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THESIS

A MULTIVARIATE ANALYSIS OF RETIREMENT INTENTIONS OF ENLISTED NAVAL RESERVISTS

by

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March 2006

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Among the reserve experience variables, perceptions about the importance of training, accomplishment recognition, family impact, civilian job impact, education benefits, leadership, career development, personal meaning, and time spent working in a primary designator are all significant influences on career plans. Marital status, pay grade, time in the Selected Reserves, and prior duty status are also significant predictors. While unit type and rating variables are not individually significant, each group of variables is jointly significant. Marital status, pay grade, time in service, and reserve experience variables have the greatest effects on a respondent's intent to stay to retirement and should be considered when evaluating and creating retention policies and/or programs for the Naval Reserve organization.

It is recommended that follow-on studies be conducted to compare the 2005 responses with the 2000-2001 responses to the Reserve Career Decision Survey to provide a better understanding of enlisted reserve retirement intentions in the 9/11 military environment.

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I. INTRODUCTION

A. PURPOSE

This thesis examines the factors that affect an individual's intention to remain in the Navy Reserves until he or she becomes eligible for retirement. With the country entangled in the Global War on Terror (GWOT), recruiting and retention have become acutely important issues for the military. The goal of this thesis is to ensure future enhancement of programs and/or conditions that promote Naval Reserve retention by predicting an individual's retirement intentions based on personal demographic characteristics and reserve-specific factors. In addition, the thesis seeks to identify specific policies that influence reservists to remain in the Navy Reserve.

B. HISTORY AND BACKGROUND

The Naval Reserve can be traced back to before the Continental Congress had officially established the Continental Navy. From the Revolutionary War through the Civil War, state naval militias offered reinforcement and additional manpower for the active Navy. By World War I the need for a federal Naval Reserve Force was evident and resulted in the "passage of legislation on March 3, 1915, creating the Naval Reserve Force."[1] Continuing its legacy throughout World War II and into the present day, the Naval Reserve Force has played a definitive role in protecting national security. "Whether responding to the ethnic cleansing in the former Yugoslavia or the threat of world terrorism, the latter coming to the forefront in the

[1] Naval Reserve Official Web Site: History, http://navyreserve.navy.mil/NR/rdonlyres/C0466290-D673-406F-8084 A7CD17EFAA54/83611/NRhistorySHORT2.doc (accessed March 15, 2006).

attacks against the World Trade Center and the Pentagon on September 11, 2001, the recently renamed Naval Reserve has been transformed from a force in waiting for massive mobilization to an integral component in carrying out the mission of the U.S. Navy."[2]

Today the Navy Reserve represents 20% of the fleet's total assets and is an essential component of United States naval power as the Navy's commitments grow around the world.[3] With the development of SeaPower 21 the required capabilities of the Naval Reserve continue to expand. The Global War on Terror has brought about the highest utilization of National Guard and Reserve members since World War II.[4] Enlisted reserve personnel have provided operational support to either their supported commands or to Combatant Commanders around the world, resulting in 18,436 individuals being mobilized since September 2001.[5] This increase in operational tempo is accompanied by a concern that "sustained use of reserve forces will eventually harm recruiting and retention of young men and women willing to serve as future citizen Sailors, Marines,

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[2] Naval Reserve Web Site: History.

[3] Naval Reserve Web Site: Mission, http://navyreserve.navy.mil/ Public/ HQ/WelcomeAboard/MissionandHistory/default.htm?&LGUID=21AD5593-1FA1-49DE-B483-7E56F6347B59 (accessed March 15, 2006).

[4] Cotton, John G., Testimony of VADM John G. Cotton United States Naval Reserve Chief of Naval Reserve Before The House Armed Services Committee Subcommittee On Total Force United States House Of Representatives Regarding Reserve Component Transformation and Relieving The Stress On The Reserve Components (March 31, 2004), http://www.house.gov/hasc/openingstatement sandpressre leases/ 108thcongress/04-03-31 cotton.html (accessed March 15, 2006).

[5] Ibid.

and Coast Guardsmen."[6] To alleviate this concern and maintain mission readiness it is imperative for leadership to continue to evaluate organizational factors that include programs and benefits that improve service retention and promote the highest level of effectiveness.

C. CHARACTERISTICS OF THE NAVAL RESERVES COMPARED TO OTHER RESERVE COMPONENTS AND THE CIVILIAN POPULATION

The Naval Reserve membership differs in several respects from the membership of other reserve components and the civilian population as shown in the reserve data for fiscal year 2001 (FY 2001) displayed in table 1. Characteristics such as age, gender, martial status, and prior active duty service can all influence an organization's culture. Knowledge of these characteristics can assist an organization in customizing its retention efforts.

1. Age

Table 1 illustrates the age composition of each military reserve component and the civilian work force in FY 2001. The Army Reserve, Army National Guard, and Marine Corps Reserve have the highest percentage of their personnel falling in the age group 20-29, while the Naval Reserve and Air Force Reserve have the highest percentage of personnel falling in the middle age groups (ages 30-34 and 35-39). Among the reserve services, the Air National Guard is the most like the civilian population in age distribution.

[6] Barnes, Joseph L., Testimony of Master Chief Joseph L. Barnes, USN (RET.) Fleet Reserve Association Before The Subcommittee On Total Force House Armed Service Committee United States House Of Representatives Regarding Military Personnel Policy, Benefits, And Compensation (March 24, 2004), http://www.house.gov/hasc/openingstatementsandpressreleases/108thcongress/04-03-24barnes.html (accessed March 15, 2006).

Table 1: FY 2001 Selected Reserve Enlisted Members, by Age and Component and Civilian Labor Force Over 16 Years Old (Percent)

Age Group	Army National Guard	Army Reserve	Naval Reserve	Marine Corps Reserve	Air National Guard	Air Force Reserve	Total DoD	Civilians
17-19	11.3	12.8	1.0	13.2	4.7	2.3	9.2	4.6
20-24	22.9	23.8	7.3	51.3	13.5	9.0	20.8	10.4
25-29	16.0	15.4	18.0	19.5	13.4	12.5	15.6	10.5
30-34	14.6	13.7	25.7	8.4	16.6	17.5	15.6	11.6
35-39	13.4	13.3	24.3	4.7	18.8	21.7	15.3	12.8
40-44	9.2	9.7	13.3	1.9	13.3	15.5	10.3	13.7
45-49	5.5	5.5	6.1	0.6	8.4	9.9	6.0	12.3
50+	7.2	5.5	4.4	0.4	11.3	11.6	7.1	24.1
Unknown	*	0.3	*	*	0.0	0.0	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Columns may not add to total due to rounding * Less than one-tenth of one percent								

Source: Office of the Under Secretary of Defense Personnel and Readiness (From Ref. 12).

The differences in this distribution can be attributed to the diverse missions associated with each service. The use of a younger force to fight on the battle field in harsh, demanding conditions is representative of the Army Reserve, Army National Guard, and Marine Corps Reserve mission requirements.[7] However, the use of equipment-intensive or high-technology fields is particularly associated with the Naval Reserve and Air Force Reserve, which heavily recruit individuals who are older and have a higher experience level.[8] Awareness of the age distribution of reservists can be utilized to target future retention policy and program development in the Naval Reserve.

[7] Office of the Under Secretary of Defense, Personnel and Readiness, "Selected Reserve Enlisted Accessions & Enlisted Force." Population Representation in the Military Services Fiscal Year 2001, http://www.defenselink.mil/prhome/poprep2001/chapter5/c5_age.htm (accessed March 15, 2006).

[8] Office of the Under Secretary of Defense, Personnel and Readiness. (2003), 5-10.

2. Gender

Table 2: FY 2001 Selected Reserve Enlisted Members, by Gender and Component, and Civilian Labor Force 18-49 Years Old (Percent)

Gender	Army National Guard	Army Reserve	Naval Reserve	Marine Corps Reserve	Air National Guard	Air Force Reserve	Total DoD	18 to 49 Year Old Civilians
Male	87.6	75.0	79.4	95.3	82.4	78.4	83.0	53.4
Female	12.4	25.0	20.6	4.7	17.6	21.6	17.0	46.6

Source: Office of the Under Secretary of Defense Personnel and Readiness (From Ref. 12).

Table 2 illustrates the gender composition of each military reserve component and the civilian work force in FY 2001. Within each reserve component, males are a larger percentage of the force than females, unlike the civilian labor force which is much more evenly distributed by gender. These differences could be attributed to the type of work environment associated with military service. For example, the Army National Guard and United States Marine Corps Reserve are largely comprised of combat units. Due to restrictions on women in combat, the population of women in these services is small. The U.S. Air Force Reserve and Naval Reserve are strongly associated with support units that are less likely to be involved with direct combat. This makes the Air Force Reserve and Naval Reserve more appealing to women who are interested in military service, because these services can offer females more diverse job opportunities.[9] Based on its relatively large population of females, the Naval Reserve's retention efforts must focus on both male and female sailors.

[9] Office of the Under Secretary of Defense, Personnel and Readiness. (2003), 5-11.

3. Marital Status

Table 3 shows the martial status composition of enlisted reservists and the civilian work force in FY 2001. Civilian workers are more likely to be married than enlisted selected reservists (54.3 percent versus 48.1 percent).[10] The greatest difference in percent married is found when comparing married female Selected Reserve members to the female civilian work force (34.7 percent versus 52.8 percent). This difference could in part be explained by the "younger age of women enlisted members compared to their civilian counterparts."[11] However, with a total of 48.1% of the Enlisted Selected Reserve force married, it is imperative that the Naval Reserve focus retention efforts on consistent family policies that assist Naval Reserve sailors with balancing military and family obligations.

Table 3: FY 2001 Married Selected Reserve Enlisted Members, by Gender, and Civilian Labor Force 18-49 Years Old (Percent)

Gender	DoD	18 to 49 Year Old Civilians
Male	50.1	55.6
Female	34.7	52.8
Total	48.1	54.3

Source: Office of the Under Secretary of Defense Personnel and Readiness (From Ref. 12).

4. Prior Service

Table 4 presents the prior service composition of each military reserve component in FY 2001. Prior Service Selected Reserve members are individuals who are released from active duty and who subsequently enter the reserve

[10] Office of the Under Secretary of Defense, Personnel and Readiness. (2003), 5-12.

[11] Ibid, 5-12.

force. These individuals are great assets to the reserves because they bring with them the knowledge and experience acquired while on active duty.

Table 4: FY 2001 Selected Reserve Non-Prior Service and Prior Service Enlisted Accessions

Components	Enlisted Accessions			
	Non-Prior Service	Prior Service	Total	Prior Service Percent of Accession Total
Army National Guard	33,405	28,942	62,347	46.4
Army Reserve	20,801	24,461	45,262	54.0
Navy Reserve	3,652	16,002	19,654	81.4
USMC Reserve	5,845	3,704	9,549	38.8
Air National Guard	5,844	5,198	11,042	47.1
Air Force Guard	2,603	5,971	8,574	69.6
DoD Total	72,150	84,278	156,428	53.9

Source: Office of the Under Secretary of Defense Personnel and Readiness (From Ref. 12).

