)	0.941*** (0.007)
Entry year 1972	0.940*** (0.005)	0.940*** (0.006)	0.941*** (0.006)
Entry year 1973	0.942*** (0.003)	0.942*** (0.003)	0.943*** (0.003)
Entry year 1974	0.944*** (0.003)	0.944*** (0.003)	0.944*** (0.003)



	(0.003)	(0.003)	(0.003)
Entry year 1975	0.944***	0.944***	0.945***
	(0.004)	(0.005)	(0.005)
Entry year 1976	0.946***	0.946***	0.947***
	(0.003)	(0.004)	(0.004)
Entry year 1977	0.948***	0.948***	0.949***
	(0.003)	(0.004)	(0.003)
Entry year 1978	0.949***	0.949***	0.950***
	(0.003)	(0.003)	(0.003)
Entry year 1979	0.949***	0.949***	0.950***
	(0.003)	(0.003)	(0.003)
Entry year 1980	0.948***	0.947***	0.948***
	(0.003)	(0.003)	(0.003)
Entry year 1981	0.951***	0.951***	0.952***
	(0.003)	(0.003)	(0.003)
Entry year 1982	0.953***	0.953***	0.954***
	(0.003)	(0.003)	(0.003)
Entry year 1983	0.950***	0.950***	0.950***
	(0.003)	(0.004)	(0.004)
Entry year 1984	0.951***	0.950***	0.951***
	(0.002)	(0.003)	(0.003)
Entry year 1985	0.950***	0.950***	0.951***
	(0.003)	(0.003)	(0.003)
Entry year 1986	0.955***	0.955***	0.956***
	(0.003)	(0.003)	(0.003)
Entry year 1987	0.954***	0.954***	0.955***
	(0.003)	(0.003)	(0.003)
Entry year 1988	0.955***	0.955***	0.955***
	(0.003)	(0.003)	(0.003)
Entry year 1989	0.953***	0.952***	0.953***
	(0.003)	(0.003)	(0.003)
Entry year 1990	0.953***	0.953***	0.953***
	(0.003)	(0.003)	(0.003)
Entry year 1991	0.955***	0.955***	0.955***
	(0.003)	(0.004)	(0.004)
Entry year 1992	0.956***	0.956***	0.956***
	(0.003)	(0.004)	(0.004)
Entry year 1993	0.956***	0.955***	0.956***
	(0.003)	(0.004)	(0.004)
Entry year 1994	0.955***	0.955***	0.955***
	(0.003)	(0.003)	(0.003)
Entry year 1995	0.953***	0.953***	0.953***
	(0.004)	(0.004)	(0.005)
Entry year 1996	0.954***	0.953***	0.954***
	(0.003)	(0.004)	(0.004)
Entry year 1997	0.951***	0.950***	0.951***
	(0.003)	(0.004)	(0.004)
Entry year 1998	0.952***	0.952***	0.952***
	(0.003)	(0.004)	(0.004)
Entry year 1999	0.950***	0.950***	0.950***
	(0.003)	(0.004)	(0.004)
Entry year 2000	0.949***	0.948***	0.949***
	(0.003)	(0.004)	(0.004)



Entry year 2001	0.944*** (0.006)	0.944*** (0.008)	0.944*** (0.009)
Entry year 2002	0.944*** (0.006)	0.943*** (0.007)	0.944*** (0.008)
Entry year 2003	0.946*** (0.004)	0.946*** (0.005)	0.946*** (0.006)
Entry year 2004	0.941*** (0.007)	0.941*** (0.009)	0.941*** (0.010)
Entry year 2005	0.939*** (0.008)	0.938*** (0.011)	0.939*** (0.011)
Entry year 2006	0.926*** (0.020)	0.926*** (0.023)	0.926*** (0.024)
Entry year 2009	0.936*** (0.003)	0.936*** (0.002)	0.937*** (0.002)
Observations	13111	13111	13111

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



APPENDIX F. RESTRICTED SAMPLE OF MARINE CORPS OFFICERS MARGINAL EFFECTS

	Model focused on number of days deployed	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	-0.001		
	(0.001)		
181 to 365 days deployed while married	-0.003		
	(0.005)		
Greater than 365 days deployed	-0.003		
	(0.005)		
Number of months deployed while married			-0.000
			(0.000)
1 deployment while married		0.000	0.001
		(0.003)	(0.001)
Deployed to Afghanistan	0.314	0.158	0.364
	(0.234)	(0.151)	(0.296)
Deployed to Iraq	0.015	0.003	0.008
	(0.021)	(0.006)	(0.014)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.010	0.001	0.005
	(0.022)	(0.006)	(0.013)
Control Variables			
Female	0.017	0.025	0.006
	(0.032)	(0.041)	(0.015)
Age at time of marriage	-0.000	-0.001	-0.000
	(0.001)	(0.001)	(0.000)
Years married	-0.002	-0.006	-0.001
	(0.004)	(0.007)	(0.003)
Dependent quantity	0.001	0.002	0.001
	(0.001)	(0.003)	(0.001)
Married to military spouse	0.034	0.062	0.048
	(0.052)	(0.071)	(0.068)
Never married prior to marriage	0.000	0.001	0.000
	(0.001)	(0.002)	(0.000)
Faith	0.001	0.002	0.001
	(0.002)	(0.003)	(0.001)
Asian	-0.001	-0.001	-0.000
	(0.001)	(0.002)	(0.001)
American Indian/Alaskan Native	0.008	0.004	0.003



	(0.031)	(0.018)	(0.013)
Combat arms	-0.000	-0.002	-0.000
	(0.001)	(0.003)	(0.001)
Combat support	-0.001	-0.002	-0.000
	(0.001)	(0.003)	(0.001)
Combat service support	-0.002	-0.004	-0.001
	(0.003)	(0.005)	(0.002)
Aviation	-0.001	-0.002	-0.000
	(0.001)	(0.002)	(0.001)
Married year 2001	0.646	0.865	0.629***
	(1.069)	(0.571)	(0.225)
Married year 2002	0.483	0.607	0.427
	(0.975)	(0.844)	(0.574)
Married year 2003	0.056	0.151	0.060
	(0.247)	(0.474)	(0.190)
Married year 2004	-0.000	0.003	-0.000
	(0.003)	(0.029)	(0.001)
Married year 2005	-0.001	0.003	-0.000
	(0.003)	(0.023)	(0.001)
Married year 2006	-0.001	-0.002	-0.001
	(0.004)	(0.006)	(0.001)
Married year 2007	-0.003	-0.004	-0.002
	(0.007)	(0.008)	(0.004)
Entry year 2001	-0.001	-0.002	-0.001
	(0.002)	(0.003)	(0.001)
Entry year 2002	0.026	0.030	0.024
	(0.031)	(0.031)	(0.029)
Entry year 2003	0.078	0.115	0.074
	(0.142)	(0.153)	(0.142)
Observations	284	289	289

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



APPENDIX G. UNRESTRICTED SAMPLE OF MARINE CORPS ENLISTEES MARGINAL EFFECTS

	Model focused on number of days deployed (length)	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	0.003 (0.005)		
91 to 180 days deployed while married	-0.014*** (0.003)		
181 to 365 days deployed while married	-0.013*** (0.003)		
Greater than 365 days deployed while married	-0.028*** (0.003)		
Number of months deployed while married			-0.002*** (0.000)
1 deployment while married		0.008*** (0.002)	0.022*** (0.003)
Greater than 1 deployment while married		0.005 (0.009)	
2 deployments while married			0.036*** (0.012)
3 deployments while married			0.056 (0.038)
Greater than 3 deployments while married			0.104 (0.105)
Deployed to Afghanistan	0.023** (0.010)	0.003 (0.008)	0.013 (0.009)
Deployed to Iraq	0.024*** (0.004)	0.003 (0.003)	0.011*** (0.003)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.000 (0.004)	-0.016*** (0.003)	-0.009** (0.004)
Control Variables			
Female	0.047*** (0.004)	0.050*** (0.004)	0.051*** (0.004)
Dependent quantity	-0.015*** (0.001)	-0.015*** (0.001)	-0.015*** (0.001)
Married to military spouse	0.036*** (0.004)	0.037*** (0.004)	0.036*** (0.004)



