NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

AN ANALYSIS OF MARINE CORPS DELAYED ENTRY PROGRAM (DEP) ATTRITION BY HIGH SCHOOL GRADUATES AND HIGH SCHOOL SENIORS

by

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March 2007

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REPORT DOCUMENTATION PAGE		*Form Approved OMB No. 0704-0188*

1. AGENCY USE ONLY	**2. REPORT DATE** March 2007	**3. REPORT TYPE AND DATES COVERED** Master's Thesis

4. TITLE AND SUBTITLE An Analysis of Marine Corps Delayed Entry Program(DEP) Attrition by High School Graduates and High School Seniors		**5. FUNDING NUMBERS**
6. AUTHOR(S) Baykiz, Murat Sami		

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
    Naval Postgraduate School
    Monterey, CA 93943-5000
	8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A	**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited	**12b. DISTRIBUTION CODE**

13. ABSTRACT

This study investigates the effects of personal background characteristics on USMC Delayed Entry Program (DEP) attrition for high school senior and high school graduate recruits and recommends policy changes to decrease DEP attrition rates. Logistic regression models to explain DEP attrition are estimated using data from the USMC Total Force Data Warehouse for all high school graduates and high school seniors who enlisted between fiscal years 2000 and 2005. DEP attrition is regressed on fiscal year, recruiting district, time spent in DEP, separation month, age, gender, AFQT score, race, marital status and dependent status, day of enlistment, and unemployment rate.

Model results show that high school seniors are more likely to be DEP losses than high school graduates. Female recruits, single recruits and recruits without dependents show higher attrition rates, as do those with lower AFQT scores. Recruits who enlisted in eastern recruiting districts, who spent longer time in DEP, and who enlisted on the last day or in the last week of the month are more likely to attrite. High School seniors are most likely to attrite in March and April. Unemployment rates were negatively associated with high school graduates' DEP attrition, but estimated effects were small.

14. SUBJECT TERMS Delayed Entry Program, Attrition, Recruiting, Marine Corps, Manpower, High School Graduate Attrition, High School Seniors Attrition, DEP	**15. NUMBER OF PAGES** 106
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UL

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

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ACKNOWLEDGMENTS

I would like to thank my nation and my senior officers that gave me the chance to obtain a graduate education in the Naval Postgraduate School.

I would like to thank my thesis advisors, Professor Stephen Mehay and Kathryn Kocher, for their help and guidance, not only during my thesis writing, but also during my life while I was at NPS.

I would like to thank two good U.S. Marines: Major Bruno and Captain Nader for their help and their constructive criticisms. Also, I would like to thank my editor Mary for helping me with English.

Without my family, writing this thesis would be impossible. I would like to thank my wife Seyide and my son Bugra Yavuz for their support, their patience and their moral support. I would also like to thank my dad and my mommy who had the biggest effect on me.

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I.   INTRODUCTION

A.   PURPOSE

The United States has become involved in many more operations around the world after the September 11, 2001, attacks on the World Trade Center and the Pentagon. Operation Noble Eagle, Operation Enduring Freedom and Operation Iraqi Freedom are the three major operations after the September 11, 2001, attacks that increased the manpower requirements of the Services. These operations heavily depend on the United States Army and United States Marine Corps (USMC) units.[1] In this challenging era, recruiting, one of the cornerstones of personnel readiness, gained more importance in the maintenance of operations, in order to support all the volunteer forces and achieve success. The Services have generally met their aggregate recruitment goals since the September 11, 2001, attacks.[2] However, in 2005, for the first time in ten years, the United States Marine Corps missed its monthly recruiting goals between January and April. Pentagon officials pointed out that this is not a crisis, but it is a major concern.[3] Retired Army General Barry McCaffrey remarked "Because the Army and Marines are too small and we're employing them in constant operations, our recruiting posture is now coming apart."[4]

Even though there are many difficulties and unpredictable factors in the recruiting environment, there is no doubt that the Marine Corps Recruiting Command (MCRC) and its valuable recruiters are doing their best to recruit qualified individuals and to meet their recruiting goals. On the other hand, between FY 2000 and 2005, an average of one out of every five recruits did not actually go to basic training. The USMC spends a great deal of

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[1] Derek B. Stewart and David E. Moser, "Military Personnel*: Preliminary Observations on Recruiting and Retention Issues within the *U.S.* Armed Forces" (Washington, DC: Government Accountability Office, 2005), http://www.gao.gov/new.items/d05419t.pdf [Accessed December 12, 2006].

[2] It should be noted that the Services began to implement "stop loss" policies after the 9/11 attacks. The "stop loss" policies prohibit military members from separating or retiring before their duties are complete. This may reduce the number of personnel that the Services must recruit and as a result of this, the Services might meet their recruiting goals, ibid.

[3] Jim Miklaszewski, "Army, Marines Missed Recruiting Goals Again," NBC News, http://www.msnbc.msn.com/id/7802712/ [Accessed December 14, 2006].

[4] Ibid.

money on recruiting, and it is obvious that, as attrition rates increase, the cost of recruiting increases. The goal of this study is to investigate the effects of personal background characteristics of high school seniors and graduates on DEP attrition and use the results to recommend policy changes to decrease Delayed Entry Program (DEP) attrition rates.

B.   BACKGROUND

1.   Recruiting

Recruiting is the process of generating a pool of qualified applicants for organizational jobs.[5] According to DoD officials:

> Recruiting is the military services' ability to bring new members into the military to carry out mission essential tasks in the near term and to begin creating a sufficient pool of entry-level personnel to develop into future mid-level and upper-level military leaders.[6]

Recruiting has been called the lifeblood of the military.[7] Recruiting is very important for the Services, because unlike the private sector, the military does not have the opportunity to transfer its members and leaders from other organizations or from other foreign military services. The individuals who are enlisted today will be tomorrow's defenders and leaders of the U.S. Armed Forces. This is commonly referred to as "Growing Your Own." Because the military must recruit individuals who are the best candidates among peer groups, recruiting is very costly for the military. The military invests large amounts of money to recruit qualified applicants and to keep them in the military. Military recruiting is different from private sector recruiting in that it costs more and it can be negatively affected by many factors that cannot be controlled. Among these factors are the following:

- Growing economy and low unemployment rates

- Decreasing population of veterans

[5] Robert L. Mathis and John H. Jackson, *Human Resource Management*, 11th ed. (Ohio: South-Western, 2006), 194.

[6] Stewart and Moser, "Military Personnel: Preliminary Observations on Recruiting and Retention Issues within the *U.S.* Armed Forces,,"," 4.

[7] Lawrence Kapp, "Recruiting and Retention: An Overview of FY2005 and FY2006 Results for Active and Reserve Component Enlisted Personnel" (Washington, DC: Congressional Research Service2006), http://fpc.state.gov/documents/organization/60715.pdf [Accessed June 15, 2006].

- Competition between the services and the private sector

- Likelihood of adults to recommend military service

- Number of qualified youth population for military

- Long lasting operations and the negative effects of these operations on the public

Figure 1 shows the organization of recruiting commands from the senior headquarters to local recruiting stations. MCRC organizes its recruiting operations into two main regions: Western and Eastern. These regions are divided into six districts. Three districts are in the Western Region and three of them are in the Eastern Region and these districts are divided into 48 recruiting stations. Between FY 2000 and FY 2005, an average of 3,000-3,500 recruiters worked in 48 Marine Corps Recruiting Stations (MCRS) to meet the USMC's recruiting goals. Under the MCRS, there are 554 Recruiting Sub Stations (MCRSS). These recruiting substations are run by non-commissioned officers (NCO). There are also Permanent Contact Stations (PCS) which are established in the areas where there is heavy traffic of candidates, such as shopping malls and show centers.[8]

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[8] Derek B. Stewart, "Military Personnel: DOD and Services Need Better Data to Enhance Visibility Over Recruiter Irregularities,"," (Washington, DC: Government Accountability Office, 2006), http://www.gao.gov/new.items/d06846.pdf [Accessed December 14, 2006].
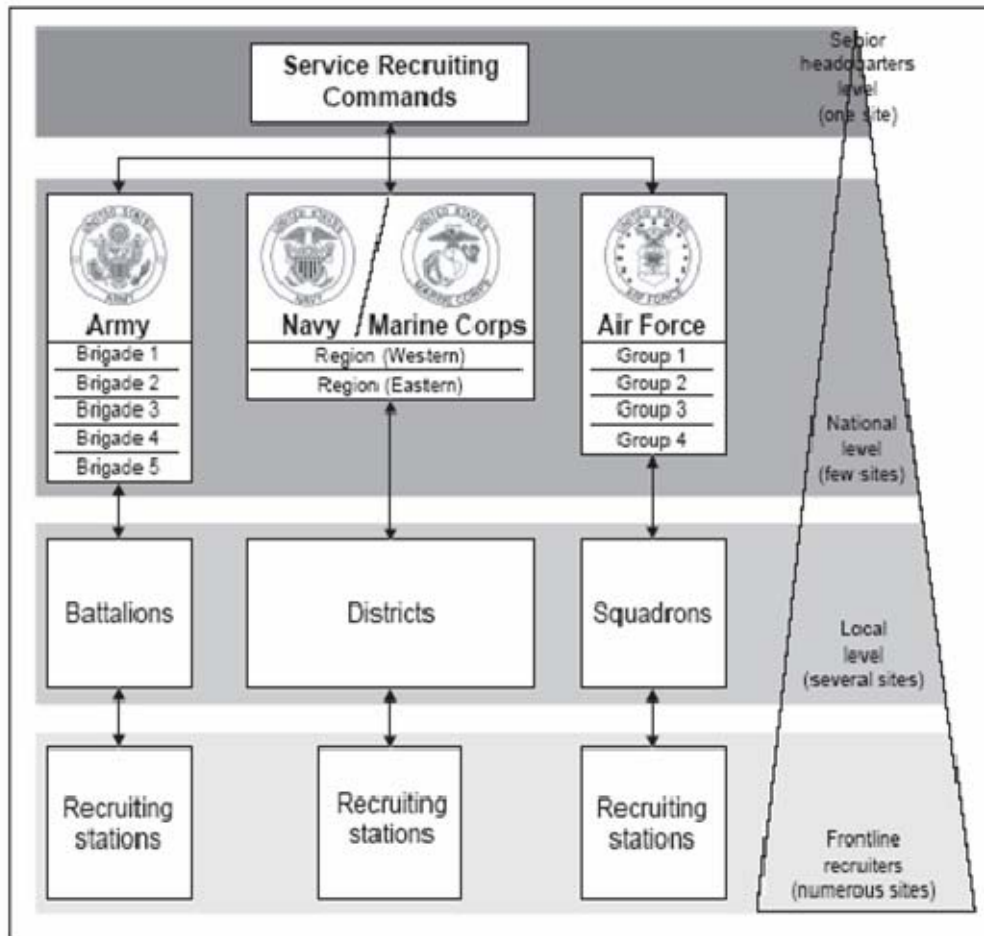
Figure 1.   Service Recruiting Command Organizational Chart (From :Derek B. Stewart, *Military Personnel: DOD and Services Need Better Data to Enhance Visibility Over Recruiter Irregularities* (Washington, DC: Government Accountability Office,[2006]), http://www.gao.gov/new.items/d06846.pdf (accessed December 14, 2006).)