As of FY 2001, the Naval Reserve has the highest percentage of prior service members among the reserve components. As discussed earlier, due to its equipment-intensive requirements and high technology fields, the Naval Reserve focuses on the recruitment of prior service individuals. By recruiting prior service members, the Naval Reserve can reduce training costs and increase mobilization readiness to meet future demands.[12] However, there is a tradeoff between active Navy service member retention and Naval Reserve accession. When the availability of prior service individuals decreases, the reserve force increases the recruiting of non-prior service members. In this situation prior service members are very

[12] Office of the Under Secretary of Defense, Personnel and Readiness. (2003), 5-4.

valuable as their experience is used to help train and integrate non-prior service members into the reserves.

D. SCOPE AND METHODOLOGY

This thesis is a follow-on study to the Naval Postgraduate School Thesis by Rita Alice Becker titled "Enlisted Navy Reservists and their intention to stay in the Navy Reserve until Retirement Eligible." This follow-on study focuses on how demographic characteristics and Naval Reserve dynamics can influence Navy Reserve retention. The source of data for this thesis and Becker's research is the 2000-2001 Navy Reserve Career Decision Survey. The data were supplied by Mr. Michael A. White, PhD of the Navy Personnel Research, Studies & Technology (NPRST) office in Millington, Tennessee.[13] A total of 56 variables including information on demographics, career in the Navy Reserve, Navy Reserve job/working conditions, personal and family life, and Navy Reserve culture were requested for use in the original study.[14] From these data, 18 variables were chosen for this follow-on study. Statistical analysis is conducted using a multivariate logistic regression model to identify the possible individual and/or joint effects that predict an individual's intent to remain in the Naval Reserves until retirement eligible.

E. ORGANIZATION OF STUDY

The following chapters investigate Enlisted Naval Reserve retention intention with respect to demographic and reserve experience differences. Chapter II presents a literature review relevant to Naval Reserve retention

[13] Becker, R. "Enlisted Navy Reservists and Their Intention to Stay in the Navy Reserves Until Retirement Eligible." Master's Thesis, Naval Postgraduate School, 2005, 9.

[14] Ibid, 9.

issues and offers insight for variable selection in this study. Chapter III discusses methodology and includes a comprehensive model and data description. Chapter IV presents the logistic regression model results, highlighting the relationships between explanatory variables and retirement intentions. Chapter V summarizes model results, outlines conclusions of the study, and suggests policy and/or program recommendations to aid Naval Reserve retention in the future.

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II. LITERATURE REVIEW

A. OVERVIEW

This thesis examines the factors that affect an individual's intent to remain in the Navy Reserves until he or she becomes eligible for retirement. The goal of this thesis is to help develop future programs and/or conditions that will promote Naval Reserve retention. No literature is available that specifically examines the influences on an individual's intent to retire from the Reserves other than Becker's thesis. However, many other retention studies can be drawn on for background on possible influencing factors.

B. PRIOR STUDIES

1. Individual Retention

Becker (2005) examined the retirement intention of enlisted Navy Reservists in pay grades E1-E6 using Chi-square analysis. Results showed that males, married members, and prior service members had a higher intention to retire from the Naval Reserves than others. Individuals attached to Reserve Center/Readiness Commands had a higher retirement intention than individuals not attached to units at Reserve Center/Readiness Commands; however, Unit type was found not to be significant in determining retirement intentions of aviation or shipboard specific units. Satisfaction with the quality of training and senior leadership both had a positive effect on a respondent's retirement intentions. In addition, perceptions about accomplishment recognition, family impact, civilian job impact, and educational benefits all proved to be

significant factors influencing members to stay in the Naval Reserve until retirement.

Kostiuk, Follmann, and Shiells (1988) studied the effectiveness of bonuses on enlisted reserve personnel retention, and the impact of rating and unit type on continuation rates. The analysis "focused on the behavior of Navy veterans because they are the largest single source of manpower for the Naval Reserve."[15] When examining retention, this study looked at the retention probability of first-term veterans who separated from active duty and remained in the Selective Reserve. The sample used in the analysis consisted of Navy Veterans who separated from active duty during fiscal years 1981 through 1985.[16] Enlistment and retention data were obtained from the Reserve Component Personnel Data System (RCCPDS), and information on bonus eligibility was taken from a series of Reserve Recruiting and Manning Objective System (RAMOS) instructions.[17] Bonus information was gathered based on whether an individual qualified for a bonus at affiliation. Ratings were divided into 11 occupational groupings, with each group considered individually to allow for differences in variable impacts. Unit type retention was investigated separately for Naval Reserve Force (NRF) and non-NRF units. The NRF is comprised of ships assigned to reserve duty.

Using a sample of Navy first-term veterans who were eligible for reenlistment but who separated from active duty, the authors found that predicted continuation rates

[15] Kostiuk, Peter F., Follman, Dean A., and Martha Shiells. (1988) *Utilization of Personnel Resources Within The Navy Selected Reserve*. (Research Memorandum Mo. CRM 88-155). Alexandria, Virginia: Center for Naval Analyses, 6.

[16] Ibid, 7.

[17] Ibid, 7.

increased by several points for most rating groups due to affiliation bonuses. They also found that retention is worse for those serving on NRF ships than in other SELRES units.[18] There were few differences in continuation rates across different ratings; however, continuation rates did rise as length of service increased.

Kostiuk and Follman (1988) also focus on the retention behavior of Naval Reserve veterans with emphasis on the quantifiable influences on retention such as pay and personal characteristics. Navy veterans who separated from active duty during fiscal years 1981 through 1985 make up the sample in this study.[19] The Reserve Common Components Personnel Data System (RCCPDS) supplied enlistment and retention data, while bonus information is provided from the series of Reserve Recruiting and Manning Objective System (RAMOS) instructions.[20] Results showed that pay significantly affects retention, but the effect varied by rating group. Among 11 different occupational groupings, the "medical" (DT, HM) rating groups had the highest retention, while the "mechanical equipment repair – aviation" (AB, AD, AE, AM, AO, AS) groups had the lowest.[21]

Kirby et al. (1997) compare 1986 and 1992 Reserve Component survey responses regarding morale, perceptions, and civilian characteristics, in addition to comparing 1992 mobilized with non-mobilized reservists in terms of their perceptions and attitudes about the reserves, their

[18] Kostiuk, Follman, and Shiells, 12.

[19] Kostiuk, Peter F. And Follman, Dean A. (1988) *Retention of Navy Veterans in the Selected Reserve.* (Research Memorandum No. CRM 88-72). Alexandria, Virginia: Center for Naval Analyses, 3.

[20] Kostiuk and Follman, 3.

[21] Ibid, 5.

families, work environments, and their ranking of potential problems faced if they were to be mobilized. The 1986 and 1992 surveys consisted of officers and enlisted personnel who were attending drills, excluding non-prior service members at Initial Active Duty Training (IADT).[22] The results of these surveys offer insight into reservist's perceptions, and could be used for retention planning. Researchers found that among enlisted personnel, greater emphasis is placed on educational benefits, whereas immediate compensation and promotion opportunities seem to be less important.[23] These results could prove to influence future reserve retention policy. Reservists describe civilian supervisors as having a more favorable attitude towards employee reserve participation in 1992 than that reported in 1986.[24] This shift has helped to lessen the anxiety most reservists experience with fulfilling reserve obligations and civilian job commitments, therefore encouraging retention. This positive attitude shift supports the need for continued development of Naval Reserve programs that encourage civilian employers to support their reservist employees to ensure increased reserve participation. Family attitudes and support over time have seemed to stay fairly consistent. Reserve drills, annual training, and extra time spent on reserve obligations seem to create the same level of conflict with family time in 1992 as in 1986.

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[22] Sheila N. Kirby et al., (1997) *Costs and Benefits of Reserve Participation : New Evidence from the 1992 Reserve Components Survey. (Document No. MR-812-OSD). Alexandria, Virginia : RAND Corporation*, 4.

[23] Ibid, xix.

[24] Ibid, xx.

There was little difference found between mobilized and non-mobilized reservists. However, there is an increased frequency of unfavorable spouse attitudes for mobilized enlisted personnel. This confirms the time sacrifice associated with reserve obligation and stresses the need for family programs to promote family support and help alleviate some of the conflict triggered by reserve obligation for both mobilized and non-mobilized reservists. For future planning purposes, the most prevalent problems reported by reservists are the lack of time for planning and administration, lack of access to good training facilities, and lack of supplies and modern equipment/weapons.[25] Fifty percent of reservists surveyed ranked retirement benefits, pride in personal accomplishment, and service to country as major contributing factors for staying in the reserves.[26]

2. NRF Unit Retention

Shiells and Reese (1988) analyzed continuation rates of the Naval Reserve Force (NRF) by geographical area, paygrade, length of service, rating, program entry into the Reserve, and type of ship. Data for this study were comprised of quarterly Inactive Enlisted Master File (IEMF) data from September 1985 through September 1987.[27] To calculate continuation rates, all SELRES personnel attached to NRF units in one quarter were identified and followed to determine if they remained in an NRF unit the next quarter.[28] Findings showed that over half of the people that

[25] Kirby et al., xxii.

[26] Ibid, 19.

[27] Shiells, Martha E. and Reese, David L. (1988) *Retention in the Naval Reserve Force.* (Document No. CRM 88-29). Alexandria, Virginia. Center for Naval Analyses, 2.

[28] Shiells and Reese, 2.

transfer out of NRF units do so within the first year and almost 80% transfer within the first two years.[29] Continuation rates for junior and senior paygrade personnel prove to be higher than for middle grade personnel.[30] In addition, findings supported the hypothesis that higher NRF continuation rates would be found for individuals who have served in the Selective Reserves for a longer period of time. NRF continuation rates were not affected by type of crew, ship class, Naval Reserve Readiness Command, or rating group, and would only improve marginally if adjusted for differences in crews, ships, geographical areas, or ratings.[31]

3. Mobilization Effects on Retention

Kirby and Scott (1998) examined retention of enlisted reservists in the post operation desert storm/shield environment by examining how factors affecting reenlistment have changed since 1986, and how mobilization has impacted retention with respect to its effects on economic position and the individual's work and family environment. The data for this study came from the 1991 Guard/Reserve Survey of Officers and Enlisted Personnel, and Quarterly Master Personnel Files drawn from the Reserve Common Component Personnel Data System (RCCPDS).[32] Individual records were matched with RCCPDS records to create a three year longitudinal history after the survey for each respondent.[33]

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[29] Shiells and Reese, 19.

[30] Ibid, 19.

[31] Shiells and Reese, 19.

[32] Kirby, Sheila N. and Naftel, Scott. (1998) *The Effect of Mobilization on retention of Enlisted Reservists After Operation Desert Shield/Storm*. (Document No. MR-943-OSD). Alexandria, Virginia: RAND Corporation, xii.

[33] Kirby and Scott, xii.

Results illustrate that mobilization status has little effect on the probability of retention among the reservists.[34] Lower paygrades are found to have lower retention, with the Naval Reserve and Marine Corps Reserve having the lowest component retention rates. "Satisfaction with reserve participation is the most important predictor of the likelihood of remaining in the reserves; those who were satisfied with the reserves have retention probabilities that are one-and-a-half to two times larger than the probabilities of those who are very dissatisfied with the reserves."[35] Negative spouse attitudes towards reserve participation had a negative effect on retention, while having civilian work supervisors with favorable attitudes had a positive effect on retention probabilities. Evidence showed that the possibility of being mobilized in the future has a small positive effect, attributed to the belief that "reservists welcome the opportunity to put their skills and training into practice in real-world deployments."[36]

4. Affiliation Decisions

Shiells (1986) studied the determinants of enlisted Navy Veterans' (NAVET) affiliation rates with the Naval Reserve. The study reviewed dynamics of market conditions, such as pay and unemployment rates, and personal characteristics, such as age, education, sex, and race, to see how each factor affected a veteran's decision to affiliate with the reserves. Results showed that women, non-whites, and persons who advance to higher paygrades during active duty have higher estimated affiliation rates.