Divorced prior to marriage	0.005 (0.005)	0.005 (0.005)	0.005 (0.005)
Never married prior to marriage	-0.017*** (0.002)	-0.018*** (0.002)	-0.018*** (0.002)
Widow/Widower prior to marriage	-0.016 (0.046)	-0.017 (0.046)	-0.017 (0.046)
E1–E3 when married	0.053*** (0.009)	0.052*** (0.009)	0.051*** (0.009)
E4–E6 when married	0.021*** (0.008)	0.022*** (0.008)	0.021*** (0.008)
Faith	-0.009*** (0.003)	-0.009*** (0.003)	-0.009*** (0.003)
Black	0.011*** (0.003)	0.011*** (0.003)	0.011*** (0.003)
Hawaiian or Pacific Islander	0.012 (0.013)	0.011 (0.013)	0.012 (0.013)
Asian	0.024*** (0.007)	0.023*** (0.007)	0.023*** (0.007)
American Indian/Alaskan – Native	0.041*** (0.007)	0.041*** (0.007)	0.042*** (0.007)
Combat arms	-0.062*** (0.003)	-0.062*** (0.003)	-0.062*** (0.003)
Combat support	-0.054*** (0.002)	-0.054*** (0.002)	-0.054*** (0.002)
Combat service support	-0.055*** (0.003)	-0.054*** (0.003)	-0.054*** (0.003)
Aviation	-0.046*** (0.003)	-0.045*** (0.003)	-0.046*** (0.003)
Entry year 1960	0.918*** (0.001)	0.918*** (0.001)	0.918*** (0.001)
Entry year 1965	0.904*** (0.027)	0.904*** (0.026)	0.904*** (0.027)
Entry year 1966	0.905*** (0.026)	0.905*** (0.025)	0.905*** (0.026)
Entry year 1967	0.909*** (0.021)	0.909*** (0.021)	0.909*** (0.021)
Entry year 1968	0.905*** (0.025)	0.906*** (0.025)	0.906*** (0.026)
Entry year 1969	0.919*** (0.008)	0.919*** (0.007)	0.920*** (0.008)
Entry year 1972	0.919*** (0.008)	0.919*** (0.008)	0.919*** (0.008)
Entry year 1973	0.923*** (0.003)	0.923*** (0.003)	0.923*** (0.003)
Entry year 1974	0.922*** (0.004)	0.922*** (0.004)	0.922*** (0.004)
Entry year 1975	0.923*** (0.003)	0.923*** (0.003)	0.923*** (0.003)
Entry year 1976	0.923***	0.923***	0.924***



	(0.003)	(0.003)	(0.003)
Entry year 1977	0.924***	0.923***	0.924***
	(0.003)	(0.002)	(0.003)
Entry year 1978	0.924***	0.924***	0.925***
	(0.002)	(0.002)	(0.002)
Entry year 1979	0.925***	0.925***	0.925***
	(0.001)	(0.001)	(0.001)
Entry year 1980	0.925***	0.925***	0.925***
	(0.002)	(0.002)	(0.002)
Entry year 1981	0.926***	0.926***	0.926***
	(0.001)	(0.001)	(0.001)
Entry year 1982	0.926***	0.926***	0.927***
	(0.001)	(0.001)	(0.001)
Entry year 1983	0.926***	0.926***	0.926***
	(0.001)	(0.001)	(0.001)
Entry year 1984	0.926***	0.926***	0.927***
	(0.001)	(0.001)	(0.001)
Entry year 1985	0.927***	0.926***	0.927***
	(0.001)	(0.001)	(0.001)
Entry year 1986	0.927***	0.927***	0.927***
	(0.001)	(0.001)	(0.001)
Entry year 1987	0.927***	0.927***	0.927***
	(0.001)	(0.001)	(0.001)
Entry year 1988	0.928***	0.928***	0.928***
	(0.001)	(0.001)	(0.001)
Entry year 1989	0.929***	0.928***	0.929***
	(0.001)	(0.001)	(0.001)
Entry year 1990	0.929***	0.929***	0.929***
	(0.001)	(0.001)	(0.001)
Entry year 1991	0.929***	0.929***	0.929***
	(0.001)	(0.001)	(0.001)
Entry year 1992	0.933***	0.933***	0.933***
	(0.002)	(0.002)	(0.002)
Entry year 1993	0.946***	0.946***	0.946***
	(0.004)	(0.004)	(0.004)
Entry year 1994	0.954***	0.954***	0.954***
	(0.005)	(0.005)	(0.005)
Entry year 1995	0.957***	0.957***	0.957***
	(0.005)	(0.005)	(0.005)
Entry year 1996	0.960***	0.960***	0.960***
	(0.005)	(0.005)	(0.005)
Entry year 1997	0.961***	0.961***	0.961***
	(0.005)	(0.005)	(0.005)
Entry year 1998	0.962***	0.962***	0.962***
	(0.004)	(0.005)	(0.005)
Entry year 1999	0.962***	0.962***	0.962***
	(0.005)	(0.005)	(0.005)
Entry year 2000	0.963***	0.963***	0.963***
	(0.005)	(0.005)	(0.005)
Entry year 2001	0.966***	0.965***	0.965***
	(0.005)	(0.005)	(0.005)
Entry year 2002	0.963***	0.963***	0.963***
	(0.005)	(0.005)	(0.005)



Entry year 2003	0.960*** (0.005)	0.959*** (0.005)	0.959*** (0.006)
Entry year 2004	0.951*** (0.005)	0.950*** (0.005)	0.950*** (0.005)
Entry year 2005	0.939*** (0.004)	0.939*** (0.004)	0.939*** (0.004)
Entry year 2006	0.928*** (0.003)	0.928*** (0.003)	0.928*** (0.004)
Entry year 2007	0.927*** (0.003)	0.927*** (0.003)	0.927*** (0.003)
Entry year 2008	0.925*** (0.003)	0.925*** (0.003)	0.925*** (0.003)
Entry year 2009	0.923*** (0.004)	0.923*** (0.004)	0.923*** (0.004)
Observations	108074	108074	108074

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



APPENDIX H. RESTRICTED SAMPLE OF MARINE CORPS ENLISTEES MARGINAL EFFECTS

	Model focused on number of days deployed	Model focused on number of deployments (frequency)	Model focused on number of deployments controlled for months deployed
Key Variables			
1 to 90 days deployed while married	0.003 (0.004)		
91 to 180 days deployed while married	0.005** (0.003)		
181 to 365 days deployed while married	0.005** (0.002)		
Greater than 365 days deployed while married	0.009** (0.004)		
Number of months deployed while married			-0.000 (0.000)
1 deployment while married		0.005*** (0.001)	0.006*** (0.002)
Greater than 1 deployment while married		0.003 (0.007)	0.004 (0.008)
Deployed to Afghanistan	0.003 (0.006)	0.003 (0.006)	0.004 (0.006)
Deployed to Iraq	0.005** (0.002)	0.005** (0.002)	0.005** (0.002)
Deployed to the Middle East (other than Afghanistan and Iraq)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Control Variables			
Female	0.020*** (0.005)	0.020*** (0.005)	0.020*** (0.005)
Age at time of marriage	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
Years married	-0.046*** (0.004)	-0.046*** (0.004)	-0.046*** (0.004)
Dependent quantity	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)
Married to military spouse	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Divorced prior to marriage	-0.005 (0.003)	-0.005 (0.003)	-0.005 (0.003)
Never married prior to marriage	-0.013* (0.003)	-0.013* (0.003)	-0.013* (0.003)



	(0.007)	(0.007)	(0.007)
E4–E6 when married	-0.011***	-0.011***	-0.011***
	(0.001)	(0.001)	(0.001)
Faith	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)
Black	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)
Hawaiian or Pacific Islander	-0.003	-0.003	-0.003
	(0.004)	(0.004)	(0.004)
Asian	0.003	0.003	0.003
	(0.004)	(0.004)	(0.004)
American Indian/Alaskan Native	0.005	0.005	0.005
	(0.005)	(0.005)	(0.005)
Combat arms	-0.015***	-0.015***	-0.015***
	(0.002)	(0.002)	(0.002)
Combat support	-0.008***	-0.008***	-0.008***
	(0.001)	(0.001)	(0.001)
Combat service support	-0.011***	-0.011***	-0.011***
	(0.002)	(0.002)	(0.002)
Aviation	-0.006***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)
Married year 2001	-0.008***	-0.008***	-0.008***
	(0.001)	(0.001)	(0.001)
Married year 2002	-0.019***	-0.019***	-0.019***
	(0.002)	(0.002)	(0.002)
Married year 2003	-0.047***	-0.047***	-0.047***
	(0.005)	(0.005)	(0.005)
Married year 2004	-0.114***	-0.113***	-0.113***
	(0.010)	(0.010)	(0.010)
Married year 2005	-0.181***	-0.180***	-0.180***
	(0.014)	(0.014)	(0.014)
Married year 2006	-0.146***	-0.145***	-0.145***
	(0.010)	(0.010)	(0.010)
Married year 2007	-0.094***	-0.094***	-0.094***
	(0.006)	(0.006)	(0.006)
Married year 2008	-0.034***	-0.034***	-0.034***
	(0.002)	(0.002)	(0.002)
Entry year 2001	0.190***	0.190***	0.190***
	(0.022)	(0.022)	(0.022)
Entry year 2002	0.794***	0.794***	0.794***
	(0.030)	(0.030)	(0.030)
Entry year 2003	0.991***	0.991***	0.991***
	(0.003)	(0.003)	(0.003)
Entry year 2004	1.000***	1.000***	1.000***
	(0.000)	(0.000)	(0.000)
Entry year 2005	1.000***	1.000***	1.000***
	(0.000)	(0.000)	(0.000)
Observations	16330	16330	16330