In general, Figure 2 shows the recruiting process from initial contact to first assignment. In the first step, recruiters contact applicants to convince them to join the military. Recruiters then make the first prescreening steps, which include an initial background review and a physical and moral assessment. After prescreening, applicants are sent to the Military Entrance Processing Stations (MEPS). These stations are under the control of the Department of Defense's (DoD) Military Entrance Processing Command. There are 65 stations in the U.S. Once in MEPS, applicants take the Armed Services Vocational Aptitude Battery (ASVAB) test to determine what each individual is qualified to do and a medical examination to determine if the applicants meet military

physical standards. In some cases, the ASVAB can be taken when applicants are in high school. After these steps, if the applicant is determined to be qualified, she or he signs a "contract" and enters the Delayed Entry Program (DEP).[9],[10]
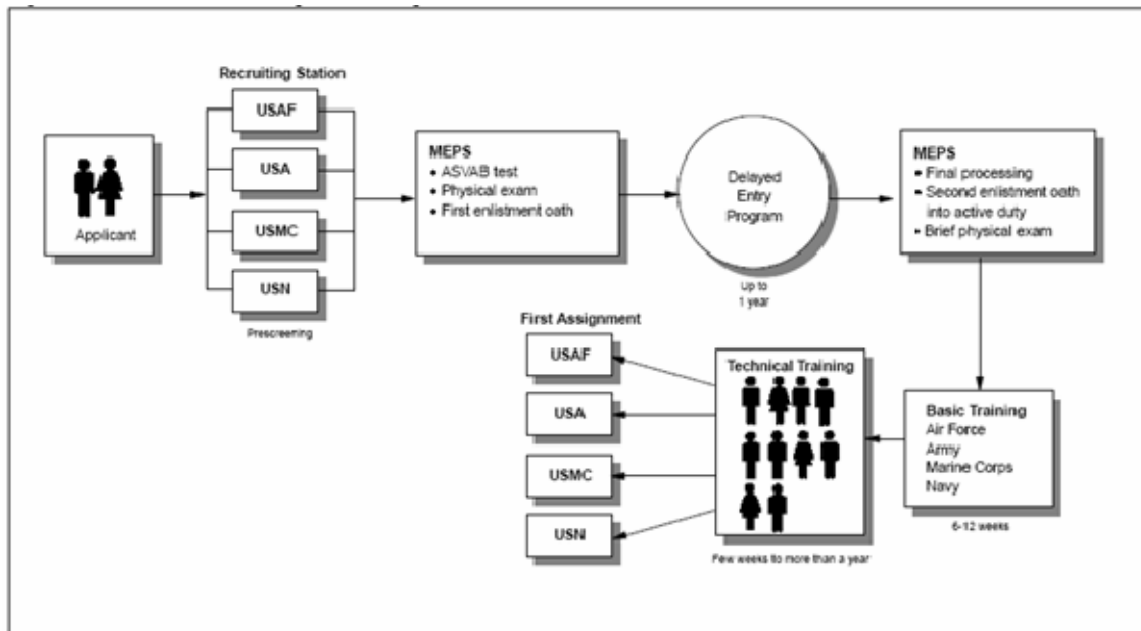
Figure 2.   Recruiting Process (From : *Military Attrition: DOD could Save Millions by Better Screening Enlisted Personnel* (Washington, DC: U.S. General Accounting Office,[1997]), http://www.gao.gov/archive/1997/ns97039.pdf (accessed June 12, 2006))

2.   Delayed Entry Program (DEP)

The Delayed Entry Program allows new recruits to postpone their entry into active-duty service for up to twelve months.[11] The first implementation of the DEP was in the mid-1960s. The program initially allowed individuals to enlist, but to delay

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[9] *Military Attrition: DOD could Save Millions by Better Screening Enlisted Personnel* (Washington, DC: U.S. General Accounting Office, 1997), http://www.gao.gov/archive/1997/ns97039.pdf [Accessed June 12, 2006].

[10] Stewart, "Military Personnel*:* DOD and Services Need Better Data to Enhance Visibility Over Recruiter Irregularities,"," 10.

[11] Richard J. Buddin, "Success of First-Term Soldiers*:* The Effects of Recruiting Practices and Recruit Characteristics" (Santa Monica, CA: RAND Corporation, 2005), http://www.rand.org/ [Accessed December 14, 2006].

reporting for active duty for up to four months. This period was extended to six months, later to nine months and finally to twelve months.   The Navy was the only service that did not use the DEP until 1982.[12]

Individuals who enter the USMC's DEP are often referred to as "poolees" because they become part of a "pool" of qualified applicants.   The Delayed Entry Program provides several benefits to the applicants and to the Marine Corps Recruiting Command: [13]

- Applicants who are high school seniors have an opportunity to complete high school before starting active duty.

- Applicants who have a job at the time of enlistment have an opportunity to work for a short time and during this time they can give notice and put their personal affairs in order before entering into active duty.

- Applicants can get training or a bonus guarantee, gain an appointment for Private First Class (E-2), and they can prepare themselves mentally and physically for recruit training.

- Delayed Entry Program assists the Recruiting Command in meeting monthly requirements by reducing "direct shipping" (current month), new contract needs, and by providing a source for referrals/new contracts.

- Moreover, it allows the Recruiting Command optimum use of training resources and facilities.

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[12] *Costs and Benefits of Longevity Payments Time Spend in the Delayed Entry Program* (Gaithersburg, MD: U.S. General Accounting Office, 1984), http://archive.gao.gov/d11t3/125249.pdf [Accessed December 6, 2006].

[13] *Military Personnel Procurement Manual, Volume 2, Enlisted Procurement, (*Marine *Corps Order* P1100.72C, 2004) 2-7. http://usmilitary.about.com/library/milinfo/marinereg/blmco1100-72b.htm [Accessed December12, 2006].

The Delayed Entry Program allows efficient resource management in an environment for military recruitment that tends to be extremely seasonal.[14] While DEP has a lot of advantages, it also has some disadvantages. Briefly, Table 1 shows the advantages and disadvantages of the Delayed Entry Program. [15]

Table 1.   Advantages and Disadvantages of DEP (From: Jason A. Wolter and Micheal J. Kwinn, "U.S. Armed Delayed Entry Program Optimization Model" U.S. Military Academy, West Point)

ADVANTAGES	DISADVANTAGES
1. Sources of referrals	1. Liaisons between recruiter and DEPers draw from recruiter's time for other activities
2. Less first-term attrition due to more realistic expectations	
3. Smoothing of recruiting efforts	2. Longer time in DEP equates to higher DEP loss
4. Long range planning tool to hedge against seasonal and economic changes or other unpredictable events (ex.Sept.11)	3. May lack sufficient direct ship slots to meet school requirements
5. Relief from direct shipment pressure for next month and enables prospecting for higher quality recruits	4. Equity problem related to differences in DEP size per recruiter

3.   Delayed Entry Program Attrition

Individuals who signed a contract and entered the Delayed Entry Program, but did not ship to boot camp, are called "Delayed Entry Program Attrites"[16] and the act of dropping out of the Delayed Entry Program is called "attrition."[17] Officially, individuals who signed a contract to enlist are obligated to ship to boot camp. However, some individuals do not go to basic training; they leave the Delayed Entry Program without any

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[14] Beulah I. Henderson, "An Analysis of Delayed Entry Program (DEP) Attrition by High School Seniors" (master's thesis, Naval Postgraduate School, 1999), 4.

[15] Jason A. Wolter and Micheal J. Kwinn, "U.S. Army Delayed Entry Program Optimization Model," U.S. Armed Force Academy West Point: 5.

[16] Margery A. Ogren, "Delayed Entry Program Attrition: A Multivariate Analysis" (master's thesis, Naval Postgraduate School, 1999), 2.

[17] Henderson, "An Analysis of Delayed Entry Program *(DEP)* Attrition by High School Seniors,"," 2.

excuse. Since the Services generally do not enforce this obligation, it is easy for recruits to drop out. Recruiting environment, recruiter behaviors, time spent in the Delayed Entry Program, job opportunities outside the military, willingness to go to college and medical problems are factors that trigger Delayed Entry Program attrition.