[34] Kirby and Scott, xiii.

[35] Ibid, xiv.

[36] Ibid, xx.

Accession behavior varies between ratings and rating groups in part because of difference in economic opportunities, personal characteristics, paygrade mix, and regional distribution of NAVETs in the rating.[37] Results also indicated that changes in compensation and affiliation bonuses will influence the Navy's ability to attract and retain Selective Reserve members.

Waite (2005) examines the factors that influence first-term Naval Veterans (NAVETs) to affiliate with the Selected Reserves (SELRES). The data set for the study was provided by the Defense Manpower Data Center (DMDC) and consisted of Fiscal Years 1990 to 1992 first term Navy enlisted losses from the Enlisted Master Records (EMR), and matched records for Fiscal Years 1990 to 2003 from the Reserve Component Common Personnel Data System (RCCPDS). In addition, Fiscal Years 1990 to 1994 reserve affiliation data were derived using EMR decade Composite Loss Files.[38] The final data file included Navy Veterans (NAVETs) who separated after their first term enlistment and were eligible for the Selected Reserves.[39]

Results showed reserve pay and unemployment rates have a significant and positive effect on a NAVET's decision to join the Selected Reserves.[40] In addition, demographic characteristics such as gender, race, martial status, dependents, and age are significant predictors of NAVET affiliation. Females have a higher propensity to affiliate

[37] Shiells, Martha E. (1986) *Affiliation of Navy Veterans with the Selected Reserve*. (Document No. CRM 86-249). Alexandria, Virginia. Center for Naval Analyses, 33.

[38] Waite, J. "Affiliation of Naval Veterans with the Selected Reserve in the 21st Century." Masters Thesis, Naval Postgraduate School,2005,15.

[39] Ibid, 15.

[40] Ibid, 43.

than males, and married NAVETs have a lower probability to affiliate than single NAVETs.[41] Lastly, active duty Navy policy decisions affect the probability of affiliation of NAVETs in the SELRES.[42]

C. SUMMARY

Based on the findings of these studies, it is evident that there are many factors that influence an individual's decision to remain in the reserves. Factors such as gender, martial status, prior service status, length of service, unit type, opportunity to work in designator, quality of training, recognition accomplishment, family and civilian job impacts, educational benefits, rate, and leadership, all affect a reservist's decision to stay or leave the reserves. The following chapters of this thesis analyze some of these variables and further evaluate their impact in order to make future Naval Reserve retention policy recommendations.

[41] Waite, 43.

[42] Ibid, 44.

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III. METHODOLOGY AND MODEL DESCRIPTION

A. DATA

1. Survey Description

The data used in this thesis represents the responses given by enlisted Naval Reservists on the 2000-2001 Navy Reserve Career Decisions Survey which was administered during drill periods nationwide from December 2000 – February 2001. The Navy Reserve Career Decision Survey was developed by the office of Navy Personnel Research, Studies, and Technology (NPRST) branch in Millington, TN in association with Commander, Navy Reserve Force, as a tool to identify key factors that determine why a drilling reservist remains in or leaves the Selected Reserve.[43]

The Navy Reserve Career Decision Survey was administered to all officers and enlisted drilling reserve personnel. Most questions were graded on a seven-point "influence to stay" or "influence to leave" scale, and collected information on how working conditions, military culture, leadership, training, pay and benefits influence members' reserve career decisions.[44] With a response rate of approximately 70 percent, participants answered 138 questions and provided a total of 50,693 observations.[45]

2. Data Organization

The data set required additional formatting so that it could be analyzed with the SAS system software. Respondents who took the Navy Reserve Career Decision Survey were in the following categories: Individuals taking the Total

[43] COMNAVRESFOR, "Naval Reserve Career Decision Survey (NR CDS)." Administrative Message, ALNAVRESFOR 33/00, R 291030Z NOV 00 ZYB.

[44] Ibid.

[45] Becker, 18.

Force Survey; those accepting promotion/advancement; those re-enlisting; and those extending, retiring, or separating. This thesis focuses only on the individuals whose responded to the "taking the Total Force Survey" (hereafter referred to as "Total Force Career Decision Survey." The data set was restricted to include only responses from enlisted individuals (paygrades: E1 – E9); in addition, certain response inputs were reformatted to ensure SAS program recognition. The final for this thesis contained a total of 13,190 observations.

a. Years of Service

An individual's response to the questions on "total years of military service" and "years of service in the Selective Reserve" were adjusted based on the assumption that no individual could have a response greater then 40 years. This time duration spans a period from age 18 to age 58. Any response that was unidentifiable or greater then this interval was deleted from the data set. Table 5 shows the definition, mean, and range of the years of service variables.

Table 5: Years of Service

Variable name	Variable description	Variable type	Range	Mean
YOS	Total number of military service years	Continuous	1yr - 40 yrs.	12.26 yrs.
YSELRES	Total number of years served in the Selective Reserves	Continuous	1yr - 38yrs.	7.75 yrs.

Source: Author, derived from Total Force Career Decision Survey data.

b. Ratings

In the survey, respondents were asked to identify their current rating, which is the respondent's occupation within the Naval Reserve. To obtain a rating means that an individual has been trained for a specific job; individuals

who have no job training are referred to as 'unrated.' The majority of rating responses were refined to their most basic rating notation. For example, responses of HM1, HMC, or HMCS were all identified as HM (Corpsman). In addition, the Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards Volume II (NAVPERS 18068F) was used to identify ratings for individuals who entered a rate-specific NEC as their rating response. Appendix 1 shows the general ratings reported in the survey and the associated title.[46] Once simplified, each rate was placed in a specific rating group. Utilizing the study by Kostiuk, Follmann, and Shiells (1988) as a model, 11 categories/ rating groups were created to capture retirement intentions with respect to occupational fields. Table 6 shows each rating group and the ratings included within each group.

Table 6: Rating groups, by occupational category

Category	Rating Group	Ratings within groups
1	Seamanship	BM, QM
2	Electronic equipment repair	AT, CTM, ET, FT, MT, ST, STG, STS, TM
3	Communications/ intelligence	AC, AW, CTI, CTO, CTR, CTT, CT, EW, IS, OS, SM, IT
4	Medical	DT, HM
5	Administrative/clerical	AK, AZ, CTA, DK, JO, PC, PN, RP, SK, YN, NC
6	Mechanical equipment repair – aviation	AB, AD, AE, AM, AO, AS,
7	Mechanical equipment repair – surface	CM, EM, EN, GM, GS, IC, MM, MN, DC, FC
8	Craftsmen	BU, CE, EO, HT, LI, MR, SW, UT

[46] "NAVPERS 18068F: Manual of Navy Enlisted Classifications and Occupational Standards Volume II, Navy Enlisted Classifications (NECs)." Director, Military Plans and Policy Division (N13). January 2006.

Category	Rating Group	Ratings within groups
9	Service/ supply	MS, PR, SH
10	Other	AG, DM, EA, PH, MA
11	Unrated	AN, FN, SN

Source: Author, (After Ref. 7).

B. RESPONDENTS' CHARACTERISTICS

Females make up a total of 2,396 (or 18.1%) of the observations in the data set. To account for similarities among multiple paygrades with respect to the survey responses, five pay groups where created to simplify model results. Table 7 displays the paygrade groups and the number of male, female, and total respondents in each group.

Table 7: E1-E9 Pay Groups

PAY GROUP	# Respondents	Male (#,%)	Female (#,%)
Junior (E1 - E3)	312	212 (67.95%)	100 (32.05%)
MIDGRADE4 (E4)	2,562	1,936 (75.57%)	626 (24.43%)
MIDGRADE5 (E5)	4,764	3,923 (82.35%)	841 (17.65%)
MIDGRADE6 (E6)	3,673	3,137 (85.41%)	536 (14.59%)
SENIOR (E7 - E9)	1,879	1,586 (84.41%)	293 (15.59%)
ToTal	13,190	10,794 (81.83%)	2,396 (18.17%)

Source: Author, derived from Total Force Career Decision Survey data.

Junior enlisted (E1 – E3) and senior enlisted (E7 – E9) respondents are expected to have similar characteristics and responses to survey questions as the individuals in their associated paygrades, and therefore are grouped together to simplify the interpretation of model results. Paygrades E4, E5, and E6, are broken up

into separate pay groups for several reasons. The number of E5 respondents is higher than the number in other paygrades, and therefore could have an overwhelming effect on results if grouped with another paygrade. In addition, individuals in each of these paygrades vary in many characteristics including age, time in service, dependents, and other factors that could result in very different responses when compared to other paygrades.

C. VARIABLE SELECTION

1. Dependent Variable: Retirement Intent

A respondent's intention to stay in the Naval Reserves until eligible for retirement is used as the dependant variable for the logistic regression model in this thesis. The survey question asked "What are your career intentions?" The respondent had six possible responses for this question. The dependent variable of the multivariate regression models are coded as one for the individuals who answer, "I intend to stay in the Navy Reserves until I am eligible to retire." Table 8 describes the characteristics of the dependent variable (RETIRE).

Table 8: Dependent Variable: Retirement Intentions

Variable Name	Variable Description	Variable Type	Range
RETIRE	Retention until retirement eligible	Binary	= 1 if member plans to stay in the Navy Reserves until retirement eligible = 0 if otherwise

Source: Author, derived from Total Force Career Decision Survey data.

2. Explanatory Variables

The explanatory variables in this thesis are selected directly from survey questions, and the additional supplemental readings discussed in the literature review chapter of this thesis. Explanatory variables fall into

three distinct categories: demographic and military background; rating and unit type; and reserve experience. Tables 9-11 list and describe the explanatory variables.

Table 9: Demographic and Military Background Variables

Variable Name	Variable Description	Variable type	Range
MALE	Gender	Binary	= 1 if member is male = 0 if female
MARRIED	Marital Status	Binary	= 1 if member is married = 0 if otherwise
YSELRES	Number of years in the Selective Reserve	Continuous	1 year to 38 years
PRIOR	Years of prior active duty served	Binary	= 1 if member has $\geq$ 4 yrs prior active service = 0 if otherwise
Paygrade:			
JUNIOR	Paygrade	Binary	= 1 if member is Paygrade (E1 – E3) = 0 if otherwise
MIDGRADE4	Paygrade	Binary	= 1 if member is Paygrade E4 = 0 if otherwise
MIDGRADE5	Paygrade	Binary	= 1 if member is Paygrade E5 = 0 if otherwise
MIDGRADE6	Paygrade	Binary	= 1 if member is Paygrade E6 = 0 if otherwise
SENIOR	Paygrade	Binary	= 1 if member is Paygrade (E7 – E9) = 0 if otherwise

Source: Author, derived from Total Force Career Decision Survey data.