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



APPENDIX I. UNRESTRICTED SAMPLE OF NAVY OFFICERS THIRD MODEL MARGINAL EFFECTS/ROBUSTNESS

	Base Model focused on number of deployments controlled for months deployed	Additional variable to account for members leaving the sample	Rank variables taken at last observation instead of first observation	Occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation and left- sample variable
Key Variables						
Number of months deployed while married	-0.029*** (0.001)	- 0.030*** (0.001)	-0.029*** (0.001)	-0.028*** (0.001)	-0.029*** (0.001)	-0.029*** (0.001)
1 deployment while married	0.141*** (0.007)	0.133*** (0.007)	0.148*** (0.007)	0.145*** (0.007)	0.148*** (0.007)	0.137*** (0.007)
2 deployments while married	0.225*** (0.026)	0.211*** (0.026)	0.252*** (0.027)	0.228*** (0.026)	0.250*** (0.027)	0.234*** (0.026)
3 deployments while married	0.180*** (0.041)	0.174*** (0.041)	0.218*** (0.043)	0.185*** (0.041)	0.217*** (0.043)	0.214*** (0.042)
Greater than 3 deployments while married	0.100*** (0.036)	0.092*** (0.035)	0.136*** (0.038)	0.102*** (0.035)	0.132*** (0.037)	0.127*** (0.037)
Deployed to Afghanistan	-0.055*** (0.011)	- 0.055*** (0.011)	-0.050*** (0.011)	-0.053*** (0.011)	-0.050*** (0.011)	-0.049*** (0.011)
Deployed to Iraq	0.016* (0.010)	0.016 (0.010)	0.016* (0.010)	0.014 (0.010)	0.017* (0.010)	0.016* (0.010)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.009 (0.008)	-0.010 (0.008)	-0.009 (0.007)	-0.009 (0.007)	-0.008 (0.007)	-0.010 (0.007)
Control Variables						
Female	0.003 (0.004)	0.002 (0.004)	0.005 (0.004)	0.011** (0.004)	0.008* (0.004)	0.008* (0.004)
Dependent quantity	-0.034*** (0.001)	- 0.036*** (0.001)	-0.024*** (0.001)	-0.026*** (0.001)	-0.023*** (0.001)	-0.025*** (0.001)
Married to military spouse	-0.054*** (0.006)	- 0.054*** (0.006)	-0.053*** (0.006)	-0.051*** (0.006)	-0.054*** (0.006)	-0.054*** (0.006)
Divorced prior to marriage	0.006 (0.007)	0.005 (0.007)	0.008 (0.007)	0.007 (0.007)	0.008 (0.007)	0.007 (0.007)
Never married	-0.034***	-	-0.033***	-0.030***	-0.033***	-0.032***



prior to marriage		0.033***				
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Widow/Widower prior to marriage	-0.069*	-0.071*	-0.061	-0.064*	-0.062	-0.065*
	(0.039)	(0.038)	(0.038)	(0.039)	(0.038)	(0.037)
W01–W05 when married	0.111***	0.128***		0.101***		
	(0.021)	(0.022)		(0.021)		
O1–O3 when married	0.045***	0.059***		0.038***		
	(0.008)	(0.008)		(0.007)		
O4–O5 when married	0.015**	0.018***		0.013*		
	(0.007)	(0.007)		(0.007)		
Faith	-0.153***	-	-0.145***	-0.146***	-0.145***	-0.145***
	(0.003)	0.153***	(0.003)	(0.003)	(0.003)	(0.002)
Black	0.033***	0.034***	0.023***	0.034***	0.024***	0.025***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Hawaiian or Pacific Islander	0.077*	0.067*	0.068*	0.072*	0.066*	0.052
	(0.040)	(0.039)	(0.039)	(0.040)	(0.039)	(0.037)
Asian	0.028***	0.028***	0.029***	0.032***	0.031***	0.031***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
American Indian/Alaskan Native	0.077***	0.078***	0.064***	0.077***	0.064***	0.063***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)
SWO	-0.046***	-	-0.041***			
	(0.005)	0.044***	(0.004)			
SUB	-0.082***	-	-0.078***			
	(0.005)	0.081***	(0.005)			
SpecWar	-0.001	0.004	-0.001			
	(0.016)	(0.017)	(0.016)			
SpecOps	0.005	0.007	0.010			
	(0.020)	(0.020)	(0.020)			
HR	-0.097***	-	-0.101***			
	(0.012)	0.093***	(0.011)			
Aviation	-0.078***	-	-0.070***			
	(0.004)	0.077***	(0.004)			
EOD	-0.017***	-	-0.017***			
	(0.006)	0.019***	(0.006)			
PAO	0.049***	0.050***	0.050***			
	(0.019)	(0.019)	(0.018)			
Merchant Marine	-0.080***	-	-0.066***			
	(0.008)	0.073***	(0.008)			
Medical	-0.042***	-	-0.035***			



		0.037***				
	(0.004)	(0.004)	(0.004)			
Chaplain	-0.032***	-	-0.024**			
		0.032***				
	(0.011)	(0.011)	(0.011)			
JAG	-0.054***	-	-0.040***			
		0.053***				
	(0.008)	(0.008)	(0.008)			
Supply	0.002	0.003	0.003			
	(0.007)	(0.007)	(0.007)			
Entry year 1956	0.135	0.104	0.221	0.172	0.228	0.176
	(0.233)	(0.221)	(0.255)	(0.243)	(0.256)	(0.244)
Entry year 1959	-0.115***	-	-0.085	-0.105***	-0.084	-0.105***
		0.125***				
	(0.037)	(0.029)	(0.053)	(0.041)	(0.053)	(0.037)
Entry year 1960	-0.110***	-	-0.079**	-0.100***	-0.078**	-0.099***
		0.120***				
	(0.025)	(0.020)	(0.034)	(0.027)	(0.035)	(0.025)
Entry year 1961	-0.101***	-	-0.073***	-0.092***	-0.073***	-0.093***
		0.112***				
	(0.022)	(0.018)	(0.028)	(0.023)	(0.028)	(0.021)
Entry year 1962	-0.109***	-	-0.081***	-0.100***	-0.080***	-0.099***
		0.119***				
	(0.017)	(0.014)	(0.022)	(0.018)	(0.023)	(0.017)
Entry year 1963	-0.130***	-	-0.107***	-0.122***	-0.106***	-0.119***
		0.136***				
	(0.011)	(0.008)	(0.016)	(0.012)	(0.016)	(0.011)
Entry year 1964	-0.074***	-	-0.033	-0.064***	-0.032	-0.060***
		0.089***				
	(0.017)	(0.015)	(0.022)	(0.018)	(0.022)	(0.018)
Entry year 1965	-0.083***	-	-0.048***	-0.075***	-0.048***	-0.074***
		0.097***				
	(0.014)	(0.012)	(0.018)	(0.015)	(0.018)	(0.014)
Entry year 1966	-0.063***	-	-0.023	-0.053***	-0.022	-0.054***
		0.080***				
	(0.013)	(0.011)	(0.016)	(0.014)	(0.016)	(0.013)
Entry year 1967	-0.055***	-	-0.012	-0.044***	-0.011	-0.045***
		0.073***				
	(0.014)	(0.012)	(0.017)	(0.014)	(0.017)	(0.014)
Entry year 1968	-0.074***	-	-0.035***	-0.064***	-0.035**	-0.062***
		0.089***				
	(0.011)	(0.009)	(0.013)	(0.011)	(0.014)	(0.011)
Entry year 1969	-0.042***	-	0.002	-0.031**	0.004	-0.032**
		0.061***				
	(0.013)	(0.012)	(0.016)	(0.014)	(0.016)	(0.013)
Entry year 1970	-0.036***	-	0.010	-0.025*	0.011	-0.025*
		0.056***				
	(0.013)	(0.011)	(0.015)	(0.013)	(0.016)	(0.013)
Entry year 1971	-0.020	-	0.026	-0.010	0.027*	-0.010
		0.041***				
	(0.014)	(0.012)	(0.016)	(0.014)	(0.016)	(0.014)
Entry year 1972	0.003	-0.020	0.053***	0.014	0.054***	0.012
	(0.015)	(0.013)	(0.017)	(0.015)	(0.017)	(0.015)