Figure 3 summarizes Marine Corps Delayed Entry Program attrition rates between FY2000 and FY2005. According to Figure 3, individuals who are high school seniors are more likely (about twice as) to drop out of the Delayed Entry Program than high school graduates. Between fiscal year 2000 and 2005, high school graduates show a fairly constant DEP attrition rate. However, there is an increase in high school seniors' DEP attrition rates beginning in fiscal year 2001. In general, high school seniors' attrition rates are higher than that of high school graduates.'
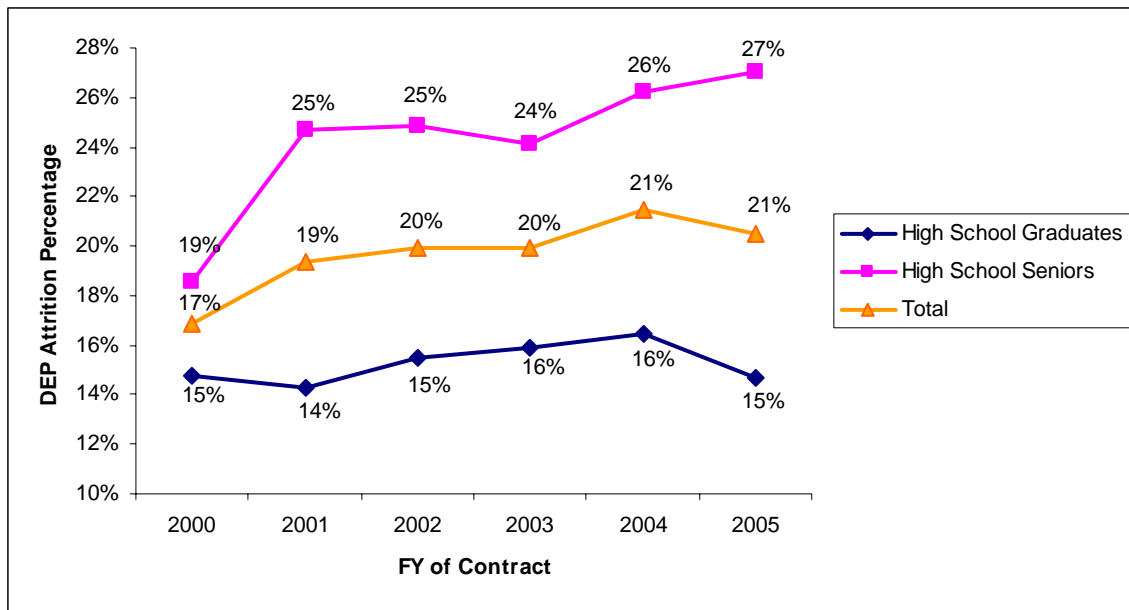
Figure 3.   DEP Attrition Rates for Marine Corps Recruits[18]

4.   Cost

It is obvious that Delayed Entry Program attrition means increased cost for the Services. It is difficult to calculate and to predict this cost. Recruiters spend a lot of time finding qualified applicants and convincing them to join. Trying to keep recruits in the Delayed Entry Program can increase the overall cost of recruiting. Moreover, shipping

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[18] This figure created by the author using initial sample data.

the applicants to MEPS (medical exams) before contracting and finding another qualified applicant to fill the place of a Delayed Entry Program attrite also increases the cost of recruiting. According to Sackett and Mavor (2002), DoD estimates that investment in an enlistee who separates after 6 months, exclusive of recruiting costs, is $23,000.[19] The United States Marine Corps spent 38.1 million dollars in FY2000 for advertising, and this cost increased to 71.5 million dollars in FY 2005.[20] This increase shows that with each year recruiting becomes more costly.

5. Research Questions

High school graduates and high school seniors are the main USMC enlisted recruiting sources. However, high school graduates and high school seniors show different behaviors while they are in the Delayed Entry Program. Previous studies indicate that high school seniors are more likely to leave the Delayed Entry Program.[21] The primary questions of this study are focused on the high school seniors and graduates' personal characteristics that may influence who drops out of the Delayed Entry Program. The secondary questions focus on the day of the month that enlistment takes place and its effect on Delayed Entry Program discharges.

- Primary Questions

- Which personal background characteristics influence the behavior of recruits to leave the Delayed Entry Program?

- Are there differences between the personal background characteristics of high school graduates and high school seniors who drop out from the Marine Corps Delayed Entry Program?

- Secondary Questions

- Is the effect of day of the month of enlistment on DEP attrition the same for both high school graduates and high school seniors?

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[19] Kevin Murphy, Jeanette Cleveland and William T. Ross, *Evaluate the Marine Corps' Recruiting Effort* (Penn state: Marine Corps Research University, 2003).

[20] Heidi Golding and Adebayo Adedeji, "Recruiting, Retention, and Future Levels of Military Personnel" (Washington, DC: Congressional Budget Office, 2006). http:// www.cbo.gov [Accessed December 7, 2006].

[21] Ogren, "Delayed Entry Program Attrition: A Multivariate Analysis," 27.

- Are there differences between high school graduates and high school seniors in the reasons why recruits leave the Delayed Entry Program (as reflected in the Delayed Entry Program discharge codes)?

C.   SCOPE AND METHODOLOGY

The Delayed Entry Program is a useful tool for the Services to use to maintain a healthy recruiting policy. However, individuals who resign from DEP make it difficult and costly to maintain it. Although studies have shown that it is impossible to eliminate Delayed Entry Program attrition, it is important for the Services to determine the factors that predict Delayed Entry Program attrition. The Services can decrease Delayed Entry Program attrition and save money by identifying these factors. The data for this study were extracted from the Total Force Data Warehouse (TFDW). It consists of the records of individuals who were enlisted by Marine Corps Recruiting Command between FY 2000 and FY2005. The first data set has observations on high school graduates and the second data set on high school seniors. Finding personal background differences between high school graduates and high school seniors who drop out of the Delayed Entry Program can be helpful in screening applicants for the Marine Corps. Moreover, research on the reasons why recruits leave the Delayed Entry Program can be useful in identifying probable Delayed Entry Program Attrites before they drop out of DEP, as well as finding ways to keep them in DEP until they ship to basic training.

D.   ORGANIZATION

Chapter II of this study highlights and summarizes previous studies that examined Delayed Entry Program attrition. Chapter III discusses the data and methodology used in this study. It also identifies the reasons for discharge using discharge codes. Chapter IV examines the regression models used to explain how personal background differences between high school graduates and high school seniors can affect DEP attrition. Chapter V summarizes the findings, provides conclusions and gives recommendations.

II. LITERATURE REVIEW

A. OVERVIEW

The Delayed Entry Program has an important place in the recruiting process and attrition is an important cost of this program. The Services are trying to find ways to decrease this cost. After the implementation of the All Volunteer Force, many studies have been done to examine the factors that influence recruits to leave the DEP. This chapter reviews the previous Delayed Entry Program attrition studies that examined factors that affect Delayed Entry Program attrition.

In the first study by the Center for Naval Analyses (CNA), Quester and Murray (1986) tried to explain the factors that affected Navy Delayed Entry Program attrition of recruits who were enlisted in fiscal years 1983 and 1984.

The second study by Knox (1998) is a Naval Postgraduate School (NPS) master's thesis that investigated Navy DEP attrition using logistic regression and tree structure classification.

The third analysis is a Naval Postgraduate School (NPS) thesis by Henderson (1999) that examined personal characteristics and the situational factors that contribute to high school seniors leaving the Delayed Entry Program. She used observations from all Services.

The fourth analysis is a Naval Postgraduate School (NPS) master's thesis by Ogren (1999) who studied the effects of personal background characteristics and local area economic conditions on an individual's likelihood to leave the Delayed Entry Program. Her data file contained individuals from all Services.

The fifth study for this literature review is a RAND Corporation study by Buddin (2005). He investigated the relationship between recruiting practices and conditions and the first term success of U.S. Army soldiers. In his study, he examined factors that are related to Delayed Entry Program attrition.

The sixth and final study by Bruno (2005) is a Naval Postgraduate School (NPS) master's thesis that examined Marine Corps Delayed Entry Program attrition. He

investigated the relationship between Delayed Entry Program attrition and the day of the month of enlistment. He categorized individuals according to their attrition risks by using variables that related to their personal backgrounds and the day of the month of their enlistment. He created two risk groups (high and low risk) that can be helpful for the screening policy of the Marine Corps Delayed Entry Program.

B.   PREVIOUS DELAYED ENTRY PROGRAM ATTRITION STUDIES

1.   Quester and Murray (1986)

In their study *Attrition From Navy Enlistment Contracts,* Quester and Murray (1986) examined Navy Delayed Entry Program attrition in fiscal years 1983 and 1984. They obtained data from the Navy's Personalized Recruiting for Immediate and Delayed Entry (PRIDE) system. Their data consisted of 171,328 observations. Of these, 20,743 were direct ships (recruits shipped within the month of their initial contract).[22] Quester and Murray (1986) used logit models to explain enlistee attrition. They regressed Delayed Entry Program attrition based on personal characteristics (gender, education level, age, AFQT score), program of enlistment, recruiting area, recruiter per recruits, DEP Time in months and month of enlistment.

Quester and Murray (1986) found that females are more likely to abrogate their contracts. Young male recruits (17-18 years old) who are high school graduates are least likely to drop out from Navy Delayed Entry Program. Quester and Murray (1986) also found that the type of Navy Enlistment Program does not appear to make much difference. Quester and Murray (1986) pointed out that attrition rates are higher in months in which each recruiter has more recruits in the Delayed Entry Program. May is the month where most attrition occurs and October is the month where least attrition occurs. Also, Quester and Murray (1986) determined that more time spent in the Delayed Entry Program means a higher risk of attrition and the effects of AFQT score were inconclusive. Most findings by the authors were parallel with those of subsequent studies. There were no recommendations made at the end of the study.