Table 10: Rating and Unit Type Variables

Variable Name	Variable Description	Variable type	Range
Rating:			
SEAMANSHIP	Rate: General Seamanship	Binary	= 1 if rate is Seamanship = 0 if otherwise
ELECREPAIR	Rate : Electronic Equipment Repair	Binary	= 1 if rate is Electronic Equipment Repair = 0 if otherwise
COMMINTEL	Rate: Communications/ Intelligence	Binary	= 1 if rate is Communications/ Intelligence = 0 if otherwise
MEDICAL	Rate: Medical	Binary	= 1 if rate is Medical = 0 if otherwise
ADMIN	Rate : Administrative/Clerical	Binary	= 1 if rate is Administrative/ Clerical = 0 if otherwise
REPAIRAIR	Rate: Mechanical Equipment Repair – Aviation	Binary	= 1 if rate is Mechanical Equipment Repair – Aviation = 0 if otherwise
REPAIRSHIP	Rate: Mechanical Equipment Repair – Surface	Binary	= 1 if rate is Mechanical Equipment Repair – Surface = 0 if otherwise
CRAFTSMEN	Rate: Craftsmen	Binary	= 1 if rate is Craftsmen = 0 if otherwise
SERVICE	Rate: Service/ Supply	Binary	= 1 if rate is Service/ Supply = 0 if otherwise
OTHER	Rate: other	Binary	= 1 if rate is other = 0 if otherwise
Unit Type:			
AIR	Aviation Unit	Binary	= 1 if member is attached to Aviation Unit = 0 if otherwise
SHIP	Shipboard Unit	Binary	= 1 if member is attached to Shipboard Unit = 0 if otherwise

Source: Author, derived from Total Force Career Decision Survey data.

Table 11: Reserve Experience Variables

Variable Name	Variable Description	Variable type	Range
TRAINING	Quality of training received at drill location	Binary	= 1 if influence to stay = 0 if otherwise
DESIGWORK	Opportunity to work in primary rating/designator	Binary	= 1 if influence to stay = 0 if otherwise
RECOGNITION	Level of recognition for individual accomplishments	Binary	= 1 if influence to stay = 0 if otherwise
FAMILY	The impact of being in the Reserves on your family	Binary	= 1 if influence to stay = 0 if otherwise
CIVJOB	The impact of being in the Reserves on your civilian job	Binary	= 1 if influence to stay = 0 if otherwise
FLEXDRILL	Availability of flex drill *(Arrangements made to fulfill weekend drill requirements at some other specified time)*	Binary	= 1 if influence to stay = 0 if otherwise
EDUCATION	Education Benefits	Binary	= 1 if influence to stay = 0 if otherwise
CPO	Quality of leadership at the Chief Petty Officer level (CPO)	Binary	= 1 if influence to stay = 0 if otherwise
OFFICERS	Quality of leadership at the senior officer level (CO/XO)	Binary	= 1 if influence to stay = 0 if otherwise
RESPECT	Amount of respect received from active duty counter-parts	Binary	= 1 if influence to stay = 0 if otherwise
CAREER	Support for my career development	Binary	= 1 if influence to stay = 0 if otherwise
MEANING	Naval Reserve has a great deal of personal meaning for me	Binary	= 1 if influence to stay = 0 if otherwise

Source: Author, derived from Total Force Career Decision Survey data.

D. PRELIMINARY ANALYSIS

Preliminary analysis of the survey data was conducted using Chi-Square tests of contingency tables. The Chi-Square test is used to understand the relationship (if any) between each independent categorical variable and the dependent variable. The null hypothesis for a Chi-Square test states that the two variables are not related to each other. The alternative hypothesis states that the two variables are not independent of each other, and share a relationship. The probability value associated with each Chi-Square statistic determines the significance level at which the null hypothesis can be rejected. Table 12 shows the Chi-Square results for the survey data.

Table 12: Results for Chi-Square Tests of Independence for Explanatory Variables by "Stay to Retire" status:

Focus Variable for all Chi-square results: RETIRE		
Variable	**X^2**	**Prob**
Demographic& Military Background Variables		
GENDER	13.77	.0004 ***
MARRIED	261.41	<.0001 ***
PAYGRADE	983.60	<.0001 ***
PRIOR	61.89	<.0001 ***
UNIT	1.04	.6414
RATE	178.37	<.0001 ***
Reserve Experience Variables		
TRAINING	250.35	<.0001 ***
DESIGWORK	169.20	<.0001 ***
RECOGNITION	103.65	<.0001 ***
FAMILY	84.56	<.0001 ***
CIVJOB	106.74	<.0001 ***
FLEXDRILL	77.01	<.0001 ***
EDUCATION	109.76	<.0001 ***
CPO	44.74	<.0001 ***
OFFICERS	88.13	<.0001 ***
RESPECT	31.11	<.0001 ***
CAREER	263.52	<.0001 ***
MEANING	383.50	<.0001 ***

*** Significant at the .01 level ** Significant at the .05 level * Significant at the .1 level
Source: Author, derived from Total Force Career Decision Survey data.

1. Demographic and Military Background Variables

a. Gender

It is hypothesized that males will have a higher propensity than females to stay in the Naval Reserves until retirement. This is based on the notion that women are more likely than their male counterparts to find it difficult to balance family obligations with reserve requirements.

Table 13 shows the variation in intention to stay to retirement by gender. About 79 percent of the female reservists intend to stay to retirement, and about 82 percent of the males plan to stay to retirement. Plans to stay until retirement eligible vary significantly by gender. The Chi-Square value of 13.77 in Table 12 indicates the relationship between gender and intent to retire is significant at all the usual levels.

Table 13: Chi-Square Test Results: "Stay to Retire" status by Gender

GENDER ***	Yes Retire	No Retire	Total
Male: # (% male)	8,848 (81.97%)	1,946 (18.03%)	10,794 (100%)
Female: # (% female)	1,890 (78.88%)	506 (21.12%)	2,396 (100%)
Total	10,738 (81.41%)	2,452 (18.59%)	13,190 (100%)

*** Significant at the .01 level, X^2 test of independence

Source: Author, derived from Total Force Career Decision Survey data.

b. Marital Status

It is hypothesized that married respondents will have a higher propensity than unmarried respondents to remain in the Naval Reserves until retirement. This theory is based on the notion that married individuals require a

higher household income in order to meet the additional financial responsibilities that are usually associated with married life, such as mortgage payments and the added financial obligation of dependents.

Table 14 shows the variation in intention to stay to retirement by martial status. About 84 percent of the married respondents intend to stay to retirement, and about 76 percent of the unmarried respondents plan to stay to retirement. Plans to stay to retirement eligible vary significantly by martial status. The Chi-Square value of 261.4 in Table 12 indicates the relationship between martial status and intent to retire is significant at all the usual levels.

Table 14: Chi-Square Test Results: "Stay to Retire" status by Marital Status

MARRIED ***	**Yes Retire**	**No Retire**	**Total**
Married: # (%)	7426 (83.92%)	1,423 (16.08%)	8,849 (100.00%)
Not Married: # (%)	3,312 (76.30%)	1,029 (23.70%)	4,341 (100.00%)
Total	10,738 (81.41%)	2,452 (18.59%)	13,190 (100.00%)

*** Significant at the .01 level, X^2 test of independence
Source: Author, derived from Total Force Career Decision Survey data.

c. Pay Group

Retirement intentions are expected to vary among different paygrades based on the differences in age, marital status, and time in service associated with each pay group. It is hypothesized that individuals in higher paygrades will be more likely than junior respondents to remain in the Naval Reserve until retirement because they have more time in the Naval Reserve and want to realize a

return on their investment. Table 15 shows the variation in intent to stay to retirement by pay group.

Table 15: Chi-Square Test Results: "Stay to Retire" status by Pay Group

PAY GROUP (PAYGRADE)***		Yes Retire	No Retire	Total
JUNIOR (E1-E3)	**#**	209	103	312
	(%)	(66.99%)	(33.01%)	(100.00%)
MIDGRADE4 (E4)	**#**	1,673	889	2,562
	(%)	(65.30%)	(34.70%)	(100.00%)
MIDGRADE5 (E5)	**#**	3,849	915	4,764
	(%)	(80.79%)	(19.21%)	(100.00%)
MIDGRADE6 (E6)	**#**	3,306	367	3,673
	(%)	(90.01%)	(9.99%)	(100.00%)
SENIOR	**#**	1,701	178	1,879
	(%)	(90.53%)	(9.47%)	(100.00%)
Total		10,738	2,452	13,190
		(81.41%)	(18.59%)	(100%)

*** Significant at the .01 level, X2 test of independence
Source: Author, derived from Total Force Career Decision Survey data.

The pay group SENIOR (E7 – E9) has the highest percentage of individuals who intend to stay in the Naval Reserve until retirement. This is a predictable result based on the principle that individuals in this pay group have the greatest number of years invested in the Naval Reserve, and therefore are more likely than any other group to remain in the Naval Reserve to obtain a return on their investment. The pay group MIDGRADE4 which is comprised of E-4's has the lowest percentage of individuals who intend to remain in the Naval Reserve until retirement. This may be attributed to the notion that the paygrade of E4 denotes a crossroad where individuals have not become heavily vested in the reserves in respect to their years of service, and have yet to finalize their military career intentions.

The probability associated with the Chi-Square statistic for the test of the relationship between paygrade and intention to stay to retirement is <.0001, (Chi-Square value in Table 12 is 983.6) allowing for the null hypothesis that paygrade and intent to retire are independent of each other to be rejected, and the alternative hypothesis to be accepted. This Chi-Square statistic shows a relationship between paygrade and intent to retire which is significant at all the usual levels.

d. Time in Military Service

It is predicted that individuals who have prior active duty service or a large number of years in the Selective Reserve will have a higher propensity to retire because of the time they have already invested in the military than individuals with no prior active military service. The time spent by a respondent in military service is captured in the model by two separate variables: YSELRES and PRIOR.

Table 16 shows the variation in intention to stay to retirement and prior active service. The variable PRIOR was constructed to represent those individuals who have served on active duty before affiliation with the Naval Reserve. About 83 percent of the respondents who had prior service intend to stay to retirement, and about 79 percent of the non-prior service respondents plan to stay to retirement. Plans to stay in the Naval Reserves until retirement eligible vary significantly with prior service status. The Chi-Square results show a relationship between prior service and the intent to retire that is significant at all the usual levels.

Table 16: Chi-Square Test Results: "Stay to Retire" status by Prior Active Service

PRIOR ***	Yes Retire	No Retire	Total
PRIOR: # (%)	6,910 (83.04%)	1,411 (16.96%)	8,321 (100.00%)
NOT PRIOR: # (%)	3,828 (78.62%)	1,041 (21.38%)	4,869 (100.00%)
Total	10,738 (81.41%)	2,452 (18.59%)	13,190 (100.00%)

*** Significant at the .01 level, X2 test of independence
Source: Author, derived from Total Force Career Decision Survey data.

Table 17 shows the variation in intention to stay to retirement by the number of years served in the Selected Reserves. The variable YSELRES represents the number of years served by the respondent in a reserve component. This variable captures the effect that an additional year of service in the Naval Reserves has on an individual's intent to stay until retirement.