Entry year 1973	0.004 (0.015)	-0.018 (0.013)	0.052*** (0.017)	0.014 (0.015)	0.052*** (0.017)	0.013 (0.015)
Entry year 1974	0.025 (0.015)	0.001 (0.014)	0.076*** (0.018)	0.036** (0.016)	0.078*** (0.018)	0.035** (0.016)
Entry year 1975	0.069*** (0.016)	0.043*** (0.015)	0.125*** (0.018)	0.081*** (0.017)	0.126*** (0.018)	0.082*** (0.017)
Entry year 1976	0.075*** (0.016)	0.047*** (0.015)	0.131*** (0.018)	0.087*** (0.017)	0.133*** (0.018)	0.084*** (0.017)
Entry year 1977	0.056*** (0.016)	0.031** (0.015)	0.112*** (0.018)	0.068*** (0.016)	0.113*** (0.018)	0.070*** (0.016)
Entry year 1978	0.112*** (0.017)	0.086*** (0.016)	0.172*** (0.018)	0.125*** (0.017)	0.173*** (0.018)	0.129*** (0.017)
Entry year 1979	0.106*** (0.016)	0.080*** (0.016)	0.164*** (0.018)	0.116*** (0.017)	0.165*** (0.018)	0.122*** (0.017)
Entry year 1980	0.117*** (0.015)	0.093*** (0.015)	0.175*** (0.017)	0.129*** (0.016)	0.176*** (0.017)	0.137*** (0.016)
Entry year 1981	0.133*** (0.015)	0.110*** (0.015)	0.192*** (0.017)	0.147*** (0.016)	0.194*** (0.017)	0.158*** (0.016)
Entry year 1982	0.155*** (0.016)	0.131*** (0.015)	0.208*** (0.017)	0.167*** (0.016)	0.211*** (0.017)	0.173*** (0.016)
Entry year 1983	0.177*** (0.016)	0.155*** (0.015)	0.227*** (0.017)	0.188*** (0.016)	0.230*** (0.017)	0.195*** (0.016)
Entry year 1984	0.209*** (0.016)	0.188*** (0.016)	0.256*** (0.017)	0.221*** (0.016)	0.259*** (0.017)	0.225*** (0.017)
Entry year 1985	0.216*** (0.015)	0.195*** (0.015)	0.264*** (0.016)	0.227*** (0.016)	0.266*** (0.016)	0.233*** (0.016)
Entry year 1986	0.209*** (0.015)	0.189*** (0.015)	0.249*** (0.016)	0.218*** (0.015)	0.252*** (0.016)	0.223*** (0.016)
Entry year 1987	0.203*** (0.015)	0.184*** (0.015)	0.239*** (0.016)	0.212*** (0.015)	0.241*** (0.016)	0.215*** (0.016)
Entry year 1988	0.217*** (0.015)	0.201*** (0.015)	0.254*** (0.016)	0.227*** (0.016)	0.257*** (0.016)	0.235*** (0.016)
Entry year 1989	0.178*** (0.014)	0.166*** (0.014)	0.207*** (0.015)	0.182*** (0.015)	0.208*** (0.015)	0.192*** (0.015)
Entry year 1990	0.140*** (0.014)	0.131*** (0.014)	0.154*** (0.015)	0.144*** (0.015)	0.157*** (0.015)	0.145*** (0.015)
Entry year 1991	0.128*** (0.015)	0.120*** (0.015)	0.135*** (0.015)	0.126*** (0.015)	0.137*** (0.015)	0.128*** (0.015)
Entry year 1992	0.122*** (0.015)	0.116*** (0.015)	0.129*** (0.016)	0.122*** (0.016)	0.129*** (0.016)	0.125*** (0.016)
Entry year 1993	0.110*** (0.014)	0.101*** (0.014)	0.118*** (0.015)	0.112*** (0.015)	0.120*** (0.015)	0.111*** (0.015)
Entry year 1994	0.064*** (0.013)	0.056*** (0.013)	0.064*** (0.014)	0.065*** (0.014)	0.067*** (0.014)	0.059*** (0.013)
Entry year 1995	0.042*** (0.013)	0.032*** (0.012)	0.043*** (0.013)	0.045*** (0.013)	0.047*** (0.013)	0.034*** (0.013)
Entry year 1996	0.060*** (0.013)	0.049*** (0.013)	0.047*** (0.013)	0.066*** (0.013)	0.051*** (0.013)	0.033*** (0.012)
Entry year 1997	0.054*** (0.013)	0.045*** (0.012)	0.042*** (0.012)	0.064*** (0.013)	0.045*** (0.013)	0.030** (0.012)
Entry year 1998	0.057*** (0.013)	0.055*** (0.013)	0.038*** (0.013)	0.058*** (0.014)	0.040*** (0.013)	0.035*** (0.013)
Entry year 1999	0.034***	0.023*	0.018	0.042***	0.019	0.002



	(0.013)	(0.012)	(0.012)	(0.013)	(0.012)	(0.011)
Entry year 2000	0.012	0.001	-0.007	0.027**	-0.006	-0.027***
	(0.013)	(0.012)	(0.011)	(0.013)	(0.011)	(0.010)
Entry year 2001	0.054***	0.044***	0.029**	0.071***	0.030**	0.010
	(0.015)	(0.015)	(0.014)	(0.016)	(0.014)	(0.013)
Entry year 2002	-0.002	-0.017	-0.019	0.015	-0.019	-0.044***
	(0.014)	(0.013)	(0.012)	(0.015)	(0.012)	(0.011)
Entry year 2003	0.016	-0.006	-0.005	0.032*	-0.004	-0.039***
	(0.018)	(0.016)	(0.016)	(0.019)	(0.016)	(0.013)
Entry year 2004	-0.009	-0.034*	-0.028	0.008	-0.027	-0.065***
	(0.021)	(0.018)	(0.018)	(0.022)	(0.018)	(0.014)
Entry year 2005	0.006	-0.017	-0.013	0.029	-0.009	-0.045**
	(0.028)	(0.026)	(0.025)	(0.030)	(0.026)	(0.021)
Entry year 2006	0.023	-0.007	0.004	0.047	0.008	-0.039
	(0.038)	(0.033)	(0.034)	(0.040)	(0.034)	(0.027)
Entry year 2007	-0.101***	-	-0.102***	-0.088***	-0.101***	-0.119***
		0.115***				
	(0.022)	(0.017)	(0.019)	(0.025)	(0.019)	(0.012)
Entry year 2008	-0.057	-0.077**	-0.063*	-0.039	-0.060*	-0.090***
	(0.037)	(0.031)	(0.033)	(0.040)	(0.034)	(0.023)
Entry year 2009	-0.090**	-	-0.089***	-0.073*	-0.088***	-0.106***
		0.102***				
	(0.036)	(0.030)	(0.032)	(0.040)	(0.033)	(0.023)
Left sample		-				-0.081***
		0.052***				
		(0.003)				(0.003)
SWO last observation				-0.046***	-0.042***	-0.040***
				(0.004)	(0.004)	(0.004)
SUB last observation				-0.083***	-0.079***	-0.079***
				(0.005)	(0.005)	(0.005)
SpecWar last observation				-0.002	-0.003	0.005
				(0.016)	(0.016)	(0.016)
SpecOps last observation				0.003	0.011	0.014
				(0.019)	(0.019)	(0.020)
HR last observation				-0.094***	-0.091***	-0.090***
				(0.008)	(0.008)	(0.008)
Aviation last observation				-0.081***	-0.072***	-0.070***
				(0.004)	(0.004)	(0.004)
EOD last observation				-0.028***	-0.027***	-0.030***
				(0.006)	(0.006)	(0.005)
PAO last observation				0.032*	0.033*	0.032*
				(0.017)	(0.017)	(0.017)
Merchant marine last observation				-0.079***	-0.071***	-0.060***
				(0.007)	(0.008)	(0.008)



FAO last observation				-0.139***	-0.133***	-0.134***
				(0.011)	(0.015)	(0.012)
Medical last observation				-0.052***	-0.041***	-0.034***
				(0.004)	(0.004)	(0.004)
Chaplain last observation				-0.034***	-0.028***	-0.027***
				(0.010)	(0.010)	(0.010)
JAG last observation				-0.063***	-0.046***	-0.045***
				(0.007)	(0.008)	(0.008)
Supply last observation				-0.003	-0.001	-0.001
				(0.006)	(0.006)	(0.006)
W01–W05 last observation			0.120***		0.115***	0.145***
				(0.021)	(0.021)	(0.022)
O1–O3 last observation			0.139***		0.136***	0.175***
				(0.007)	(0.007)	(0.008)
O4–O5 last observation			0.024***		0.023***	0.032***
				(0.005)	(0.005)	(0.005)
Observations	65003	65003	64395	64399	64399	64399