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[22] Aline Quester and Martha Murray, *Attrition from Navy Enlistment Contracts* (Virginia: Center For Naval Analyses, 1986).

2. Knox (1998)

In his Naval Postgraduate School master's thesis "Analysis of Navy Delayed Entry Program and Recruit Training Center Attrition," Bryant W. Knox (1998) investigated Navy Delayed Entry Program and Recruit Training Center Attrition by using logistic regression and tree-structured classification. His data was provided by Commander, Naval Recruiting Command (CNRC) and the Center for Naval Analyses (CNA). The data that he used consisted of 130,486 individuals who were scheduled to report to recruit training command between October 1995 and December 1997.[23]

In his logistic model, Knox (1998) regressed (DEP Attrite) as a dependent variable based on AFQT score, age, gender, race, education status, bonus and the number of days the individual was scheduled for DEP. The logistic model that he used to analyze DEP attrition showed that age, race (white or black), General Equivalency (GED) Diplomas and scheduled DEP duration had a positive effect on DEP attrition. However, an individual who accepts incentives prior to enlistment (Navy College Fund or Enlistment Bonus), individuals who changed enlistment programs, males and recruits with high AFQT scores were less likely to drop out from DEP. By using the DEP tree model, he found that individuals who had a low score on the AFQT, who had no high school diploma and who scheduled a long DEP duration were more likely to attrite from DEP.

3. Henderson (1999)

In her Naval Postgraduate School master's thesis "An Analysis of Delayed Entry Program (DEP) Attrition by High School Seniors," Beulah I. Henderson (1999) examined personal characteristics and the situational factors that contributed to high school seniors leaving the Delayed Entry Program. Her data was provided by the Defense Manpower Data Center (DMDC). In addition, she also obtained Delayed Entry Program data from Commander, Navy Recruiting Command (CNRC). She got unemployment data from the Bureau of Labor Statistics (BLS) website. She merged unemployment data with the data sets from DMDC and CNRC. The data sets contained observations for individuals who entered the Delayed Entry Program (DEP) between FY 1990 and FY 1996. She restricted

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[23] Bryant W. Knox, "Analysis of Navy Delayed Entry Program and Recruit Training Center Attrition" (master's thesis, Naval Postgraduate School, 1998), 19.

the data set to high school seniors with no prior active duty service. She used multivariate data analysis to identify factors that explain why high school seniors had high attrition rates while they were in DEP. Furthermore, she examined high school seniors (who left the DEP) by their personal backgrounds and their Service by using descriptive data analysis. In her first model, which was called the DoD Model by the author, DEP attrition was regressed as a dependent variable based on explanatory variables (personal characteristics, recruiting policies, and economic factors) for DMDC data that contained observations of recruits from all Services. In her second model, she used the same variables for an analysis of CNRC data that contained observations of recruits who entered the Navy Delayed Entry Program (DEP).

By using cross-tabulation tables, Henderson (1999) found the following:[24]

- Married seniors had a higher likelihood of remaining in the DEP than did seniors who were single or divorced.
- However, female high school seniors who were married experienced a relatively high rate of attrition.
- Blacks had a higher probability of remaining in the DEP than did Non-Blacks.

Henderson (1999) pointed out that, of all the services, the Marine Corps tended to have the highest percentage of seniors in the DEP and had the highest rate of attrition for high school seniors.

In the DoD Model, she found that recruits from the Army and Marine Corps had a higher rate of attrition when compared with the Navy. Older high school seniors and seniors who signed for longer DEP contracts had a high probability of discharge. Her DoD Model showed that the DEP attrition rate of women is 16 percent higher than men. She found that blacks tended to have a stronger tendency to drop out of the DEP in the Navy and Army; however, they tended to remain longer in the Marine Corps and in the Air Force Delayed Entry Program (DEP). Also, black women had the lowest attrition rate of the race-gender groups. The author linked this result to black women's limited career

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[24] Henderson, "An Analysis of Delayed Entry Program (DEP) Attrition by High School Seniors"

opportunities in the civilian labor market.[25] Married seniors and recruits who were previously in the DEP tended to have a higher probability of remaining in the DEP. High school seniors who had low AFQT scores tended to have a high probability of discharge. Her DoD model showed that unemployment rates had a small but negative effect on DEP attrition. The model that used a Navy-only data set from CNRC showed similar results to those found in the DoD model.[26] In this model, the author also included variables for the Navy College Fund (NCF), and Hispanic and Asian ethnicity. She found that seniors who received the NCF were less likely to drop out of DEP than were those who did not sign up for the NCF.

Henderson (1999) suggested that recruiters should focus on young high school seniors who had high AFQT scores. Additionally, she recommended that to decrease attrition rates that were caused by long DEP time, it would be better to target high school seniors for recruitment when they were in the middle of the final year of high school.

4. Ogren (1999)

In her Naval Postgraduate School master's thesis "Delayed Entry Program Attrition: A Multivariate Analysis," Margery A. Ogren (1999) studied the effects of personal background characteristics and local area economic conditions on an individual's likelihood to leave the Delayed Entry Program (DEP). Her data file, which was compiled by the Defense Manpower Data Center (DMDC), contained 1.1 million observations and included all individuals from all Services, who entered the DEP between October 1989 and June 1996. She did not include the individuals who were sent to boot camps within the first month of enlistment in this data set. She obtained unemployment rates at the county level from the Bureau of Labor Statistics (BLS) and merged them with her data set. She used binary logit models to examine the effects of personal background characteristics and local area economic conditions (local unemployment rates) on DEP attrition. She regressed DEP attrition as the dependent variable based on gender, race, ethnicity, educational level, dependent status, Armed Forces Qualification Test (AFQT) score, moral waiver status and unemployment rates.

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[25] Henderson, "An Analysis of Delayed Entry Program (DEP) Attrition by High School Seniors,"," 98.

[26] Ibid., 99.

She estimated 18 different models: with/without county unemployment rates, high school seniors only, and non-high school seniors only. She examined high school seniors and non-high school seniors separately because of different characteristics between these two groups. In some of her models, she used observations from all services together and she also analyzed each service separately.

The major results of Ogren's (1999) statistical analyses were the following:[27]

- Gender and educational level had a strong effect on the attrition behavior of individuals who were in DEP.

- Women had a higher probability of being discharged from DEP than did males.

- High school seniors were more likely to leave DEP than non-high school seniors.

- County-level unemployment rates had a significant, but small, negative effect on DEP attrition.

- The longer a person spends in the DEP, the higher the probability of leaving the DEP.

- Individuals who had dependents at the time of DEP entry were less likely to leave DEP than those without dependents.

- Black recruits were less likely to drop out of DEP.

- Individuals with moral waivers were found to be less likely to attrite from DEP.

- Most individuals who did not go to boot camps declared "apathy, personal problems or refusal to enlist" as a reason for attrition.

Ogren (1999) pointed out that the Marine Corps had the highest attrition rates of all the services and, at the same time, the Marine Corps also had the highest attrition rates for women.[28] The individuals who entered the Marine Corps DEP had different personal background characteristics than the DEP entrants to other Services. Persons whose ethnic origin was Asian or Pacific Islander were more likely to attrite from the Marine Corps

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27 Ogren, "Delayed Entry Program Attrition: A Multivariate Analysis."

28 Ibid., 4.

DEP than those who were in other services' DEP and being Hispanic also had a negative impact on DEP attrition in the Marine Corps.

Table 2 from Ogren (1999) summarizes DEP attrition findings from her own and previous studies.[29] Most of Ogren's (1999) findings were in accord with previous studies. However, one of her findings differed from prior studies. She found that across the Services, both DEP moral waivers and active-duty moral waivers were less likely to drop out of DEP. She suggested that since individuals with moral waivers have to demonstrate that they have high qualifications in other ways, these other qualifications may make them less likely to leave the DEP.[30]

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[29] Ogren, "Delayed Entry Program Attrition: A Multivariate Analysis,","28.

[30] Ibid., 71.

Table 2.   Summary of DEP Attrition From Previous Studies (From: Margery A. Ogren, "Delayed Entry Program Attrition: A Multivariate Analysis," Naval Postgraduate School)

Study	Year	Data	Method	Findings*
Philip & Schmitz	1985	Army (FY82-83)	LOGIT Models	(+) DEP Length (-) Female (+) Age (-) AFQT score
Murray	1985	Navy (FY80-83)	LOGIT Models	(+) >7 months in DEP (+) >21 years old (+) High School Drop Out (+) >65th percentile AFQT score
Quester & Murray	1986	Navy (FY83-84)	LOGIT Models	(+) DEP Length (+) Female (+) Age (+) May Shipper (-) October Shipper (+) # of recruits in DEP per recruiter
Kearl & Nelson	1990	Army (FY86-87)	LOGIT Models	(-) Regional Unemployment Rate (-) Military/Civilian Wage Ratio
Nakada	1994	Navy (FY87-91)	LOGIT Models	(+) Female (-) AFQT Score > 50 % (+) DEP Length (+) High School Senior (+) Age (+) White (-) More senior recruiter (-) Local Unemployment Rate (-) Distance from home to Recruiting Station
Bohn & Schmitz	1996	Navy 20% of (FY92-93)	LOGIT Models	(+) High School Senior (-) AFQT Score (+) Hispanic (+) Age (+) DEP Length (+) Female
Knox	1998	Navy (1995-1997)	LOGIT Models	(-) Enlistment incentive while in DEP (-) Change in enlistment program in DEP (+) Non-High School Diploma Grad (+) Low AFQT score (+) 12 months in DEP
Henderson	1999	All Services/ High School Seniors Only (FY90-96)	LOGIT Models	(+) > 18 years old (+) Female (-) Married (+) AFQT score > 65 percentile (-) Regional Unemployment Rate (-) Black Female

*Note: (+) Positive Effect on DEP Attrition; (-) Negative Effect on DEP Attrition

Ogren (1999) recommended that administrative forms that include reasons why individuals leave the DEP should be developed. She suggested that new administrative forms with multiple drop codes could provide more detailed information for researchers. With these forms, more useful information can be gathered. Another recommendation was related to individuals who dropped out of DEP for "apathy." She pointed out that by conducting personal exit interviews with these people directly and, as soon as possible after discharge, more accurate and objective information could be gathered about why they left DEP. Related to high school senior attrition, she suggested that high school seniors with marginal grades could be paired with fellow Delayed Entry Program participants who have academic strengths. This collaboration could create good relationships between these individuals, as well as make available the extra help that some seniors need to graduate. More female role models in the recruiting force and providing limited medical services, such as birth control, were suggested policies to decrease the number of female DEP dropouts.