Table 17: T-test Results: "Stay to Retire" status by Years in the Selective Reserve

Equality of Variance			
Variable	**Method**	**F-value**	**Pr > F**
YSELRES ***	Folded F	1.28	<.0001
T-test (Satterthwaite)			
Variable	**Mean**	**T-value**	**T-statistic**
YSELRES ***	8.2 years	-26.39	<.0001

*** Significant at the .01 level
Source: Author, derived from Total Force Career Decision Survey data.

A T-test of group means was used to test if the mean number of years served in the selective reserve is the same for the individuals who plan to stay to retirement and the individuals who plan to leave the reserves before retirement. Using Levene's test on Equality of Variances, results show that the variance between the two groups of reservists in respect to the number of years served in the

Selective Reserve is unequal. With unequal variances between the groups, the Satterthwaite T-test shows that the difference in the mean number of years served in the Selective Reserves for individuals who plan to stay to retirement and individuals who plan to leave prior to retirement is significantly different at all the usual levels.

2. Unit Type Variables

Table 18 shows the variation in intention to stay to retirement by unit type. Based on the study done by Kostiuk, Follman, and Shiells (1988), it is hypothesized that a respondent's unit assignment will have an effect on the respondent's intent to remain in the reserves until retirement; with individuals attached to NRF ships being the least likely to stay. The unit type variable reflects the three types of unit assignments available to a Selective Reservist: an aviation unit, a unit at a Reserve/Readiness Center, or a shipboard unit. Based on the survey responses approximately 81 percent of the respondents attached to aviation units and reserve readiness centers intended to stay to retirement. About 84 percent of the respondents attached to NRF ships intended on remaining in the reserves until eligible for retirement. These results conflict with the results of the Kostiuk, Follmann, and Shiells (1988) study which found that retention is lower on NRF ships than in other SELRES units.[47] The Chi-Square probability for unit type is .5939, which is not significant at any of the usual levels and indicates there is no relationship between unit type and intentions to stay to retirement.

[47] Kostiuk, Follmann, and Shiells, 12.

Table 18: Chi-Square Test Results: "Stay to Retire" status by Unit Type

UNIT TYPE		Yes Retire	No Retire	Total
Unit at Air Site	**#**	1,778	408	2,186
	(%)	(81.34%)	(18.66%)	(100.00%)
Unit at Reserve/ Readiness Center	**#**	8,821	2,018	10,839
	(%)	(81.38%)	(18.62%)	(100.00%)
NRF Ship	**#**	139	26	165
	(%)	(84.24%)	(15.76%)	(100.00%)
Total		10,738	2,452	13,190
		(81.41%)	(18.59%)	(100%)

*** Significant at the .01 level, X2 test of independence
Source: Author, derived from Total Force Reserve Career Decision Survey data.

3. Rating Variables

The probability associated with the Chi-Square statistic for the test of the relationship between rating and intention to stay to retirement is <.0001, (Chi-Square value in Table 12 is 178.37) allowing for the null hypothesis that a respondent's rate and intent to retire are independent of each other to be rejected, and the alternative hypothesis to be accepted. This Chi-Square statistic shows a relationship between rating and intent to retire which is significant at all the usual levels.

Table 19 shows the variation in intention to stay to retirement by rate group. Respondents whose rating is associated with the SEAMANSHIP rate group have the highest percentage of individuals who intend to stay in the Naval Reserves until retirement. UNRATED respondents had the lowest percentage of individuals who intend to stay in the Naval Reserves until retirement.

Table 19: Chi-Square Test Results: "Stay to Retire" status by Rate Group

RATEGROUP ***		Yes Retire	No Retire	Total
SEMANSHIP	#	792	122	914
	(%)	(86.65%)	(13.35%)	(100%)
ELECREPAIR	#	944	196	1,140
	(%)	(82.81%)	(17.19%)	(100%)
COMMINTEL	#	1,534	375	1,909
	(%)	(80.36%)	(19.64%)	(100%)
MEDICAL	#	950	318	1,268
	(%)	(74.92%)	(25.08%)	(100%)
ADMIN	#	1,860	456	2,316
	(%)	(80.31%)	(19.69%)	(100%)
REPAIR	#	722	189	911
	(%)	(79.25%)	(20.75%)	(100%)
REPAIRSHIP	#	1,559	288	1,847
	(%)	(84.41%)	(15.59%)	(100%)
CRAFTSMAN	#	1,669	349	2,018
	(%)	(82.71%)	(17.29%)	(100%)
SERVICE	#	339	60	399
	(%)	(84.96%)	(15.04%)	(100%)
OTHER	#	349	88	437
	(%)	(79.86%)	(20.14%)	(100%)
UNRATED	#	20	11	31
	(%)	(64.52%)	(35.48%)	(100%)
Total	#	10,738	2,452	13,190
	(%)	(81.41%)	(18.59%)	(100%)

*** Significant at the .01 level, X2 test of independence

Source: Author, derived from Total Force Reserve Career Decision Survey data.

4. Reserve Experience Variables

It is hypothesized that each of the reserve experience variables will promote a respondent's intent to remain in the Naval Reserve until retirement. This theory is based on the notion that each reserve experience variable can be considered a positive influence by the Naval Reserve organization to promote retention. The reserve experience variables offer insight into specific dynamics that impact a respondent's intention to remain in the Naval Reserve until eligible to retire.

This thesis investigates 12 reserve experience variables: quality of training, time spent in original designator, personal recognition, family and civilian job impact, opportunity to flex drill, education benefits, leadership, career development, personal meaning, and respect from active duty counterparts. Table 20 shows the survey questions about reserve experiences and the possible survey responses.

Table 20: Survey Questions for Reserve Experience Variables

Using the scale here, please show whether the following factors have influenced you (contributed to your decision) to stay, influenced you to leave, or had no effect on your Naval Reserve career intention.	
Variable	**Question**
Original Response Choices: 1 - 3 = Influence to Leave, 4 = No Effect, 5 – 7 = Influence to Stay **Recoded binary categories**: Influence not positive = 0 , original responses 1-3 Influence positive = 1, original responses 4-7	
TRAINING	The quality of training you have received at your drill location.
DESIGWORK	Your opportunity to work in your primary rating/designator.
RECOGNITION	Level of recognition for my accomplishments.
FAMILY	The impact of being in Reserves on your family.

Using the scale here, please show whether the following factors have influenced you (contributed to your decision) to stay, influenced you to leave, or had no effect on your Naval Reserve career intention.	
Variable	**Question**
Original Response Choices: 1 - 3 = Influence to Leave, 4 = No Effect, 5 – 7 = Influence to Stay **Recoded binary categories**: Influence not positive = 0 , original responses 1-3 Influence positive = 1, original responses 4-7	
CIVJOB	The impact of being in Reserves on your civilian job.
FLEXDRILL	Availability of flex drill
EDUCATION	Your education benefits.
CPO	The quality of leadership at the Chief Petty Officer level (CPO)
OFFICERS	The quality of leadership at the senior level (CO/XO).
RESPECT	The amount of respect you receive from your active duty counter-parts.
CAREER	The support for my Career development.
Please rate the following items using the scale here:	
Original Response Choices:1 = Strongly Disagree, 2 = Moderately Disagree, 3 = Slightly Disagree 4 = Neither Agree nor Disagree, 5 = Slightly Agree, 6 = Moderately Agree, 7 = Strongly Agree **Recoded binary categories**: Influence not positive = 0 , original responses 1-3 Influence positive = 1, original responses 4-7	
MEANING	The Naval Reserves has a great deal of personal meaning for me.

Source: Author, (After Ref. 8).

Table 21 shows the variation in the intention to stay to retirement with specific reserve experiences. The probability associated with the Chi-Square statistics for each reserve experience variable and a respondent's intent to stay to retirement is <.0001 for every variable, allowing for the null hypothesis that each reserve experience variable and intent to retire are independent of each other to be rejected, and the alternative hypothesis to be accepted. Plans to stay until retirement eligible

vary significantly by each reserve experience. The Chi-Square results in Table 12 indicate a significant relationship between the intent to retire and each reserve experience variable studied in the model.

Table 21: Chi-Square Test Results: "Stay to Retire" status by Reserve Experience

Reserve Experience Variables ***	Yes Retire	No Retire	Total
TRAINING* **			
Influence #, (%)	8,002, (84.13%)	1,510 (15.87%)	9,512, (100%)
Not Influence	2,736, (74.39%)	942, (25.61%)	3,678, (100%)
DESIGWORK***			
Influence #, (%)	7,903, (83.82%)	1,526, (16.18%)	9,429, (100%)
Not Influence	2,835, (75.38%)	926, (24.62%)	3,761, (100%)
RECOGNITION***			
Influence #, (%)	8,211, (83.08%)	1,672, (16.92%)	9,883, (100%)
Not Influence	2,527, (76.41%)	780, (23.59%)	3,307, (100%)
FAMILY***			
Influence #, (%)	7,991, (82.87%)	1,652, (17.13%)	9,643, (100%)
Not Influence	2,747, (77.45%)	800, (22.55%)	3,547, (100%)
CIVJOB***			
Influence #, (%)	7,893, (83.08%)	1,607, (16.92%)	9,500, (100%)
Not Influence	2,845, (77.10%)	845, (22.90%)	3,690, (100%)
FLEXDRILL***			
Influence #, (%)	9,594, (82.26%)	2,069, (17.74%)	11,663, (100%)
Not Influence	1,144, (74.92%)	383, (25.08%)	1,527, (100%)
EDUCATION			
Influence #, (%)	9,342, (82.76%)	1,946, (17.24%)	11,288, (100%)
Not Influence	1,396, (73.40%)	506, (26.60%)	1,902, (100%)
CPO***			
Influence #, (%)	9,528, (82.13%)	2,073, (17.87%)	11,601, (100%)
Not Influence	1,210, (76.15%)	379, (23.85%)	1,589, (100%)
OFFICERS***			
Influence #, (%)	9,600, (82.45%)	2,043, (17.55%)	11,643, (100%)
Not Influence	1,138, (73.56%)	409, (26.44%)	1,547, (100%)

Reserve Experience Variables ***		Yes Retire	No Retire	Total
RESPECT***				
Influence	#, (%)	8,742, (82.11%)	1,905, (17.89%)	10,647, (100%)
Not Influence		1,996, (78.49%)	547, (21.51%)	2,543, (100%)
CAREER***				
Influence	#, (%)	8,743, (83.79%)	1,691, (16.21%)	10,434, (100%)
Not Influence		1,995, (72.39%)	761, (27.61%)	2,756, (100%)
MEANING***				
Influence	#, (%)	10,165, (82.90%)	2,097, (17.10%)	12,262, (100%)
Not Influence		573, (61.75%)	355, (17.10%)	928, (100%)

*** Significant at the .01 level, X2 test of independence

Source: Author, derived from Total Force Career Decision Survey data.

Based on the literature review and the descriptive statistics we can hypothesize the predicted effects of each explanatory variable on retirement intention. Table 22 presents a summary of the explanatory variables and their expected effects on the dependent variable.