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



APPENDIX J. UNRESTRICTED SAMPLE OF NAVY ENLISTEES THIRD MODEL MARGINAL EFFECTS/ROBUSTNESS

	Model focused on number of deployments controlled for months deployed	Additional variable to account for members leaving the sample	Rank variables taken at last observation instead of first observation	Occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation and left-sample variable
Key Variables						
Number of months deployed while married	-0.012*** (0.001)	-0.012*** (0.001)	-0.011*** (0.001)	-0.012*** (0.001)	-0.011*** (0.001)	-0.011*** (0.001)
1 deployment while married	0.072*** (0.004)	0.070*** (0.004)	0.076*** (0.004)	0.075*** (0.004)	0.077*** (0.004)	0.076*** (0.004)
2 deployments while married	0.076*** (0.016)	0.072*** (0.016)	0.084*** (0.016)	0.085*** (0.016)	0.088*** (0.016)	0.085*** (0.016)
3 deployments while married	0.090*** (0.030)	0.082*** (0.030)	0.099*** (0.031)	0.096*** (0.030)	0.100*** (0.031)	0.092*** (0.030)
Greater than 3 deployments while married	0.070** (0.029)	0.055** (0.028)	0.084*** (0.030)	0.082*** (0.030)	0.088*** (0.030)	0.072** (0.029)
Deployed to Afghanistan	-0.051*** (0.010)	-0.065*** (0.009)	-0.046*** (0.010)	-0.047*** (0.010)	-0.044*** (0.010)	-0.060*** (0.008)
Deployed to Iraq	-0.027*** (0.005)	-0.042*** (0.005)	-0.024*** (0.005)	-0.026*** (0.005)	-0.024*** (0.005)	-0.041*** (0.005)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.037*** (0.004)	-0.051*** (0.004)	-0.035*** (0.004)	-0.036*** (0.004)	-0.036*** (0.004)	-0.051*** (0.004)
Control Variables						
Female	0.045*** (0.003)	0.041*** (0.003)	0.051*** (0.003)	0.049*** (0.003)	0.050*** (0.003)	0.045*** (0.002)
Dependent quantity	-0.023*** (0.001)	-0.025*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.016*** (0.001)
Married to military spouse	-0.034*** (0.003)	-0.030*** (0.003)	-0.028*** (0.003)	-0.028*** (0.003)	-0.028*** (0.003)	-0.023*** (0.003)
Divorced prior to marriage	-0.001 (0.004)	-0.002 (0.004)	-0.001 (0.004)	-0.000 (0.004)	-0.000 (0.004)	-0.002 (0.004)



Never married prior to marriage	-0.041***	-0.040***	-0.035***	-0.034***	-0.035***	-0.034***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Widow/Widower prior to marriage	0.007	0.003	0.014	0.015	0.015	0.011
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
E1–E3 when married	0.015***	0.030***		0.025***		
	(0.005)	(0.005)		(0.005)		
E4–E6 when married	0.015***	0.025***		0.011***		
	(0.004)	(0.004)		(0.004)		
Faith	0.056***	0.064***	0.048***	0.046***	0.047***	0.057***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Black	0.041***	0.038***	0.034***	0.036***	0.035***	0.030***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Hawaiian or Pacific Islander	0.011	0.003	0.009	0.010	0.010	0.001
	(0.016)	(0.015)	(0.015)	(0.016)	(0.016)	(0.015)
Asian	0.074***	0.067***	0.067***	0.067***	0.068***	0.060***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
American Indian/Alaskan Native	0.032***	0.031***	0.030***	0.029***	0.029***	0.028***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Construction	0.002	0.004	-0.007*			
	(0.004)	(0.004)	(0.004)			
Marine engineering	-0.017***	-0.015***	-0.024***			
	(0.004)	(0.004)	(0.004)			
Ship maintenance	0.021***	0.021***	0.012***			
	(0.004)	(0.004)	(0.004)			
Aviation ground support	-0.010***	-0.012***	-0.016***			
	(0.003)	(0.003)	(0.003)			
Logistics and administration	0.031***	0.028***	0.022***			
	(0.004)	(0.004)	(0.003)			
Health care	-0.011***	-0.008**	-0.017***			
	(0.004)	(0.004)	(0.004)			
Cryptology	0.028***	0.029***	0.023***			
	(0.006)	(0.006)	(0.006)			
Ordnance	0.040***	0.042***	0.030***			
	(0.006)	(0.006)	(0.006)			
Communications systems	-0.014**	-0.012*	-0.021***			
	(0.006)	(0.006)	(0.006)			
Weapons system and control	-0.004	-0.002	-0.011**			
	(0.005)	(0.005)	(0.005)			
Entry year 1958	-0.111***	-0.123***	-0.096***	-0.104***	-0.097***	-0.113***
	(0.031)	(0.020)	(0.037)	(0.031)	(0.036)	(0.022)
Entry year 1959	-0.119***	-0.129***	-0.109***	-0.112***	-0.109***	-0.121***



	(0.013)	(0.008)	(0.015)	(0.014)	(0.015)	(0.008)
Entry year 1960	-0.092***	-0.111***	-0.077***	-0.084***	-0.077***	-0.100***
	(0.015)	(0.010)	(0.017)	(0.016)	(0.017)	(0.011)
Entry year 1961	-0.106***	-0.121***	-0.096***	-0.099***	-0.096***	-0.113***
	(0.012)	(0.007)	(0.013)	(0.012)	(0.012)	(0.007)
Entry year 1962	-0.088***	-0.109***	-0.075***	-0.082***	-0.076***	-0.101***
	(0.013)	(0.009)	(0.014)	(0.013)	(0.014)	(0.009)
Entry year 1963	-0.097***	-0.114***	-0.088***	-0.093***	-0.088***	-0.108***
	(0.011)	(0.008)	(0.012)	(0.011)	(0.012)	(0.007)
Entry year 1964	-0.084***	-0.105***	-0.070***	-0.078***	-0.071***	-0.096***
	(0.011)	(0.008)	(0.012)	(0.011)	(0.012)	(0.008)
Entry year 1965	-0.084***	-0.105***	-0.071***	-0.079***	-0.072***	-0.096***
	(0.009)	(0.006)	(0.010)	(0.009)	(0.010)	(0.006)
Entry year 1966	-0.078***	-0.101***	-0.064***	-0.072***	-0.064***	-0.092***
	(0.009)	(0.006)	(0.010)	(0.009)	(0.010)	(0.006)
Entry year 1967	-0.078***	-0.101***	-0.066***	-0.074***	-0.066***	-0.093***
	(0.010)	(0.007)	(0.010)	(0.009)	(0.010)	(0.007)
Entry year 1968	-0.083***	-0.104***	-0.072***	-0.078***	-0.072***	-0.097***
	(0.008)	(0.006)	(0.009)	(0.008)	(0.009)	(0.006)
Entry year 1969	-0.069***	-0.095***	-0.058***	-0.065***	-0.059***	-0.089***
	(0.009)	(0.006)	(0.009)	(0.009)	(0.009)	(0.006)
Entry year 1970	-0.072***	-0.096***	-0.060***	-0.067***	-0.061***	-0.089***
	(0.009)	(0.007)	(0.010)	(0.009)	(0.010)	(0.006)
Entry year 1971	-0.042***	-0.073***	-0.030***	-0.038***	-0.031***	-0.067***
	(0.011)	(0.008)	(0.011)	(0.010)	(0.011)	(0.008)
Entry year 1972	-0.051***	-0.080***	-0.042***	-0.049***	-0.042***	-0.075***
	(0.010)	(0.007)	(0.010)	(0.009)	(0.010)	(0.007)
Entry year 1973	-0.023**	-0.056***	-0.012	-0.021*	-0.013	-0.051***
	(0.012)	(0.009)	(0.012)	(0.012)	(0.012)	(0.009)
Entry year 1974	-0.031***	-0.064***	-0.020**	-0.027***	-0.020**	-0.058***
	(0.010)	(0.008)	(0.010)	(0.010)	(0.010)	(0.007)
Entry year 1975	-0.014	-0.048***	-0.002	-0.011	-0.003	-0.042***
	(0.010)	(0.008)	(0.010)	(0.010)	(0.010)	(0.008)
Entry year 1976	0.008	-0.029***	0.021**	0.012	0.020**	-0.022***
	(0.010)	(0.008)	(0.010)	(0.010)	(0.010)	(0.008)
Entry year 1977	0.033***	-0.006	0.044***	0.035***	0.043***	-0.001
	(0.011)	(0.010)	(0.012)	(0.011)	(0.012)	(0.010)
Entry year 1978	0.047***	0.009	0.057***	0.048***	0.056***	0.013
	(0.011)	(0.010)	(0.012)	(0.011)	(0.012)	(0.010)
Entry year 1979	0.077***	0.035***	0.087***	0.078***	0.087***	0.040***
	(0.011)	(0.010)	(0.011)	(0.011)	(0.011)	(0.010)
Entry year 1980	0.112***	0.070***	0.119***	0.112***	0.120***	0.073***
	(0.011)	(0.010)	(0.011)	(0.011)	(0.011)	(0.010)
Entry year 1981	0.120***	0.081***	0.128***	0.119***	0.128***	0.085***
	(0.011)	(0.010)	(0.011)	(0.011)	(0.011)	(0.010)
Entry year 1982	0.147***	0.104***	0.154***	0.146***	0.154***	0.107***
	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)
Entry year 1983	0.126***	0.093***	0.131***	0.123***	0.130***	0.093***
	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.009)
Entry year 1984	0.138***	0.105***	0.144***	0.137***	0.143***	0.107***
	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)
Entry year 1985	0.142***	0.108***	0.145***	0.141***	0.146***	0.110***
	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.009)