5.   Buddin (2005)

In his study "Success of First-Term Soldiers: The Effects of Recruiting Practices and Recruit Characteristics," Buddin (2005) investigated the relationship between recruiting practices and conditions and the first term success of U.S. Army soldiers. His study consisted of factors that affect DEP attrition, fitness training participation, boot camp attrition, first term attrition, promotion and reenlistment.[31] His data set was based on Army contracts for non-prior-service enlisted personnel from FY1995 through FY2001.[32] He obtained the data set from the U.S. Army Recruiting Command (USAREC). He also obtained monthly time series of unemployment rates from the Bureau of Labor Statistics (BLS). He used local unemployment rates as a measure of civilian opportunities in the recruit's hometown. His data set included 550,000 observations regarding who enlisted during this time.[33]

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[31] Buddin, "Success of First-Term Soldiers: The Effects of Recruiting Practices and Recruit Characteristics,"," 4.

[32] Ibid.

[33] Ibid.

Buddin (2005) used a probit model to explain the factors that affect DEP attrition in the U.S. Army Delayed Entry Program. He regressed DEP attrition on explanatory variables such as recruit characteristics, features of enlistment contract, recruiting environment, recruiter characteristics and fiscal year of contract. In his study, Buddin (2005) found the following:[34]

- Women recruits were more likely to drop out from DEP.

- The loss rate for white non-Hispanics was higher than the other recruits.

- The probability of discharge for high school seniors was about two percentage points higher than for high school graduates.

- Married recruits were less likely to leave the DEP than singles.

- Age at entry had a significant but small positive effect on DEP attrition.

- The unemployment rate had a negative effect on DEP attrition, but this effect was also small.

- Recruits who participated in the Army College Fund (ACF) program were less likely to drop out of DEP.

- Time spent in DEP had a large positive effect on DEP attrition.

- The day of the month of enlistment had an effect on DEP attrition. Recruits who entered on the last day of the recruiting month were more likely to leave the DEP. Recruits who signed the contract on the last five days of the month were also more likely to drop out of DEP.

- Recruiter characteristics had little effect on DEP attrition.

Buddin (2005) suggested that the Army could reduce DEP losses if it relied less on high school seniors and on recruiting high school seniors with long DEP times.[35] He pointed out that since the seniors were a big part of the contract pool, it would be costly to replace them. In his alternative suggestion, he recommended that the DEP time for

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[34] Buddin, "Success of First-Term Soldiers: The Effects of Recruiting Practices and Recruit Characteristics."

[35] Ibid.

seniors could be reduced. He noted that the problem with this suggestion was that seniors might shift to another Service's DEP, so the Army might seek cooperation with other Services that faced the same problem with high school seniors. One specific suggestion of the author was that the Services should not enlist high school seniors until March of their senior year.

Buddin (2005) also complained about current automated data files. He pointed out that the current system was insufficient and it provided little information about attrition. He suggested that the Army should build an automated system to track recruit problems, remediation efforts and results.

6.   Bruno (2005)

In his Naval Postgraduate School thesis, "Analysis of Recruit Attrition from the U.S. Marine Corps Delayed Entry Program," Michael G. Bruno (2005) looked at the relationship between the Marine Corps Delayed Entry Program attrition (DEP) and the day of the month of enlistment. He investigated the hypothesis that discharge probability increases for enlistees who are recruited at the end of the month. He also tried to categorize individuals according to their DEP attrition risks. He used two separate data sets which were obtained from the Marine Corps Total Force Data Warehouse (TFDW). His original data set consisted of all individuals who were in the Marine Corps Delayed Entry Program (DEP) from 1 October 1999 through 30 September 2001, from five of the six Marine Corps Districts (MCDs). His second data set, which was used to test the validity of the model, consisted of all recruits from 20 May 2002 through 20 May 2004 from the same MCDs. He couldn't include the recruits from one district (8th MCD) because of data limitations.

Bruno (2005) based his hypothesis (which was that discharge probability increases for enlistees who are recruited at the end of the month) on a phenomenon he called the "Hockey-Stick" effect. The author explained the "Hockey-stick" effect as "An explanation for behavior that occurs in the presence of a deadline-sensitive goal."[36] According to Bruno (2005), pressure to achieve the monthly goals forced recruiters to

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[36] Michael G. Bruno, "Analysis of Recruit Attrition from the U.S. Marine Corps Delayed Entry Program" (master's thesis, Naval Postgraduate School, 2005), 12.

enlist individuals who have a high attrition risk probability.[37] In his first model, he tried to test his hypothesis by using a probit model. He regressed a binary discharge variable based on dummy variables representing different periods during the month. He created three independent variables for this model: enlistees who were contracted in weeks one, two or three (WEEK_123), enlistees who were contracted in week four (WEEK_4), and enlistees who were contracted on the last day of the month (LDAY).[38] He found that results of his probit analysis strongly supported his hypothesis: individuals who entered the DEP in the last week or last day of the month can be expected to have a higher attrition risk than individuals who entered in earlier periods.

Bruno (2005) ran the same model with his second data set and his findings were in accord with his original model. Since the variables WEEK_4 and LDAY showed the same characteristics, he pooled these two variables and created a new variable: WEEK_45. In his second model, Bruno (2005) regressed a binary discharge variable based on enlistment year, commands, seasons, time spent in DEP, gender, education, age, Armed Forces Qualification Test (AFQT) score, component (active or reserve), ASVABTIME (the number of days between taking ASVAB and enlistment day), race, pool moves, enlistment source, bonus, waivers and the day of the month of enlistment. Bruno (2005) identified six variables that he suggests can be used as the basis for DEP policy: Age, Component, ASVABTIME, Armed Forces Qualification Test (AFQT), WEEK_123 and WEEK_45. He created new dummy variables by categorizing Age, ASVABTIME, and AFQT. By interacting component, day of enlistment (WEEK_123, WEEK_45) and the new variables that were created by categorizing Age, ASVABTIME, and AFQT, he generated 56 mutually exclusive groups in which an applicant might fall. He created 31 groups for high school graduates and 25 groups for high school seniors. He ran a probit regression model to find discharge probabilities for each group. He followed the same steps for his second data set to validate his findings and he found similar discharge probabilities for each group that had the same characteristics.

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[37] For more information and examples about Hockey-Stick Effect, see Bruno (2005, 12-14).

[38] Bruno (2005) chose work days in his models. For example, if a day is the last day of the month and it is an official holiday, he chose work day before this day as the last day.

Bruno (2005) merged these groups according to their discharge probabilities. He created three categories: (1) CAT1 which consists of individuals who show low attrition rates whenever they enlisted, whether in the first three weeks or in the last week; (2) CAT2, which consists of individuals who show high attrition rates whenever they enlisted, whether in the first three weeks or in the last week; and (3) CAT3 which consists of individuals who show low attrition rates if they enlisted in the first three weeks and who show high attrition rates if they enlisted in the last week. These categories were the same for both high school graduates and high school seniors. Table 3, created by the author, shows these categories based on their risk groups.

Table 3.   Risk Categories

Day of the Month of Enlistment	Categories		
	CAT1	CAT2	CAT3
WEEK_123	Low risk	High risk	Low risk
WEEK_45	Low risk	High risk	High risk

Bruno (2005) recommended that the Marine Corps should focus its efforts on high risk individuals to decrease attrition rates. While spending more time with all enlistees who are in DEP would not be an effective solution, identifying high risk individuals (according to his study) and spending more time with this high risk group would be useful for lowering DEP attrition rates. Although this recommendation is likely to be beneficial, spending more time with this high risk group may lead to an increase in attrition rates of the low risk group who are not receiving as much attention. Filling Marine Corps billets with these low quality individuals from the high risk group may be another negative effect of this recommendation. Another recommendation was barring individuals who are in the high risk group from enlisting in the last week of the month. He pointed out that this policy would prevent gambling to achieve the end of the month quota. Additional screenings of these high risk individuals and decreasing Delayed Entry Program (DEP) time for high risk group members were other recommendations made by Bruno (2005). He suggested that a policy that involves decreasing DEP time requires further analysis.

C.   SUMMARY

In general, studies on Delayed Entry Program attrition have found similar results. However, some results are not parallel with each other. This may be because different groups were observed over different time periods or because different research techniques were used in the studies. Based on the literature review and Table-2, the following conclusions emerge.

All studies are in agreement about time spent in the Delayed Entry Program (DEP Time): Longer DEP Time has a strong positive effect association with Delayed Entry Program attrition. Spending a long time in the DEP means a high risk of leaving the DEP.[39] This may be because recruits can search for new job opportunities outside the military or they can be negatively affected by their friends or parents while they are still in DEP.

Nakada (1994), Bohn and Schmitz (1996), Ogren (1999), Henderson (1999) and Buddin (2005) found that high school seniors are more likely to drop out of DEP than high school graduates. In addition, most researchers found that female recruits are more likely to drop out of DEP. However, Philip and Schmitz (1985) disagreed with the statement that female recruits are more likely to drop out of DEP. Also, the AFQT score is one of the variables upon which there is no common agreement.