Table 22: Explanatory Variables and Expected Signs

Variable	Variable Type	Expected Sign
Demographic& Military Background		
MALE	Dichotomous	+
MARRIED	Dichotomous	+
PAYGRADE	Dichotomous	+
YSELRES	Continuous	+
PRIOR	Dichotomous	+
UNIT	Dichotomous	+/-
Reserve Experience Variables		
TRAINING	Dichotomous	+
DESIGWORK	Dichotomous	+
RECOGNITION	Dichotomous	+
FAMILY	Dichotomous	+
CIVJOB	Dichotomous	+
FLEXDRILL	Dichotomous	+
EDUCATION	Dichotomous	+
CPO	Dichotomous	+
OFFICERS	Dichotomous	+
RESPECT	Dichotomous	+
CAREER	Dichotomous	+
MEANING	Dichotomous	+
RATE	Dichotomous	+

Source: Author.

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IV. RESULTS

A. INTRODUCTION

This chapter discusses the results of the multivariate logistic regression model used to analyze the retirement intentions of enlisted Naval Reservists. The model reveals the effects of demographic variables, unit type, critical-rates, and reserve experiences on an individual's intent to remain in the Naval Reserve until eligible for retirement. By observing the coefficients and significance levels in the model, an assessment can be made as to the level of influence each variable has on an individual's intent to retire.

B. RESULTS ENLISTED RETIRE MODEL

1. Model Fit

Table 23 shows the model fit statistics associated with the stay-to-retire model. These statistics are used to test the overall goodness of fit for the model constructed in this thesis. These statistics include the Chi-Square value based on the likelihood ratio known as the -2 LOG L test (or the Global null hypothesis) and the max-rescaled R-Square.

Table 23: Model fit statistics for "Stay to Retire" model

- 2 Log L	
Intercept Only	12668.221
Intercept and Covariates	11130.401
Pseudo R-Square	.1100
Max-rescaled R-Squared	.1783
Testing Global Null Hypothesis: Beta = 0	
Likelihood Ratio (Chi-Sq)	1537.8203
Pr > Chi-Sq	<.0001 ***
DF	32

*** Significant at the .01 level

Source: Author, derived from Total Force Career Decision Survey data.

a. R-Square

The first measure for goodness of fit for the model is the Max-rescaled R-Square. Unlike OLS regression in which R-Square statistics capture percent variance explained by the model, logistic regression R-Square statistics are used to examine the strength of association in the model. Table 23 shows the Max-rescaled R-Square for the stay-to-retire model.

As indicated in Table 23, the Max-rescaled R-Square for the model is .1783 indicating that 17.83 percent of the variation in the dependent variable RETIRE is explained by the explanatory variables used in the model. This low R-square suggests that there are other variables such as area unemployment rate and reserve pay effects that are not included in the model, but could prove to be important in explaining retirement intentions among Naval Reservists. Unfortunately, data were not available on these variables for this thesis.

b. Global Null Hypothesis Test

The second criterion used to assess the goodness of fit of the model is the global null hypothesis. The global null hypothesis is tested using the Log Likelihood Ratio and its associated Chi-Square probability. This statistic tests the null hypothesis that all the coefficients in the model are equal to zero. Rejection of the null hypothesis means at least one of the beta coefficients for the explanatory variables in the model is not equal zero. Table 23 shows the Log Likelihood Ratio for the stay-to-retire model.

The likelihood ratio for the retirement model is 1537.8203 with 32 degrees of freedom and a Chi-Square

probability value of <.0001. This probability value is sufficient evidence to reject the null hypothesis that all the beta coefficients are equal to zero, and accept the alternative hypothesis that at least one explanatory variable coefficient is not equal to zero, and the model has some explanatory power.

c. Classification Table

The last criterion used to evaluate the goodness of fit for the model is the classification table. This method is a useful way to evaluate the portion of the cases in the model that are correctly classified by the model. Table 24 shows the classification table results for the model.

Table 24: Classification Table Results for the "Stay to Retire" model

	Correct		Incorrect			Percentages			
Prob Level	Event	Non-Event	Event	Non-Event	**Correct**	Sensi-tivity	Speci-ficity	False Pos	False Neg
.800	7598	1593	859	3140	**69.7**	70.8	65.0	10.2	66.3

Source: Author, derived from Total Force Career Decision Survey data.

To determine the cut-off probability for the classification table the total frequency of reservists who answered they intended to remain in the Naval Reserve until retirement (10,738) was divided by the total number of observations in the survey (13,190), resulting in a probability of .8141. When applied to the classification table 69.7 percent of the respondents in the survey are classified correctly. The "sensitivity" results for the model shows that 70.8 percent of the respondent's who intend to stay in the Reserves until retirement are

accurately classified while “specificity” results indicate correct classification of 65.0 percent of those who do not intend to stay to retirement.

2. Interpretation and Evaluation of Coefficients

Table 25 shows that the estimated results of the stay-to-retire model indicate 16 of the 32 explanatory variables are statistically significant. Significance levels indicated for the maximum likelihood estimates are for a one-tailed test.

Table 25: Logistic Regression Results “Stay to Retire” model (N=13,190)

Variable	Estimate	Pr>ChiSq
INTERCEPT	-2.0317	<.0001
MALE	-.0625	.3301
MARRIED	.3006	<.0001***
MIDGRADE4	-.2160	.1073
MIDGRADE5	.3477	.0172**
MIDGRADE6	.8682	<.0001***
SENIOR	.4215	.0186**
YSELRES	.0835	<.0001***
PRIOR	.3706	<.0001***
AIR	.0613	.6268
SHIP	1.5037	.3506
TRAINING	.2364	<.0001***
DESIGWORK	.2283	<.0001***
RECOGNITION	.1360	.0272**
FAMILY	.3862	<.0001***
CIVJOB	.2091	.0002***
FLEXDRILL	-.0253	.7438
REDUCATION	.2982	<.0001***
CPO	.00795	.9016
OFFICERS	.1912	.0098***
RESPECT	-.0194	.7766
CAREER	.2836	<.0001***
MEANING	.7460	<.0001***
SEAMANSHIP	.5060	.2053
ELECREPAIR	.1882	.6188
COMINTEL	.0465	.8737

Variable	Estimate	Pr>ChiSq
MEDICAL	-.1721	.7166
ADMIN	.1238	.7286
REPAIRAIR	.0834	.8194
REPAIRSHIP	.3022	.4320
CRAFTSMEN	.2699	.4813
SERVICE	.5056	.2271
OTHER	.0841	.8095

*** Significance at the .01 level ** Significance at the .05 level
Source: Author, derived from Total Force Career Decision Survey data.

a. Demographic and Military Background Variables

The variable MALE is not significant in the model. This result does not support the proposed hypothesis that males would be more likely then females to desire to stay in the Naval Reserves until retirement. It is possible that women do not have more trouble than their male counterparts with balancing family and reserve obligations. Male and female respondents may encounter similar issues when coping with reserve requirements and family responsibilities and therefore have similar opinions when weighing their intent to stay until retirement. The literature shows that gender is important in reserve retention studies, therefore the gender variable was retained in the model.

A restricted model test was used to decide if individual models were needed for the male and female respondents. Table 26 shows the restricted model results. The null hypothesis for the restricted model test is that the beta coefficients for the male and female model are the same. With a log likelihood of 40.853 associated with a

probability of .98257, the null hypothesis cannot be rejected meaning the coefficients are the same and only one model is needed.

Table 26: Restricted Model Test for separate Male and Female model

Log Likelihood	P	Prob
40.853	.017432	.98257

Source: Author, derived from Total Force Career Decision Survey data.

The variable MARRIED is significant at the one percent level and positive. This supports the hypothesis that a married respondent is more likely then an unmarried respondent to plan on remaining in the reserves until retirement. It is possible that married respondents place a higher value on the additional income provided by the Naval Reserves than unmarried respondents.

The paygrade variables MIDGRADE5, MIDGRADE6, and SENIOR are all significant in the model. The variable MIDGRADE4; however, is not significant in the model. This contradicts the hypothesis that E4 respondents are more likely to stay to retirement when compared to a respondent in a junior paygrade (E1-E3). A possible explanation for this may be that there is a small difference in total years of service between the E4 respondents and the junior paygrade (E1-E3). One average E4 respondents have six years total service in the military, while respondents in the junior paygrade (E1-E3) have on average four years total service in the military. Based on these results both pay groups are still early in their career with less then two tours of military experience. This lack of experience may result in an uncertainty within both groups with

respect to military career intentions and therefore display little difference between the two group's responses.

Using a one-tail test MIDGRADE5 and SENIOR are significant at the five percent level, and MIDGRADE6 is significant at the one percent level. This supports the hypothesis that an individual in a higher paygrade will have a greater propensity than a respondent in a junior paygrade (E1-E3) to remain in the Naval Reserves until retirement. It is possible this positive effect is reflective of the additional years of service associated with each paygrade when compared to the base case paygrade of E1-E3.

A test for joint significance showed that the paygrade variables (MIDGRADE4, MIDGRADE5, MIDGRADE6, and SENIOR) were jointly significant at the one percent level. This suggests that together the paygrade variables are significant and help predict a respondent's intent to remain until retirement, and therefore should remain in the model. Table 27 shows the values associated with the joint significance test.

Table 27: Joint Significance Test for Paygrade Variables

Wald Chi-Square	DF	Pr>ChiSq
172.5407	4	<.0001

Source: Author, derived from Total Force Career Decision Survey data.

The YSELRES variable is significant at the one percent level and positive. This supports the hypothesis and shows that, holding all other factors constant, an additional year of service in the Selective Reserves makes

a respondent more likely to plan on staying in the reserves until eligible for retirement.

The PRIOR variable is positive and significant at the one percent level. This supports the stated hypothesis, and indicates that a person with previous active duty military service is more likely to aspire to stay in the Naval Reserves than an individual with no prior active military service.

A test for joint significance showed that the time in service variables (PRIOR and YSELRES) were jointly significant at the one percent level. Table 28 shows the values associated with the joint significance test. This suggests that, together, the time in service variables are significant and help predict a respondent's intent to remain until retirement.

Table 28: Joint Significance Test for Time in Service Variable

Wald Chi-Square	DF	Pr>ChiSq
190.9868	2	<.0001

Source: Author, derived from Total Force Career Decision Survey data.

b. Unit Type Variable

The unit variables, AIR and SHIP, are not significant. It is possible that the variable AIR and SHIP are not significant when compared to individuals assigned to Reserve Center units (base case) because unit assignment does not always reflect work environment. Many respondents could be cross-assigned to a ship or air unit and still complete their monthly drill requirement at the closest reserve center. In this event respondents attached to reserve center units, air units, or ship units may share

the same work environment and similar factors that influence their intent to remain in the reserves until eligible to retire.

A test for joint significance showed that the unit type variables (AIR and SHIP) were jointly significant at the five percent level. Table 29 shows the values associated with the joint significance test. This suggests together the unit type variables are significant in the model and help predict a respondent's intent to remain until retirement, and therefore should remain in the model.

Table 29: Joint Significance Test for Unit Type Variables

Wald Chi-Square	DF	Pr>ChiSq
6.1103	2	.0471

Source: Author, derived from Total Force Career Decision Survey data.

c. Rating Variables

The rating variables SEAMANSHIP, ELECREPAIR, COMINTL, MEDICAL, ADMIN, REPAIRAIR, REPAIRSHIP, CRAFTSMEN, SERVICE, and OTHER are not significant in the model. This contradicts the hypothesis which predicted a significant relationship between a respondent's rating and his or her intent to retire.

A test for joint significance of the rating variables shows a Chi-Square probability of <.001, indicating that the rating variables are jointly significant and do affect a respondent's intent to stay in the Naval Reserves until retirement, and therefore should remain in the model. Table 30 shows the values associated with the joint significance test.