Entry year 1986	0.132*** (0.009)	0.105*** (0.009)	0.136*** (0.009)	0.132*** (0.009)	0.136*** (0.009)	0.106*** (0.009)
Entry year 1987	0.124*** (0.009)	0.104*** (0.008)	0.126*** (0.009)	0.124*** (0.009)	0.128*** (0.009)	0.107*** (0.008)
Entry year 1988	0.114*** (0.009)	0.102*** (0.008)	0.112*** (0.009)	0.112*** (0.009)	0.113*** (0.009)	0.100*** (0.008)
Entry year 1989	0.119*** (0.008)	0.107*** (0.008)	0.115*** (0.008)	0.116*** (0.008)	0.117*** (0.008)	0.105*** (0.008)
Entry year 1990	0.100*** (0.008)	0.091*** (0.008)	0.097*** (0.008)	0.098*** (0.008)	0.098*** (0.008)	0.089*** (0.008)
Entry year 1991	0.100*** (0.009)	0.093*** (0.009)	0.095*** (0.009)	0.096*** (0.009)	0.096*** (0.009)	0.089*** (0.008)
Entry year 1992	0.074*** (0.008)	0.075*** (0.008)	0.065*** (0.008)	0.067*** (0.008)	0.066*** (0.008)	0.067*** (0.008)
Entry year 1993	0.028*** (0.006)	0.033*** (0.007)	0.019*** (0.006)	0.022*** (0.006)	0.020*** (0.006)	0.026*** (0.006)
Entry year 1994	0.003 (0.005)	0.009* (0.005)	-0.001 (0.005)	0.003 (0.005)	0.001 (0.005)	0.008 (0.005)
Entry year 1995	0.030*** (0.006)	0.034*** (0.006)	0.029*** (0.006)	0.033*** (0.006)	0.031*** (0.006)	0.036*** (0.006)
Entry year 1996	0.040*** (0.006)	0.045*** (0.006)	0.039*** (0.006)	0.043*** (0.006)	0.040*** (0.006)	0.046*** (0.006)
Entry year 1997	0.039*** (0.006)	0.044*** (0.006)	0.041*** (0.006)	0.045*** (0.006)	0.043*** (0.006)	0.048*** (0.006)
Entry year 1998	0.025*** (0.006)	0.030*** (0.006)	0.028*** (0.006)	0.031*** (0.006)	0.030*** (0.006)	0.036*** (0.006)
Entry year 1999	0.022*** (0.005)	0.028*** (0.005)	0.025*** (0.005)	0.027*** (0.005)	0.027*** (0.005)	0.034*** (0.005)
Entry year 2000	0.012** (0.005)	0.016*** (0.005)	0.017*** (0.005)	0.019*** (0.005)	0.020*** (0.005)	0.025*** (0.005)
Entry year 2001	0.008* (0.005)	0.011** (0.005)	0.014*** (0.005)	0.015*** (0.005)	0.016*** (0.005)	0.019*** (0.005)
Entry year 2002	0.003 (0.005)	0.001 (0.005)	0.008 (0.005)	0.008* (0.005)	0.010** (0.005)	0.008 (0.005)
Entry year 2003	-0.020*** (0.005)	-0.023*** (0.005)	-0.014*** (0.005)	-0.015*** (0.005)	-0.014*** (0.005)	-0.016*** (0.005)
Entry year 2004	-0.029*** (0.005)	-0.035*** (0.005)	-0.021*** (0.006)	-0.022*** (0.005)	-0.020*** (0.006)	-0.027*** (0.005)
Entry year 2005	-0.046*** (0.006)	-0.055*** (0.006)	-0.038*** (0.006)	-0.039*** (0.006)	-0.037*** (0.006)	-0.049*** (0.006)
Entry year 2006	-0.063*** (0.007)	-0.081*** (0.006)	-0.059*** (0.007)	-0.063*** (0.007)	-0.061*** (0.007)	-0.081*** (0.005)
Entry year 2007	-0.043*** (0.009)	-0.063*** (0.007)	-0.045*** (0.008)	-0.051*** (0.008)	-0.050*** (0.008)	-0.073*** (0.006)
Entry year 2008	-0.068*** (0.009)	-0.089*** (0.007)	-0.074*** (0.009)	-0.079*** (0.008)	-0.079*** (0.008)	-0.099*** (0.005)
Entry year 2009	-0.032* (0.018)	-0.052*** (0.015)	-0.038** (0.017)	-0.030* (0.018)	-0.031* (0.018)	-0.054*** (0.015)
Left sample		-0.085*** (0.003)				-0.097*** (0.003)
E1–E3 last observation			0.035*** (0.005)		0.057*** (0.005)	0.091*** (0.006)



E4–E6 last observation			0.043***		0.040***	0.054***
			(0.003)		(0.003)	(0.003)
Construction last observation				0.059***	0.056***	0.064***
				(0.005)	(0.005)	(0.005)
Marine engineering last observation				0.035***	0.033***	0.041***
				(0.005)	(0.005)	(0.005)
Ship maintenance last observation				0.077***	0.076***	0.082***
				(0.005)	(0.005)	(0.005)
Aviation ground support last observation				0.047***	0.046***	0.048***
				(0.004)	(0.004)	(0.004)
Logistics and administration last observation				0.105***	0.103***	0.108***
				(0.004)	(0.005)	(0.005)
Health care last observation				0.049***	0.048***	0.057***
				(0.005)	(0.005)	(0.005)
Cryptology last observation				0.102***	0.101***	0.110***
				(0.007)	(0.007)	(0.007)
Ordnance last observation				0.097***	0.095***	0.104***
				(0.007)	(0.007)	(0.008)
Communications systems last observation				0.005	0.004	0.009
				(0.007)	(0.007)	(0.007)
Weapons system and control last observation				0.054***	0.052***	0.060***
				(0.006)	(0.006)	(0.006)
Observations	177186	177186	175567	175567	175567	175567

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



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APPENDIX K. UNRESTRICTED SAMPLE OF MARINE CORPS OFFICERS THIRD MODEL MARGINAL EFFECTS/ROBUSTNESS

	Model focused on number of deployments controlled for months deployed	Additional variable to account for members leaving the sample	Rank variables taken at last observation instead of first observation	Occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation and left-sample variable
Key Variables						
Number of months deployed while married	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1 deployment while married	0.024***	0.024***	0.028***	0.023***	0.028***	0.028***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
2 deployments while married	0.009	0.009	0.010	0.009	0.011	0.011
	(0.022)	(0.022)	(0.022)	(0.021)	(0.022)	(0.022)
3 deployments while married	-0.034	-0.034	-0.030	-0.033	-0.028	-0.029
	(0.029)	(0.029)	(0.032)	(0.029)	(0.033)	(0.033)
Greater than 3 deployments while married	0.001	0.001	0.008	-0.002	0.006	0.004
	(0.063)	(0.062)	(0.065)	(0.061)	(0.064)	(0.062)
Deployed to Afghanistan	-0.016	-0.017	-0.017	-0.015	-0.016	-0.018
	(0.012)	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)
Deployed to Iraq	-0.013**	-0.014**	-0.014**	-0.013**	-0.014**	-0.015**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.003	-0.004	-0.005	-0.002	-0.004	-0.005
	(0.009)	(0.009)	(0.008)	(0.009)	(0.008)	(0.008)
Control Variables						
Female	0.034***	0.034***	0.038***	0.035***	0.039***	0.039***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
Dependent quantity	0.000	0.000	0.002	0.001	0.002	0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Married to military spouse	0.045***	0.049***	0.044***	0.046***	0.043***	0.048***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Divorced prior to marriage	-0.005	-0.004	-0.004	-0.005	-0.004	-0.003