Henderson (1999), Ogren (1999) and Buddin (2005), who investigated the relationship between DEP attrition and unemployment rates, found that the unemployment rate has a negative, but small effect on DEP attrition. Moreover, studies showed that recruits who were married or who had dependents were less likely to drop out of DEP. Also, studies showed that age is a positive association with DEP attrition.

In recent years, researchers have found that there is a significant relationship between DEP attrition and the day of the month of enlistment. Buddin (2005) and Bruno (2005) found that discharge probability from DEP increases for enlistees who are recruited at the end of the month.

In studies that examined each individual Service's DEP attrition, researchers found that the Marine Corps' recruits showed different behaviors than the recruits of

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[39] Henderson, "An Analysis of Delayed Entry Program (DEP) Attrition by High School Seniors,"11.

other Services. Ogren (1999) found that the highest attrition rates for both males and females were in the Marine Corps DEP. Recruits who were Asian or Pacific Islander were more likely to drop out of the Marine Corps DEP; however, they were less likely to drop out of the other Services' DEP. Being Hispanic had a negative effect on Marine Corps DEP attrition but, on the other hand, Hispanics were more likely to attrite from Navy and Army DEP. Henderson (1999) found that, of all the services, the Marine Corps had the highest percentage of high school seniors in DEP, and also that the Marine Corps had the highest attrition rate for high school seniors.

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III. DATA AND METHODOLOGY

A. DATA

The data for this study were obtained from the Marine Corps Total Force Data Warehouse (TFDW). Two data sets were used: one of them consisted of observations of high school graduates and the other consisted of observations of high school seniors. The raw data file of high school graduates contained 138,515 observations for those who entered the Marine Corps Delayed Entry Program between fiscal year 2000 and fiscal year 2005. The second data file on high school seniors contained 131,901 observations. Fiscal years 2000-2005 were chosen because, during this time period, the economy was doing well, the September 11 attacks occurred, and the war against global terrorism gained speed. Also, the Marine Corps was involved in many operations in this time period that were the first long lasting operations in the history of the All-Volunteer Force (AVF), and it is important to understand how recruits behaved under these conditions. Unemployment rates for the Metropolitan Statistical Areas where Marine Corps Recruiting Stations are located were used to examine the effects of economic conditions on DEP attrition.[40] Unemployment rates were obtained from the Bureau of Labor Statistics (BLS) web page by the author. These unemployment rates were merged with the main data sets.

Delayed Entry Program discharge dates of recruits were used to identify DEP attrites. Time spent in DEP was recorded in months. The day of the month of enlistment variables were created by the author by using the date of enlistment. The month of separation (shipment month to basic training or discharge month from DEP) was derived from DEP discharge dates and shipment dates. AFQT scores were grouped as in the Department Of Defense AFQT Categories. Individuals who scored less than 30 points on the AFQT were deleted from the sample because there were not enough observations to allow for statistical analysis. Missing cells and duplicated and meaningless observations were deleted. After these deletions, 122,089 observations of high school graduates and

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[40] In her study, Ogren (1999) used county unemployment rates to examine the effect of local economic conditions on DEP attrition. However, for future studies, she recommended that metropolitan-level unemployment rates should be used to figure out the effects of unemployment rates on DEP attrition, see Ogren (1999, 74-75).

120,739 observations of high school seniors remained in the sample. Table 4 describes the variables that were in the data files or that were created by the author.

Table 4.   Data Descriptions

VARIABLE	DESCRIPTIONS
DEPDISCH	= 1 if discharged from DEP, = 0 if otherwise
FY	Fiscal Year of enlistment
FY00	=1 if entered DEP in fiscal year 2000, =0 if otherwise
FY01	=1 if entered DEP in fiscal year 2001, =0 if otherwise
FY02	=1 if entered DEP in fiscal year 2002, =0 if otherwise
FY03	=1 if entered DEP in fiscal year 2003, =0 if otherwise
FY04	=1 if entered DEP in fiscal year 2004, =0 if otherwise
FY05	=1 if entered DEP in fiscal year 2005, =0 if otherwise
COMMAND	Marine Corp District Command (MCD)
MCD1	=1 if enlisted by MCD1, =0 if otherwise
MCD4	=1 if enlisted by MCD4, =0 if otherwise
MCD6	=1 if enlisted by MCD6, =0 if otherwise
MCD8	=1 if enlisted by MCD8, =0 if otherwise
MCD9	=1 if enlisted by MCD9, =0 if otherwise
MCD12	=1 if enlisted by MCD12, =0 if otherwise
DEPTIME	Time spent in DEP in days, continuous variable from 1-365
DPINMNTH	Time spent in DEP in months, continuous variable from 1-12
DPMNTH1	=1 if recruit spent one month in DEP, =0 if otherwise
DPMNTH 2	=1 if recruit spent two months in DEP, =0 if otherwise
DPMNTH 3	=1 if recruit spent three months in DEP, =0 if otherwise
DPMNTH 4	=1 if recruit spent four months in DEP, =0 if otherwise
DPMNTH 5	=1 if recruit spent five months in DEP, =0 if otherwise
DPMNTH 6	=1 if recruit spent six months in DEP, =0 if otherwise
DPMNTH 7	=1 if recruit spent seven months in DEP, =0 if otherwise
DPMNTH 8	=1 if recruit spent eight months in DEP, =0 if otherwise
DPMNTH 9	=1 if recruit spent nine months in DEP, =0 if otherwise
DPMNTH 10	=1 if recruit spent ten months in DEP, =0 if otherwise
DPMNTH 11	=1 if recruit spent eleven months in DEP, =0 if otherwise
DPMNTH 12	=1 if recruit spent twelve months in DEP, =0 if otherwise
GENDER	Recruits' gender
MALE	=1 if recruit was male, =0 otherwise
FEMALE	=1 if recruit was female, =0 otherwise
REG	=1 if recruit was regular component, =0 otherwise
RES	=1 if recruit was reserve component, =0 otherwise
AGE_CONT	Age of recruit at the time of enlistment
AGE_1718	=1 if recruit was 17 or 18 years old, =0 otherwise
AGE_19UP	=1 if recruit was 19 or older, otherwise =0
AFQT	AFQT Score, continuous variable from 31-99
AFQT_1	=1 if recruit's AFQT was over 92, =0 otherwise
AFQT_2	=1 if recruit's AFQT was between 65-92, =0 otherwise
AFQT_3A	=1 if recruit's AFQT was between 50-64, =0 otherwise
AFQT_3B	=1 if recruit's AFQT was between 31-49, =0 otherwise
WHITE	=1 if recruit was white, =0 otherwise
BLACK	=1 if recruit was black or African American, =0 otherwise
OTHER	=1 if recruit was American Indian or Alaska Native or Asian Or Native Hawaiian or Pacific Islander, =0 otherwise
DECLINE	=1 if recruit declined to respond his/her race, =0 otherwise
SEPYEAR	Year of shipment to basic training or drop out of DEP

SEPMONTH	Month of shipment to basic training or drop out of DEP
JAN	=1 if recruits separated from DEP in January, =0 otherwise
FEB	=1 if recruits separated from DEP in February, =0 otherwise
MAR	=1 if recruits separated from DEP in March, =0 otherwise
APR	=1 if recruits separated from DEP in April, =0 otherwise
MAY	=1 if recruits separated from DEP in May, =0 otherwise
JUNE	=1 if recruits separated from DEP in June, =0 otherwise
JUL	=1 if recruits separated from DEP in July, =0 otherwise
AUG	=1 if recruits separated from DEP in August, =0 otherwise
SEPT	=1 if recruits separated from DEP in September, =0 otherwise
OCT	=1 if recruits separated from DEP in October, =0 otherwise
NOV	=1 if recruits separated from DEP in November, =0 otherwise
DEC	=1 if recruits separated from DEP in December, =0 otherwise
MARRIED	=1 if recruit was married, =0 otherwise
SINGLE	=1 if recruit was single, =0 otherwise
DEPENDENTS	Number of dependents
DEPEND	=1 if recruit had dependents, =0 otherwise
NODEPEND	=1 if recruit had no dependents, =0 otherwise
WEEK_123	=1 if recruits was enlisted in the first three weeks of the month, =0 otherwise
WEEK_4	=1 if recruit was enlisted in last week minus the last day of the month, =0 otherwise
WEEK_45	=1 if WEEK_4 or L_DAY=1, =0 otherwise
L_DAY	=1 if recruit was enlisted in the last day of the month, =0 otherwise
UNEMPLY	The unemployment rate at the time of separation from DEP
DEPCODE	Reason why recruit dropped out of DEP
SHIPDTE	Shipment date to basic training
DEPDSCHDTE	Date of discharge
DOB	Birth date
RECSTATN	Recruiting station where recruit was enlisted

B. DESCRIPTIVE STATISTICS FOR POOLED SAMPLE

It should be noted that, compared with the other Services, Marine Corps recruits have shown different personal background characteristics during the AVF: for example, the Marine Corps had the smallest proportion of females and the smallest proportion of married recruits.[41] There are also some other extreme examples: in fiscal year 2004, the Marine Corps enlisted the highest percentage of 17- and 18-year-old recruits (50 percent). Again, in fiscal year 2004, the Marine Corps had the highest percentage of whites and the

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[41] *Population Representation in the Military Service, Fiscal Year 2004* (Department Of Defense, 2006), http://www.dod.mil/prhome/poprep2004/download/2004report.pdf/ [Accessed December 12, 2006], 2-14.

smallest percentage of blacks.[42] These differences in personal background naturally affect the decisions of the recruits when we compare them with the other services.