Table 30: Joint Significance Test for Rating Variables

Wald Chi-Square	DF	Pr>ChiSq
48.6678	10	<.0001

Source: Author, derived from survey data.

d. Reserve Experience Variables

The reserve experience variables TRAINING, DESIGWORK, FAMILY, CIVJOB, EDUCATION, CAREER, and MEANING were all positive and significant in the model at the one percent level. In addition, the variable RECOGNITION was positive and significant at the five percent level. This supports the hypothesis that reserve experience variables would have a positive effect on a respondent's intent to remain in the Naval Reserve until retirement.

The reserve experience variable FLEXDRILL was not significant in the model suggesting that a respondent's ability to flex drill does not affect his or her decision to remain in the reserves until retirement eligible. This does not support the hypothesis that the freedom to flex drill would increase a respondent's intent to remain in the Naval Reserves until retirement. A plausible explanation may be that the authorization to flex drill is not available to all Selected Reservists. This could result in a response of "does not apply" or "no effect" by respondents who do not have the opportunity to flex drill, and therefore cause the true effect of the opportunity to flex drill to not be captured by the survey.

The reserve experience variable RESPECT was not significant in the model indicating that the level of respect received by a respondent from active duty forces does not affect his or her decision to remain in the Naval Reserve until retirement. This does not support the

hypothesis that the amount of respect received from active duty forces would positively influence a respondent's intent to remain in the reserves until retirement. This may be attributed to the fact that most Naval Reserve personnel have limited interaction with their active duty counterparts and therefore are indifferent to the level of respect received from the active duty component when considering retirement intentions.

The reserves experience variables associated with quality of leadership are CPO and OFFICERS. The variable CPO is not significant in the model. The variable OFFICERS is significant at the five percent level and positive. These results contradict the hypothesis that both leadership variables would have a positive effect on a respondent's intent to remain in the reserves to retirement.

A test for joint significance showed that the leadership variables (CPO and OFFICERS) where jointly significant at the one percent level. This indicates that the leadership variables are significant in the model, and do affect a respondent's intent to stay in the Naval Reserves until retirement. Table 31 shows the values associated with the joint significance test.

Table 31: Joint Significance Test for Leadership Variables

Wald Chi-Square	DF	Pr>ChiSq
6.8651	2	.0323

Source: Author, derived from Total Force Career Decision Survey data.

Table 32 shows the values associated with the joint significance test for the reserve experience variables. Results showed that the reserve experience

variables (TRAINING, DESIGWORK, RECOGNITION, FAMILY, CIVJOB, FLEXDRILL, EDUCATION, CPO, OFFICERS, RESPECT, CAREER, MEANING, and all rating variables) were jointly significant at the one percent level. This indicates that these variables together are significant in the model and do affect a respondent's intent to stay in the Naval Reserves until retirement. Based on these results all reserve experience variables were retained in the model.

Table 32: Joint Significance Test for Reserve Experience Variables

Wald Chi-Square	DF	Pr>ChiSq
564.8774	22	.<.0001

Source: Author, derived from Total Force Career Decision Survey data.

3. Partial Effects of Significant Variables

Partial effects are used to explain the effect of each explanatory variable on the probability of staying in the Naval Reserves until eligible for retirement. A reference person is created to evaluate the partial effect associated with each explanatory variable. To test for partial effects, all the explanatory variables in the model are set to zero with the exception of the continuous variable YSELRES which is set to its mean (7.75 years) to create values for the "reference" person. The reference or "notional person is also known as the base case. Each variable is then individually tested by increasing it by one. The partial effect of the variable is then subtracted from the probability for the intent to stay to retirement of the base case. The probability of intent to stay to retirement for the base case in the model is .1964. Table 33 shows the partial effects and significance levels for significant variables in the stay-to-retire model.

Table 33: Partial Effects Results "Stay to Retire" model (N=13,190)

Base Case Probability of Staying Until Retirement	**.19644**
Variable	**Partial Effect**
MARRIED***	.05161
MIDGRADE5**	.05285
MIDGRADE6***	.16336
SENIOR**	.06713
YSELRES***	.00593
PRIOR***	.05721
TRAINING***	.03227
DESIGWORK***	.03082
RECOGNITION**	.01472
FAMILY***	.06023
CIVJOB***	.02741
EDUCATION***	.04354
OFFICERS**	.02426
CAREER***	.04084
MEANING***	.13550

*** Significance at the .01 level (one-tail) ** Significance at the .05 level (one-tail)

Source: Author, derived from Total Force Career Decision Survey data.

a. Demographic and Military Background Variables

The demographic variables that are significant for the stay to retire model are: MARRIED, MIDGRADE4, MIDGRADE5, MIDGRADE6 SENIOR, YSELRES, and PRIOR. The effect of each variable compared to the base case reserve respondent and holding all other variables constant is as follows.

MARRIED: A married respondent is 5.1 percentage points more likely to intend to stay in the reserves until eligible for retirement than an unmarried reserve respondent. This effect is practically significant as it

indicates that a married respondent is about 20 percent more likely to stay to retirement than the base case individual.

MIDGRADE5: A respondent in the paygrade of E5 is 5.3 percentage points more likely to intend to stay to retirement than a reserve respondent in a junior paygrade (E1-E3).

MIDGRADE6: A respondent in the paygrade E6 is 16.3 percentage points more likely to intend to stay in the Naval Reserves until retirement than a reserve respondent in a junior paygrade (E1-E3).

SENIOR: A reserve respondent in a senior paygrade (E7-E9) is 6.7 percentage points more likely to intend to stay to retirement than a reserve respondent in a junior paygrade (E1-E3).

YSELRES: If a respondent's total years of service in the Selective Reserve increase by one year, the probability of intent to stay in the Naval Reserve until retirement is .59 percentage points higher. (Base Case: mean years of service in the Selective reserve is 7.7 years)

PRIOR: A respondent with prior active duty military service is 5.7 percentage points more likely to intend to stay to retirement than a respondent who has no prior active duty military service.

b. Reserve Experience Variables

The reserve experience variables that are significant for the stay to retire model are: TRAINING, DESIGWORK, RECOGNITION, FAMILY, CIVJOB, EDUCATION, OFFICERS, CAREER, and MEANING. The effect of each variable

compared to the base case reserve respondent and holding all other variables constant is as follows.

TRAINING: A respondent who considers quality of training as an influencer to stay to retirement is 3.2 percentage points more likely to intend to remain in the Naval Reserves until retirement eligible than a respondent who does not.

DESIGWORK: A respondent whose response indicates that he or she perceives the opportunity to work in his or her primary rating is an influencer to stay in the Naval Reserves until retirement is 3.1 percentage points more likely to stay to retirement than a respondent who does not.

RECOGNITION: A respondent who considers the level of recognition received for accomplishments as an influencer to stay until retirement is 1.5 percentage points more likely to stay to retirement than a respondent who does not.

FAMILY: A respondent who perceives the impact of being in the reserves on his or her family as an influencer to stay in the Naval Reserves until retirement is 6.0 percentage points more likely to remain in the reserves until retirement when compared with a respondent who doe not.

CIVJOB: A respondent who perceives the impact of being in the reserves on his or her civilian job as an influencer to stay in the Naval Reserves until retirement is 2.7 percentage points more likely to remain in the reserves until retirement when compared to a respondent who does not.

EDUCATION: A respondent who perceives Naval Reserve education benefits as an influencer to stay in the reserves until retirement is 4.4 percentage points more likely to stay to retirement when compared with a respondent who does not.

OFFICERS: A respondent who perceives the quality of leadership at the senior officer level (CO/XO) as an influencer to stay in the Naval Reserves until retirement is 2.4 percentage points more likely to stay to retirement than a respondent who does not.

CAREER: A respondent who perceives the level of support received for career development as an influencer to stay in the Naval Reserves until retirement is 4.1 percentage points more likely to stay to retirement when compared to a respondent who does not.

MEANING: A respondent who feels the Naval Reserve has a great deal of personal meaning is 13.6 percentage points more likely to remain in the Naval Reserves until retirement eligible when compared to a respondent who does not feel.

C. SUMMARY

This chapter presents the logistic regression results for the stay-to-retire model by highlighting the influence of demographic and other variables on a respondent's retirement intentions. The stay-to-retire model includes a total of 32 explanatory variables which include a respondent's demographics, military background, unit type, rating, and reserve experience. Of the 32 variables used in the model, a total of 15 variables were statistically significant. In addition, joint significance tests for the leadership variables, rating variables, unit type

variables, paygrade variables, time in service variables, and reserve experience variables confirm that each group is jointly significant and affects a respondent’s intent to stay until retirement. Overall, marital status, paygrade, time in service, and reserve experience variables have the greatest effect on a respondent’s intent to remain in the Naval Reserves until eligible for retirement.

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V. SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS

A. SUMMARY

The purpose of this thesis is to ensure future enhancement of programs and/or conditions that promote Naval Reserve retention by assessing an individual's retirement intentions with respect to personal demographics, military background, and reserve specific dynamics. A multivariate logistic regression model is used to examine the factors that affect an individual's intent to remain in the Naval Reserves until he or she becomes eligible for retirement.

The study found that of the 32 variables used in the model, a total of 15 variables were statistically significant. In addition, joint significance tests for the leadership variables, rating variables, unit type variables, paygrade variables, time in service variables, and reserve experience variables confirm that each group is jointly significant, and therefore affects a respondent's intent to stay in the Naval Reserves until retirement. Overall, marital status, paygrade, time in service, and reserve experience variables have the greatest effects on a respondent's intent to remain in the Naval Reserves until retirement.

B. RECOMMENDATIONS

1. Training and Time Spent Working in Primary Rating

The variables TRAINING and DESIGWORK were significant in the stay-to-retire model. In addition, joint significance tests for rating variables and unit type

variables confirm that each group of variables is jointly significant, and affects a respondent's intent to stay to retirement.

Based on the model results, it is vital for the Naval Reserve organization to sponsor programs that shape a reservist's ability to work directly in his or her rating, and to receive the required rate training to stay proficient with his or her job skills. Reserve Centers must become more involved with the parent commands to design and implement practical rate training that can be completed at the reserve centers during drill periods. This training will make each reservist a greater asset to his or her parent command, and enable individuals to feel proficient to perform the duties required by their specific rating.

Currently a great deal of rate-specific training in the Naval Reserves is limited to the completion of rating manuals and the training received during an individual's Active Duty Training (ADT). As suggested by LCDR Becker, the sponsorship of Shipboard Simulators, Damage Control Trainers, and Reserve Intermediate Maintenance Activity (RIMA) shops seems to be a positive step to ensure reserve personnel receive the opportunity to work in rate specific activities while receiving high quality training.[48]

2. Time in Service

The variables MIDGRADE5, MIDGRADE6, SENIOR, YSELRES, and PRIOR were significant in the stay-to-retire model. In addition, joint significance tests for the paygrade variables and time in service variables confirm that each group of variables is jointly significant, and affects a respondent's intent to stay to retirement.

[48] Becker, 55.