	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Never married prior to marriage	-0.020***	-0.020***	-0.019***	-0.020***	-0.019***	-0.019***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Missing married information prior to marriage	0.024	0.025	0.026	0.032	0.034	0.035
	(0.027)	(0.027)	(0.027)	(0.028)	(0.028)	(0.029)
W01–W05 when married	-0.003	-0.003		-0.010		
	(0.017)	(0.017)		(0.016)		
O1–O3 when married	0.012	0.018		0.003		
	(0.018)	(0.018)		(0.018)		
O4–O5 when married	-0.015	-0.014		-0.022		
	(0.016)	(0.016)		(0.015)		
Faith	-0.030***	-0.032***	-0.019*	-0.033***	-0.015	-0.018*
	(0.011)	(0.011)	(0.010)	(0.011)	(0.010)	(0.010)
Black	0.026**	0.027**	0.025**	0.027**	0.026**	0.026**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Hawaiian or Pacific Islander	0.200***	0.202***	0.182***	0.200***	0.183***	0.186***
	(0.066)	(0.066)	(0.063)	(0.066)	(0.064)	(0.064)
Asian	-0.009	-0.009	-0.008	-0.008	-0.009	-0.010
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)
American Indian/Alaskan Native	0.019	0.017	0.016	0.020	0.016	0.015
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Combat arms	-0.004	-0.004	-0.001			
	(0.009)	(0.009)	(0.008)			
Combat support	0.002	0.003	0.005			
	(0.011)	(0.011)	(0.011)			
Combat service support	-0.009	-0.009	-0.006			
	(0.008)	(0.008)	(0.008)			
Aviation	-0.012	-0.011	-0.007			
	(0.008)	(0.008)	(0.008)			
Entry year 1961	0.933***	0.932***	0.936***	0.933***	0.938***	0.937***
	(0.013)	(0.015)	(0.011)	(0.002)	(0.009)	(0.002)
Entry year 1966	0.936***	0.934***	0.939***	0.935***	0.942***	0.940***
	(0.018)	(0.020)	(0.016)	(0.014)	(0.012)	(0.012)
Entry year 1967	0.924***	0.921***	0.928***	0.923***	0.933***	0.930***
	(0.031)	(0.034)	(0.027)	(0.026)	(0.021)	(0.022)
Entry year 1968	0.922***	0.918***	0.928***	0.921***	0.933***	0.929***
	(0.035)	(0.039)	(0.029)	(0.029)	(0.023)	(0.024)
Entry year 1969	0.933***	0.931***	0.937***	0.933***	0.940***	0.938***
	(0.018)	(0.021)	(0.014)	(0.015)	(0.011)	(0.011)
Entry year 1970	0.933***	0.931***	0.937***	0.933***	0.940***	0.938***
	(0.018)	(0.021)	(0.015)	(0.015)	(0.011)	(0.012)
Entry year 1971	0.941***	0.940***	0.943***	0.941***	0.944***	0.944***



	(0.007)	(0.008)	(0.006)	(0.006)	(0.005)	(0.005)
Entry year 1972	0.941***	0.940***	0.943***	0.941***	0.944***	0.944***
	(0.006)	(0.007)	(0.005)	(0.005)	(0.004)	(0.005)
Entry year 1973	0.943***	0.942***	0.944***	0.943***	0.945***	0.945***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1974	0.944***	0.944***	0.946***	0.945***	0.947***	0.947***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1975	0.945***	0.944***	0.947***	0.945***	0.948***	0.947***
	(0.005)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)
Entry year 1976	0.947***	0.947***	0.949***	0.947***	0.949***	0.949***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Entry year 1977	0.949***	0.948***	0.950***	0.949***	0.951***	0.951***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1978	0.950***	0.950***	0.951***	0.950***	0.952***	0.952***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1979	0.950***	0.950***	0.951***	0.950***	0.951***	0.952***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1980	0.948***	0.948***	0.950***	0.948***	0.950***	0.950***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1981	0.952***	0.952***	0.953***	0.952***	0.954***	0.954***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1982	0.954***	0.954***	0.955***	0.954***	0.955***	0.955***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1983	0.950***	0.950***	0.951***	0.950***	0.952***	0.952***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)
Entry year 1984	0.951***	0.951***	0.952***	0.951***	0.953***	0.953***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
Entry year 1985	0.951***	0.951***	0.952***	0.951***	0.953***	0.953***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1986	0.956***	0.956***	0.957***	0.956***	0.957***	0.957***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1987	0.955***	0.955***	0.956***	0.955***	0.956***	0.956***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1988	0.955***	0.955***	0.956***	0.956***	0.957***	0.957***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1989	0.953***	0.953***	0.954***	0.953***	0.955***	0.955***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1990	0.953***	0.954***	0.954***	0.954***	0.955***	0.955***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1991	0.955***	0.955***	0.956***	0.955***	0.957***	0.957***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Entry year 1992	0.956***	0.956***	0.957***	0.956***	0.958***	0.958***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)
Entry year 1993	0.956***	0.956***	0.956***	0.956***	0.957***	0.958***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)
Entry year 1994	0.955***	0.955***	0.955***	0.955***	0.956***	0.956***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)
Entry year 1995	0.953***	0.953***	0.952***	0.953***	0.954***	0.954***
	(0.005)	(0.005)	(0.007)	(0.004)	(0.005)	(0.005)
Entry year 1996	0.954***	0.954***	0.953***	0.954***	0.954***	0.955***
	(0.004)	(0.004)	(0.005)	(0.003)	(0.004)	(0.004)
Entry year 1997	0.951***	0.951***	0.950***	0.951***	0.951***	0.951***



	(0.004)	(0.004)	(0.007)	(0.003)	(0.005)	(0.004)
Entry year 1998	0.952***	0.952***	0.951***	0.953***	0.952***	0.952***
	(0.004)	(0.004)	(0.007)	(0.003)	(0.005)	(0.005)
Entry year 1999	0.950***	0.950***	0.948***	0.950***	0.950***	0.950***
	(0.004)	(0.004)	(0.008)	(0.004)	(0.006)	(0.005)
Entry year 2000	0.949***	0.949***	0.947***	0.949***	0.949***	0.949***
	(0.004)	(0.004)	(0.007)	(0.003)	(0.006)	(0.005)
Entry year 2001	0.944***	0.944***	0.937***	0.944***	0.941***	0.941***
	(0.009)	(0.009)	(0.019)	(0.007)	(0.014)	(0.012)
Entry year 2002	0.944***	0.944***	0.938***	0.944***	0.941***	0.941***
	(0.008)	(0.008)	(0.016)	(0.006)	(0.012)	(0.010)
Entry year 2003	0.946***	0.946***	0.942***	0.946***	0.945***	0.945***
	(0.006)	(0.006)	(0.012)	(0.005)	(0.009)	(0.007)
Entry year 2004	0.941***	0.941***	0.934***	0.941***	0.937***	0.937***
	(0.010)	(0.010)	(0.020)	(0.008)	(0.016)	(0.014)
Entry year 2005	0.939***	0.939***	0.931***	0.940***	0.935***	0.934***
	(0.011)	(0.012)	(0.022)	(0.009)	(0.018)	(0.016)
Entry year 2006	0.926***	0.925***	0.910***	0.927***	0.918***	0.914***
	(0.024)	(0.026)	(0.046)	(0.020)	(0.037)	(0.036)
Entry year 2009	0.937***	0.937***	0.937***	0.937***	0.938***	0.938***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.005)
Left sample		-0.018***				-0.023***
		(0.005)				(0.005)
Combat arms last observation				0.006	-0.021*	-0.022**
				(0.010)	(0.011)	(0.011)
Combat support last observation				0.012	-0.017	-0.017
				(0.013)	(0.011)	(0.011)
Combat service support last observation				-0.002	-0.028***	-0.029***
				(0.009)	(0.011)	(0.011)
Aviation last observation				-0.003	-0.027**	-0.027**
				(0.009)	(0.011)	(0.011)
W01–W05 last observation			0.035**		0.072***	0.072***
			(0.016)		(0.027)	(0.027)
O1–O3 last observation			0.096***		0.129***	0.141***
			(0.015)		(0.024)	(0.024)
O4–O5 last observation			0.018*		0.042***	0.045***
			(0.009)		(0.015)	(0.015)
Observations	13111	13111	13104	13104	13104	13104

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



APPENDIX L. UNRESTRICTED SAMPLE OF MARINE CORPS ENLISTED THIRD MODEL MARGINAL EFFECTS/ROBUSTNESS

	Model focused on number of deployments controlled for months deployed	Additional variable to account for members leaving the sample	Rank variables taken at last observation instead of first observation	Occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation instead of first observation	Rank and occupation variables taken at last observation and left- sample variable
Key Variables						
Number of months deployed while married	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1 deployment while married	0.022***	0.022***	0.028***	0.022***	0.028***	0.028***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
2 deployments while married	0.036***	0.039***	0.045***	0.036***	0.050***	0.054***
	(0.012)	(0.013)	(0.013)	(0.012)	(0.013)	(0.013)
3 deployments while married	0.056	0.051	0.058	0.051	0.066	0.060
	(0.038)	(0.037)	(0.039)	(0.037)	(0.040)	(0.039)
Greater than 3 deployments while married	0.104	0.105	0.119	0.102	0.119	0.119
	(0.105)	(0.105)	(0.108)	(0.105)	(0.111)	(0.111)
Deployed to Afghanistan	0.013	0.013	0.010	0.010	0.007	0.008
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Deployed to Iraq	0.011***	0.012***	0.011***	0.009***	0.010***	0.011***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Deployed to the Middle East (other than Afghanistan and Iraq)	-0.009**	-0.012***	-0.009**	-0.010***	-0.011***	-0.014***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Control Variables						
Female	0.051***	0.049***	0.054***	0.054***	0.056***	0.054***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Dependent quantity	-0.015***	-0.015***	-0.007***	-0.007***	-0.006***	-0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married to military spouse	0.036***	0.040***	0.042***	0.035***	0.038***	0.044***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Divorced prior to marriage	0.005	0.004	0.003	0.001	0.001	-0.000