Descriptive statistics for the variables are shown in Table 5. A typical high school graduate in the DEP was male, 20.3 years old, spent 3.7 months in DEP, was single and had no dependents. On the other hand, a typical high school senior in the DEP was male, 17.9 years old, spent 7.1 months in DEP, was single and had no dependents. The largest number of high school graduates enlisted in fiscal year 2002 and the largest number of high school seniors enlisted in fiscal year 2003. Marine Corps District Command (MCD) 12 had the biggest percentage of DEP for both high school graduates and high school seniors. The largest percentage of high school graduates spent one month in DEP, and as time spent in DEP increases, the percentage of high school graduates in DEP decreases. However, high school seniors showed a different pattern in DEP: as time spent in DEP increases, the percentage of high school seniors in DEP increases. Since the military is a male dominated environment and, as a result of the limited number of positions open to women in the Marine Corps, male recruits make up more than 90 percent of the Marine Corps' DEP entrants. The average age of high school seniors was 17.9 years old, while high school graduates were older recruits with an average age of 20.3 years. High quality recruits, who scored at least 50 points on the AFQT, constituted about 70 percent of both samples. Whites represented about 70 percent of both high school graduates and high school seniors. Recruits who declined to list their race represented about 17 percent in both data sets. TFDW administrators noted that this field was a default field when incorrectly left blank.[43] High school seniors separated from DEP mostly in the summer months. As noted earlier, high school seniors were more likely to drop out of DEP than high school graduates. In general, recruits who were enlisted by eastern region commands (MCD1, 4, and 6) were more likely to leave DEP than recruits who were enlisted by western region commands (MCD8, 9, and 12).

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[42] *Population Representation in the Military Service, Fiscal Year 2004* (Department Of Defense,2006), http://www.dod.mil/prhome/poprep2004/download/2004report.pdf/ [Accessed December 12, 2006], 2-11.

[43] Baczkowski Jr., Robert E., "The Effects of End-of-Month Recruiting on Marine Corps Recruit Depot Attrition" (master's thesis, Naval Postgraduate School, 2006.), 21.

Figure 4 shows attrition rates according to time spent in DEP. Both high school seniors and high school graduates showed a high attrition rate at the beginning of the DEP. These high attrition rates decreased until the third month, and then they began to increase. Previous studies showed that longer time spent in DEP has a strong positive association with Delayed Entry Program attrition. Spending a long time in the DEP means a high risk of leaving the DEP. The attrition pattern is similar for these data, beginning after the third month. However, the behavior of both high school graduates and high school seniors in the first three months (high attrition rates of the recruits who spent less time in the DEP) in this study is not parallel with attrition behavior in the literature.
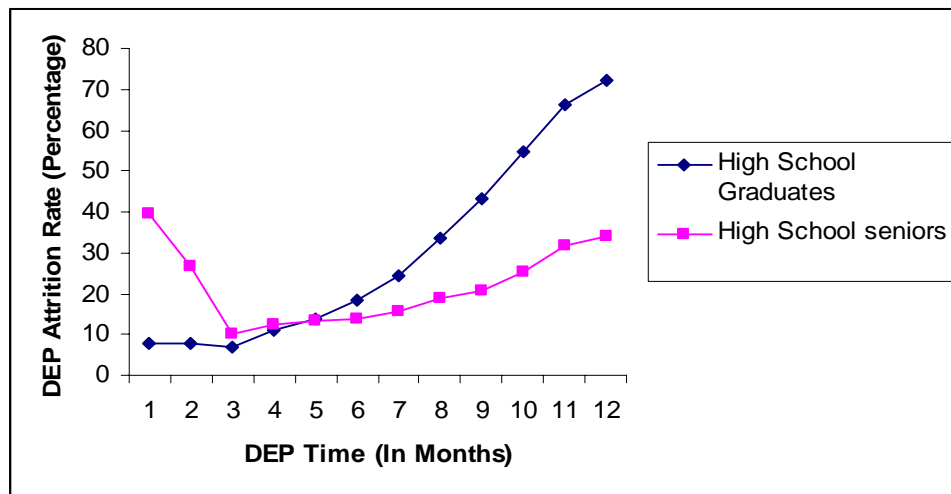
Figure 4.   DEP Attrition Rates By DEP Time

While females were more likely to drop out of DEP than males, and high school senior males were more likely to drop out of DEP than high school graduate females. Older high school graduates showed higher attrition rates than their younger peers; however, older high school seniors showed lower attrition rates than their younger peers. Recruits who were black, single, without dependents and had low AFQT scores showed high attrition rates. Recruits who were enlisted at the end of the month were more likely to drop out of DEP than recruits who were enlisted in the first three weeks of the month.

Table 5.   Descriptive Statistics for High School Graduates and High School Seniors, Fiscal Years 2000-2005

CATEGORY	VARIABLES	HIGH SCHOOL GRADUATES		HIGH SCHOOL SENIORS	
		Percent of Sample (%)	Discharge Rate (%)	Percent of Sample (%)	Discharge Rate (%)
Enlistment Year	FY00	11.05	14.71	14.52	18.54
	FY01	17.99	14.28	17.46	24.75
	FY02	19.34	15.46	17.65	24.79
	FY03	18.95	15.91	18.29	24.23
	FY04	16.94	16.52	17.80	26.31
	FY05	15.73	14.73	14.29	27.04
Command	MCD1	17.30	16.97	16.06	25.94
	MCD4	15.75	15.17	15.28	26.43
	MCD6	16.87	14.87	17.64	26.62
	MCD8	17.02	14.83	16.66	23.78
	MCD9	14.80	14.88	16.35	22.55
	MCD12	18.25	15.10	18.01	21.19
Time in DEP	DPMNTH1	26.28	7.83	3.30	39.50
	DPMNTH 2	18.22	7.81	2.76	26.56
	DPMNTH 3	13.15	6.81	2.88	10.28
	DPMNTH 4	10.13	10.92	3.73	12.43
	DPMNTH 5	8.34	13.74	5.24	13.22
	DPMNTH 6	6.86	18.18	7.35	13.93
	DPMNTH 7	4.98	24.18	8.80	15.76
	DPMNTH 8	3.32	33.45	9.22	18.83
	DPMNTH 9	2.44	43.27	10.07	20.83
	DPMNTH 10	2.01	54.82	10.63	25.42
	DPMNTH 11	1.89	66.26	12.14	31.71
	DPMNTH 12	2.38	72.17	23.90	33.82
	Mean	3.7 Months		7.1 Months	
Gender	MALE	91.92	14.67	92.85	23.36
	FEMALE	8.08	22.67	7.15	37.40
Component	REG	79.32	15.57	88.31	24.26
	RES	20.68	14.35	11.69	25.19

Age	AGE_1718	18.04	13.65	77.56	24.83
	AGE_19UP	81.96	15.68	22.44	22.77
	Mean	20.3 years old		17.9 years old	
AFQT Score	AFQT_1	6.42	13.22	3.34	20.53
	AFQT_2	38.66	15.14	35.25	22.20
	AFQT_3A	25.16	16.21	28.96	24.86
	AFQT_3B	29.77	15.24	32.45	26.67
Race	WHITE	70.68	15.04	70.73	23.78
	BLACK	8.81	17.12	9.02	29.43
	OTHER	3.14	14.83	2.94	22.26
	DECLINE	17.37	15.63	17.32	24.45
Separation Month	JAN	12.84	10.34	3.95	32.79
	FEB	7.67	17.70	2.48	44.26
	MAR	8.08	17.65	2.15	58.58
	APR	7.56	19.78	2.08	67.04
	MAY	9.42	13.27	4.81	38.18
	JUNE	6.01	19.61	20.45	15.95
	JUL	5.67	16.84	18.90	15.81
	AUG	6.67	14.66	16.58	16.61
	SEPT	8.33	26.16	14.01	31.30
	OCT	10.09	8.94	7.36	19.75
	NOV	9.09	12.12	4.23	33.54
	DEC	8.55	13.58	3.00	40.73
Marital Status	MARRIED	4.70	13.90	0.91	15.61
	SINGLE	95.30	15.39	99.09	24.45
Dependent	DEPEND	2.54	6.26	0.59	10.38
	NODEPEND	97.46	15.55	99.41	24.45
Time of Enlistment	WEEK_123	71.96	14.60	71.28	23.53
	WEEK_4	20.11	16.50	20.65	25.63
	L_DAY	7.92	18.85	8.07	28.51
Average Unemployment rate	UNEMPLY	4.99		4.97	
Attrition rate	DEPDISCH	15.32		24.36	

C.   DESCRIPTIVE STATISTICS BY FISCAL YEAR

This section of the thesis gives information about the personal characteristics of Marine Corps' recruits by year of entry for fiscal years 2000 through 2005. This information is presented using cross tabulation tables.

1.   High School Graduates

Table 6 shows the distribution of the Marine Corps' high school graduate DEP poolees by marital status and gender in fiscal years of 2000 through 2005. As expected, married recruits who were in the Marine Corps DEP represented a small part, only 4.70 percent, of the sample. Married female recruits were more likely to participate in DEP than married males. Furthermore, there was a decrease in the percentage of participation of married males from fiscal year 2000 to fiscal year 2004, but in fiscal year 2005 this decrease stopped. Also, there was a noticeable decrease in the proportion of married females after fiscal year 2001. Fiscal years 2004 and 2005 had the smallest proportion of married recruits since fiscal year 2000.