Based on model results it is important for the Naval Reserve organization to continue to recruit individuals who possess prior active duty service and therefore have time already invested in the military. LCDR Becker's suggestion to reevaluate the High Year Tenure (HYT) restrictions for E4 individuals to fill Non-Prior Service quotas would help maintain a higher level of mobilization readiness and promote the retention of E4 prior service individuals.[49] In addition, the broadening of current recruitment efforts to include other military service organizations with comparable occupational skills may assist in retention efforts. An example of this can be modeled after the U.S. Army's "Blue to Green" program.

3. Education Benefits

The variable EDUCATION was significant in the stay-to-retire model. Of the respondents in the survey, 82.76 percent reported that reserve education benefits had a positive influence on their intent to remain in the Naval Reserves until retirement.

Based on the model results, it is essential for the Naval Reserve organization to continue its current education benefit programs and attempt to develop additional education incentives in order to retain personnel and attract individuals in the future. At this time the Naval Reserve organization sponsors education programs such as the Montgomery GI Bill (MGIB), MGIB-SR Kicker, and DOD Voluntary Education Program. The development of a loan repayment incentive program could also enhance the current retention effects of education

[49] Becker, 53.

benefits in the Naval Reserve, and attract personnel who possess a higher level of education to the organization

4. Civilian Job Impact

The variable CIVJOB was significant in the stay-to-retire model. Respondents were asked in the survey to rate whether "the impact of being in Reserves on your civilian job influenced you to stay, influenced you to leave, or had no effect on your Naval Reserve career intentions."[50] Of the respondents in the survey, 83.08 percent reported that reserve impact on his or her civilian job had a positive influence on his or here intent to remain in the Naval Reserves until retirement.

Based on the model results, it is necessary for the Naval Reserve organization to continue to develop and promote programs that encourage outside employers to support their employees serving in the Naval Reserve. Additional recognition programs such as the Patriot Award which recognizes employers' support for the guard and reserves should be utilized to build employers' support.

In addition, the development of specific literature aimed at educating civilian employers on the responsibilities and requirements associated with reserve participation may generate further civilian job support. By taking the initiative to educate employers about the Naval Reserve organization, greater understanding of employees' attempts to balance civilian job and reserve obligations may be generated.

Lastly, the opportunity to flex drill should be offered to all drilling reservists when possible. The opportunity to flex drill proved to have no significant

[50] Naval Career Decision Survey (2000-2001).

effect on an individual's intent to remain in the Naval Reserves until retirement; however, it was jointly significant when tested with all the reserve experience variables. The ability to flex drill adds flexibility for reserve personnel who may have difficulty balancing reserve and civilian job requirements, and could make the difference in whether an individual stays or leaves the reserve organization.

5. Leadership and Career Support

The variable OFFICERS represents reservists' responses when asked in the survey to rate whether "the quality of leadership at the senior officer level (CO/XO) influenced you to stay, influenced you to leave, or had no effect on your Naval Reserve career intentions."[51] The variable CAREER represents reservists' responses when asked to rate whether "the support for my career development influenced you to stay, influenced you to leave, or had no effect on your Naval Reserve career intentions."[52] The variables OFFICERS and CAREER were significant in the stay-to-retire model. In addition, joint significance test for the leadership variables confirm that they are jointly significant, and affect a respondent's intent to stay to retirement.

Based on the model results, it is necessary for the Naval Reserve organization to continue to develop and promote programs that encourage career development and leadership abilities among reserve personnel. Reserve Centers should take an active role to ensure all officers assigned to the command attend the Reserve Officer Leadership Courses. In addition, commands should ensure

[51] Naval Reserve Career Decision Survey (2000-2001).

[52] Ibid.

that some form of leadership training is offered to all paygrades to ensure positive development of leadership traits. Lastly, 83.08 percent of the respondent's reported that support for career development had a positive influence on their intent to remain in the Naval Reserves until retirement. Based on these results, every Commanding Officer and Executive Officer should take direct responsibility to ensure that some form of mentorship program is functioning within his or her command.

6. Accomplishment Recognition

The variables RECOGNITION and MEANING were significant in the stay-to-retire model. The variable RECOGNITION represents reservists' responses when asked in the survey to rate whether the "Level of recognition for my accomplishments influenced you to stay, influenced you to leave or had no effect on your Naval Reserve career intentions."[53] The variable MEANING represents reservists' responses when asked to rate the statement, "The Naval Reserve has a great deal of personal meaning for me," on a seven point scale ranging from strongly agrees to strongly disagree." Of the respondent's in the survey, 83.08 percent reported accomplishment recognition had a positive influence on their intent to stay to retirement, and 82.90 percent reported the Naval Reserve had a great deal of personal meaning for them.

Based on these model results, it is necessary for the Naval Reserve organization to continue to develop and sponsor programs that promote accomplishment recognition and influence a sense of ownership and meaning for the organization by personnel. Commands should continue to

[53] Naval Reserve Career Decision Survey (2000-2001).

develop and utilize the awards system to recognize individuals for exceptional performance, attendance, community service, and physical fitness standards to make sailors feel a sense of achievement associated with their reserve involvement. Commands should also use positive job reinforcement and strong leadership to strengthen the personal meaning that his or her commitment to the Naval Reserve organization has for each sailor.

7. Married Personnel and Family Impact

The variables MARRIED and FAMILY were significant in the stay-to-retire model. The variable MARRIED reflects whether the respondent was married or single at the time the survey was taken. The variable FAMILY represents reservists' responses when asked in the survey to rate whether "The impact of being in Reserves on your family influenced you to stay, influenced you to leave, or had no effect on your Naval Reserve career intentions."[54] The variable FAMILY had the largest positive partial effect in the model. A respondent who perceives the impact of being in the reserves on his or her family as a positive influencer to stay was 6.0 percentage points more likely to remain in the reserves until retirement than a respondent who does not perceive family impact as an influencer to stay.

Based on these model results it is vital for the Naval Reserve organization to continue to sponsor and develop programs that build not only the member's commitment to the organization, but also the member's family support for the organization. Current events such as the annual Family Appreciation Day help build military family loyalty for the

[54] Naval Reserve Career Decision Survey (2000-2001).

organization and heightened family support for the military member. In addition to Family Appreciation Day, commands must take an active role to ensure that families understand the organization is there to support them.

A monthly Reserve Center news letter could be created with family-focused information and reserve headlines to help keep families informed and educated on current Naval Reserve topics and the issues affecting their family members. Commands should ensure that local phone trees and support groups are established to aid the spouses and family members of reserve personnel who are mobilized. Lastly, spouse appreciation awards should be utilized to express the organizations gratitude for the sacrifices endured by spouses as they support the member's reserve obligations.

8. Follow-On Studies

While this thesis offers insight into factors that affect a reservist's intent to remain in the Naval Reserves until retirement, it is important to understand the limitations associated with this study. Access to current response data for the Navy Reserve Career Decision Survey, would have provided a more accurate data set for analyzing enlisted members' intent to remain in the Naval Reserve until retirement. For this reason it is recommended that follow-on studies include post 9/11 responses to the Reserve Career Decision Survey as well as the 2000-2001 responses to ensure an accurate representation of responses over time. In addition, data were not available to study the effects of pay or unemployment with respect to survey

responses. If available, this information may provide a better understanding of economic factors influence retirement intentions.

C. CONCLUSIONS

This thesis is a follow-on study analyzing the enlisted reserve responses on the 2000-2001 Navy Reserve Career Decision Survey using multivariate logistic regression. Enlisted Naval Reservists' retirement intentions are assessed with respect to demographic variables, unit-type, and reserve experiences. This study shows that marital status, paygrade, time in service, and reserve experiences have the greatest effects on a respondent's intent to remain in the Naval Reserve until retirement and therefore should be considered when evaluating and creating retention policies and/or programs for the Naval Reserve organization.

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APPENDIX: NAVY RATINGS AND TITLE

General Rating	Long Title
AB	AVIATION BOATSWAIN'S MATE
AC	AIR TRAFFIC CONTROLLER
AD	AVAITION MACHINIST'S MATE
AE	AVAITION ELECTRICIAN'S MATE
AG	AEROGRAHPER'S MATE
AK	AVAITION STOREKEEPER
AM	AVIATION STRUCTURAL MECHANIC
AN	AIRMAN (UNRATED)
AO	AVIATION ORDANCEMAN
AS	AVIATION SUPPORT EQUIPMENT TECHNICIAN
AT	AVIATION ELECTRONICS TECHNICIAN
AW	AVIATION ANTISUBMARINE WARFARE OPERATOR
AZ	AVIATION MAINTENANCE ADMINISTRATIONMAN
BM	BOATSWAIN'S MATE
BU	BUILDER
CE	CONSTRUCTION ELECTRICIAN
CM	CONSTRUCTION MECHANIC
CT	CRYPTOLOGIC TECHNICIAN
CTA	CRYPTOLOGIC TECHNICIAN (ADMINISTRATIVE)
CTI	CRYPTOLOGIC TECHNICIAN (INTERPRETIVE)
CTM	CRYPTOLOGIC TECHNICIAN (MAINTENANCE)
CTO	CRYPTOLOGIC TECHNICIAN (COMMUNICATIONS)
CTR	CRYPTOLOGIC TECHNICIAN (COLLECTIONS)
CTT	CRYPTOLOGIC TECHNICIAN (TECHNICAL)
DC	DAMAGE CONTROLMAN
DK	DISBURSING CLERK
DM	ILLUSTRATOR DRAFTSMAN
DT	DENTAL TECHNICAN
EA	ENGINEERING AID
EM	ELECTRICIAN'S MATE
EN	ENGINEMAN
EO	EQUIPMENT OPERATOR
ET	ELECTRONICS TECHNICIAN

Source: Author, (After Ref. 10).

Navy Ratings and Title continued:

General Rating	Long Title
EW	ELECTRONICS WARFARE TECHNICIAN
FC	FIRE CONTROLMAN
FN	FIREMAN (UNRATED)
FT	FIRE CONTROL TECHNICIAN
GM	GUNNER'S MATE
GS	GAS TURBINE SYSTEMS TECHNICIAN
HM	HOSPITAL CORPSMAN
HT	HULL MAINTENCE TECHNICIAN
IC	INTERIOR COMMUNICATIONS ELECTRICIAN
IS	INTELLIGENCE SPECIALIST
IT	INFORMATION SYSTEMS TECHNICIAN
JO	JOURNALIST
LI	LITHOGRAPHERS
MA	MASTER-AT-ARMS
MM	MACHINIST'S MATE
MN	MINEMAN
MR	MACHINERY REPAIRMAN
MS	MESS MANAGEMENT SPECIALIST
MT	MISSILE TECHNICIAN
NC	NAVY COUNSELOR
OS	OPERATIONS SPECIALIST
PC	POSTAL CLERK
PH	PHOTOGRAPHER'S MATE
PN	PERSONNELMAN
PR	AIRCREW SURVIVAL EQUIPMENTMAN
QM	QUARTERMASTER
RP	RELIGION PROGRAM SPECIALIST
SH	SHIP'S SERVICEMAN
SK	STOREKEEPER
SM	SIGNALMAN
SN	SEAMAN (UNRATED)
ST	SONAR TECHNICIAN
STG	SONAR TECHNICIAN (SURFACE)
STS	SONAR TECHNICIAN (SUBMARINE)
SW	STEEL WORKER
TM	TORPEDOMAN'S MATE
UT	UTILITIESMAN
YN	YEOMAN

Source: Author, (After Ref. 10).

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