	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Never married prior to marriage	-0.018***	-0.019***	-0.017***	-0.021***	-0.022***	-0.023***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Widow/Widower prior to marriage	-0.017	-0.018	-0.011	-0.014	-0.015	-0.017
	(0.046)	(0.045)	(0.047)	(0.045)	(0.044)	(0.043)
E1–E3 when married	0.051***	0.062***		0.051***		
	(0.009)	(0.009)		(0.009)		
E4–E6 when married	0.021***	0.031***		0.016**		
	(0.008)	(0.008)		(0.008)		
Faith	-0.009***	-0.010***	-0.008***	-0.011***	-0.011***	-0.012***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Black	0.011***	0.011***	0.007**	0.007**	0.006**	0.006**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Hawaiian or Pacific Islander	0.012	0.010	0.010	0.010	0.011	0.009
	(0.013)	(0.013)	(0.012)	(0.012)	(0.013)	(0.012)
Asian	0.023***	0.022***	0.021***	0.020***	0.021***	0.019***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
American Indian/Alaskan Native	0.042***	0.042***	0.037***	0.035***	0.034***	0.034***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Combat arms	-0.062***	-0.061***	-0.059***			
	(0.003)	(0.003)	(0.003)			
Combat support	-0.054***	-0.053***	-0.050***			
	(0.002)	(0.002)	(0.002)			
Combat service support	-0.054***	-0.052***	-0.049***			
	(0.003)	(0.003)	(0.003)			
Aviation	-0.046***	-0.044***	-0.041***			
	(0.003)	(0.003)	(0.003)			
Entry year 1960	0.918***	0.919***	0.922***	0.922***	0.922***	0.923***
	(0.001)	(0.009)	(0.010)	(0.009)	(0.001)	(0.001)
Entry year 1965	0.904***	0.908***	0.909***	0.910***	0.910***	0.913***
	(0.027)	(0.021)	(0.024)	(0.022)	(0.024)	(0.022)
Entry year 1966	0.905***	0.908***	0.909***	0.910***	0.910***	0.911***
	(0.026)	(0.021)	(0.024)	(0.022)	(0.025)	(0.025)
Entry year 1967	0.909***	0.912***	0.913***	0.913***	0.913***	0.915***
	(0.021)	(0.016)	(0.001)	(0.001)	(0.021)	(0.019)
Entry year 1968	0.906***	0.908***	0.910***	0.910***	0.911***	0.911***
	(0.026)	(0.001)	(0.023)	(0.021)	(0.024)	(0.024)
Entry year 1969	0.920***	0.921***	0.923***	0.923***	0.924***	0.925***
	(0.008)	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)
Entry year 1972	0.919***	0.920***	0.923***	0.923***	0.923***	0.924***
	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Entry year 1973	0.923***	0.924***	0.927***	0.926***	0.926***	0.927***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1974	0.922***	0.923***	0.926***	0.925***	0.926***	0.927***



	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)
Entry year 1975	0.923***	0.924***	0.927***	0.926***	0.926***	0.927***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
Entry year 1976	0.924***	0.925***	0.927***	0.926***	0.926***	0.928***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)
Entry year 1977	0.924***	0.925***	0.927***	0.926***	0.927***	0.928***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Entry year 1978	0.925***	0.925***	0.928***	0.927***	0.928***	0.929***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Entry year 1979	0.925***	0.926***	0.929***	0.928***	0.929***	0.930***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1980	0.925***	0.926***	0.929***	0.928***	0.928***	0.929***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Entry year 1981	0.926***	0.927***	0.930***	0.929***	0.929***	0.930***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1982	0.927***	0.927***	0.930***	0.929***	0.930***	0.931***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1983	0.926***	0.927***	0.930***	0.929***	0.929***	0.930***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1984	0.927***	0.927***	0.930***	0.929***	0.930***	0.931***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1985	0.927***	0.927***	0.930***	0.930***	0.930***	0.931***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1986	0.927***	0.928***	0.931***	0.930***	0.930***	0.931***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1987	0.927***	0.928***	0.931***	0.930***	0.930***	0.932***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1988	0.928***	0.929***	0.932***	0.931***	0.931***	0.932***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1989	0.929***	0.930***	0.932***	0.931***	0.932***	0.933***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1990	0.929***	0.930***	0.933***	0.932***	0.932***	0.933***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1991	0.929***	0.930***	0.933***	0.932***	0.932***	0.933***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Entry year 1992	0.933***	0.934***	0.936***	0.935***	0.935***	0.937***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Entry year 1993	0.946***	0.949***	0.947***	0.947***	0.946***	0.949***
	(0.004)	(0.003)	(0.005)	(0.005)	(0.006)	(0.005)
Entry year 1994	0.954***	0.956***	0.954***	0.954***	0.954***	0.956***
	(0.005)	(0.003)	(0.005)	(0.005)	(0.006)	(0.005)
Entry year 1995	0.957***	0.960***	0.958***	0.958***	0.957***	0.960***
	(0.005)	(0.003)	(0.005)	(0.005)	(0.006)	(0.005)
Entry year 1996	0.960***	0.963***	0.961***	0.961***	0.961***	0.963***
	(0.005)	(0.003)	(0.005)	(0.005)	(0.006)	(0.005)
Entry year 1997	0.961***	0.964***	0.963***	0.962***	0.962***	0.964***
	(0.005)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)
Entry year 1998	0.962***	0.964***	0.963***	0.963***	0.963***	0.965***
	(0.005)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)
Entry year 1999	0.962***	0.964***	0.964***	0.963***	0.963***	0.965***
	(0.005)	(0.003)	(0.004)	(0.005)	(0.005)	(0.004)
Entry year 2000	0.963***	0.966***	0.965***	0.964***	0.965***	0.967***



	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)
Entry year 2001	0.965***	0.968***	0.967***	0.967***	0.967***	0.969***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)
Entry year 2002	0.963***	0.966***	0.965***	0.965***	0.965***	0.967***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)
Entry year 2003	0.959***	0.962***	0.962***	0.961***	0.962***	0.964***
	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Entry year 2004	0.950***	0.953***	0.953***	0.953***	0.953***	0.955***
	(0.005)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)
Entry year 2005	0.939***	0.941***	0.942***	0.942***	0.942***	0.943***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)
Entry year 2006	0.928***	0.929***	0.930***	0.931***	0.930***	0.930***
	(0.004)	(0.003)	(0.005)	(0.003)	(0.005)	(0.005)
Entry year 2007	0.927***	0.928***	0.930***	0.930***	0.930***	0.930***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
Entry year 2008	0.925***	0.926***	0.927***	0.928***	0.928***	0.929***
	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)	(0.004)
Entry year 2009	0.923***	0.924***	0.923***	0.924***	0.924***	0.924***
	(0.004)	(0.003)	(0.007)	(0.005)	(0.007)	(0.007)
Left sample		-0.043***				-0.053***
		(0.003)				(0.004)
Combat arms last observation				-0.049***	-0.048***	-0.051***
				(0.004)	(0.004)	(0.004)
Combat support last observation				-0.041***	-0.040***	-0.042***
				(0.004)	(0.004)	(0.004)
Combat service support last observation				-0.038***	-0.035***	-0.038***
				(0.004)	(0.004)	(0.004)
Aviation last observation				-0.033***	-0.030***	-0.032***
				(0.004)	(0.004)	(0.004)
E1–E3 last observation			0.075***		0.082***	0.116***
			(0.009)		(0.009)	(0.010)
E4–E6 last observation			0.018***		0.020***	0.038***
			(0.005)		(0.005)	(0.005)
Observations	108074	108074	107649	107649	107649	107649

Note. Standard errors are shown in parentheses; * = significant at 10%; ** = significant at 5%; *** = significant at 1%.



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2003 - 2011 SPONSORED RESEARCH TOPICS

Acquisition Management

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting



Financial Management

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-tem Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness
- Naval Aviation Maintenance and Process Improvement (2)



- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

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