Table 6.   Distribution of High School Graduates in USMC DEP By Marital Status, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
MARRIED	655	1,054	976	979	649	685	4,998
%	5.28	5.21	4.49	4.57	3.43	3.91	4.45
SINGLE	11,759	19,166	20,769	20,437	18,270	16,831	107,232
%	94.72	94.79	95.51	95.43	96.57	96.09	95.55
Total	12,414	20,220	21,745	21,416	18,919	17,516	112,230
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
MARRIED	91	172	127	126	114	111	741
%	8.41	9.87	6.81	7.35	6.46	6.57	7.52
SINGLE	991	1,571	1,737	1,589	1,651	1,579	9,118
%	91.59	90.13	93.19	92.65	93.54	93.43	92.48
Total	1,082	1,743	1,864	1,715	1,765	1,690	9,859
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
MARRIED	746	1,226	1,103	1,105	763	796	5,739
%	5.53	5.58	4.67	4.78	3.69	4.14	4.70
SINGLE	12,750	20,737	22,506	22,026	19,921	18,410	116,350
%	94.47	94.42	95.33	95.22	96.31	95.86	95.30
Total	13,496	21,963	23,609	23,131	20,684	19,206	122,089
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 7 shows the distribution of high school graduates by race, fiscal year and gender for fiscal year 2000 to fiscal year 2005. About 71 percent of the Marine Corps' recruits were white and blacks represented about 9 percent. In general, there was an obvious decrease in participation of black recruits between fiscal years 2000 and 2005. This is not surprising, because the literature indicated that there has been a sharp decrease among black adults in recommending the military to the youth population.[44] Black females were more likely to participate in DEP than black males. The percentage of recruits who declined to list his/her race increased after fiscal year 2003. However, as noted earlier, this may be due to the result of the Marine Corps' recruiting system.

Table 7.　Distribution of High School Graduates in USMC DEP By Race, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
BLACK	1,669	2,296	1,937	1,354	1,210	1,084	9,550
%	13.44	11.36	8.91	6.32	6.40	6.19	8.51
DECLINE	1,086	1,449	1,319	5,686	5,435	4,496	19,471
%	8.75	7.17	6.07	26.55	28.73	25.67	17.35
OTHER	453	761	842	479	468	457	3,460
%	3.65	3.76	3.87	2.24	2.47	2.61	3.08
WHITE	9,206	15,714	17,647	13,897	11,806	11,479	79,749
%	74.16	77.72	81.15	64.89	62.40	65.53	71.06
Total	12,414	20,220	21,745	21,416	18,919	17,516	112,230
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
BLACK	171	265	225	165	191	186	1,203
%	15.80	15.20	12.07	9.62	10.82	11.01	12.20
DECLINE	89	150	134	447	484	447	1,751
%	8.23	8.61	7.19	26.06	27.42	26.45	17.76
OTHER	43	74	89	65	50	57	378
%	3.97	4.25	4.77	3.79	2.83	3.37	3.83
WHITE	779	1,254	1,416	1,038	1,040	1,000	6,527
%	72.00	71.94	75.97	60.52	58.92	59.17	66.20
Total	1,082	1,743	1,864	1,715	1,765	1,690	9,859
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
BLACK	1,840	2,561	2,162	1,519	1,401	1,270	10,753
%	13.63	11.66	9.16	6.57	6.77	6.61	8.81
DECLINE	1,175	1,599	1,453	6,133	5,919	4,943	21,222
%	8.71	7.28	6.15	26.51	28.62	25.74	17.38

[44] In a November 2002 survey, 59% of white respondents, 53% of African American respondents, and 51% of Hispanic respondents indicated they would recommend military service to a young person who came to them for advice. By May 2004, the figures had changed to 47% for white respondents, 28% of African American respondents, and 56% for Hispanic respondents. Lawrence Kapp, *Recruiting and Retention: An Overview of FY2005 and FY2006 Results for Active and Reserve Component Enlisted Personnel*, 7.

OTHER	496	835	931	544	518	514	3,838
%	3.68	3.80	3.94	2.35	2.50	2.68	3.14
WHITE	9,985	16,968	19,063	14,935	12,846	12,479	86,276
%	73.98	77.26	80.74	64.57	62.11	64.97	70.67
Total	13,496	21,963	23,609	23,131	20,684	19,206	122,089
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 8 shows the dependent status of high school recruits between fiscal years 2000 and 2005. As expected, most of the recruits had no dependents. This may be due to the small proportion of married recruits. Only 2.56 percent of males and 2.27 percent of females had dependents. In fiscal year 2000, 6.86 percent of recruits had dependents; however this number decreased to 0.80 percent in fiscal year 2002 and showed a slight increase in 2005, to about 1.67 percent. This may be because of the decrease in the percentages of the married recruits between fiscal year 2000 and fiscal year 2004, as represented in Table 6.

Table 8.   Distribution of High School Graduates in USMC DEP By Dependent Status, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
DEPEND	856	1,022	178	240	278	303	2,877
%	6.90	5.05	0.82	1.12	1.47	1.73	2.56
NODEPEND	11,558	19,198	21,567	21,176	18,641	17,213	109,353
%	93.10	94.95	99.18	98.88	98.53	98.27	97.44
Total	12,414	20,220	21,745	21,416	18,919	17,516	112,230
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
DEPEND	70	97	10	12	18	17	224
%	6.47	5.57	0.54	0.70	1.02	1.01	2.27
NODEPEND	1,012	1,646	1,854	1,703	1,747	1,673	9,635
%	93.53	94.43	99.46	99.30	98.98	98.99	97.73
Total	1,082	1,743	1,864	1,715	1,765	1,690	9,859
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
DEPEND	926	1,119	188	252	296	320	3,101
%	6.86	5.09	0.80	1.09	1.43	1.67	2.54
NODEPEND	12,570	20,844	23,421	22,879	20,388	18,886	118,988
%	93.14	94.91	99.20	98.91	98.57	98.33	97.46
Total	13,496	21,963	23,609	23,131	20,684	19,206	122,089
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

As seen in Table 9, 81.96 percent of high school graduate recruits were 19 years old and over. While 21.43 percent of high school graduates were between 17 and 18 years old in fiscal year 2000, this percentage decreased to 15.77 percent in fiscal year 2005. There was a decrease in the young male proportion from fiscal year 2000 to fiscal year 2005. Young female recruits were more likely to participate in DEP than young males.

Table 9.   Distribution of High School Graduates in USMC DEP By Age, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
AGE_1718	2,624	3,742	4,060	3,631	3,166	2,657	19,880
%	21.14	18.51	18.67	16.95	16.73	15.17	17.71
AGE_19UP	9,790	16,478	17,685	17,785	15,753	14,859	92,350
%	78.86	81.49	81.33	83.05	83.27	84.83	82.29
Total	12,414	20,220	21,745	21,416	18,919	17,516	112,230
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
AGE_1718	268	363	406	365	371	372	2,145
%	24.77	20.83	21.78	21.28	21.02	22.01	21.76
AGE_19UP	814	1,380	1,458	1,350	1,394	1,318	7,714
%	75.23	79.17	78.22	78.72	78.98	77.99	78.24
Total	1,082	1,743	1,864	1,715	1,765	1,690	9,859
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
AGE_1718	2,892	4,105	4,466	3,996	3,537	3,029	22,025
%	21.43	18.69	18.92	17.28	17.10	15.77	18.04
AGE_19UP	10,604	17,858	19,143	19,135	17,147	16,177	100,064
%	78.57	81.31	81.08	82.72	82.90	84.23	81.96
Total	13,496	21,963	23,609	23,131	20,684	19,206	122,089
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 10 shows that between fiscal years 2000 and 2005, out of 122,089 high school graduate recruits, 18,699 recruits (15.32 percent of the sample), dropped out of DEP. As mentioned in the literature review, other studies have shown that female high school graduates are more likely to leave the DEP than male high school graduates. While there was an increase in DEP attrition rates of the male recruits between fiscal years 2000 and 2004, this increase stopped in fiscal year 2005.

Table 10.   Distribution of High School Graduates in USMC DEP By Fiscal Year, DEP Status, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
SHIPPED	10,700	17,486	18,520	18,097	15,879	15,084	95,766
%	86.19	86.48	85.17	84.50	83.93	86.12	85.33
DROP OUT	1,714	2,734	3,225	3,319	3,040	2,432	16,464
%	13.81	13.52	14.83	15.50	16.07	13.88	14.67
Total	12,414	20,220	21,745	21,416	18,919	17,516	112,230
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
SHIPPED	811	1,340	1,440	1,353	1,388	1,292	7,624
%	74.95	76.88	77.25	78.89	78.64	76.45	77.33
DROP OUT	271	403	424	362	377	398	2,235
%	25.05	23.12	22.75	21.11	21.36	23.55	22.67
Total	1,082	1,743	1,864	1,715	1,765	1,690	9,859
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
SHIPPED	11,511	18,826	19,960	19,450	17,267	16,376	103,390
%	85.29	85.72	84.54	84.09	83.48	85.27	84.68
DROP OUT	1,985	3,137	3,649	3,681	3,417	2,830	18,699
%	14.71	14.28	15.46	15.91	16.52	14.73	15.32
Total	13,496	21,963	23,609	23,131	20,684	19,206	122,089
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 11 shows the distribution of high school graduates by marital status, DEP status and gender. As expected, based on past studies, the data in the table shows that female recruits, whether married or single, were more likely to drop out of DEP than males. Furthermore, married female/male high school graduate recruits, who are likely to have more responsibilities than single female/male recruits, were less likely to drop out of DEP than single female/male recruits.

Table 11.   Distribution of High School Graduates in USMC DEP By Marital Status, DEP Status, and Gender

GENDER	FEMALE	MALE	Total
MARRIED			
SHIPPED	598	4,343	4,941
%	80.70	86.89	86.10
DROP OUT	143	655	798
%	19.30	13.11	13.90
Total	741	4,998	5,739
%	100.00	100.00	100.00
SINGLE			
SHIPPED	7,026	91,423	98,449

%	77.06	85.26	84.61
DROP OUT	2,092	15,809	17,901
%	22.94	14.74	15.39
Total	9,118	107,232	116,350
%	100.00	100.00	100.00
ALL			
SHIPPED	7,624	95,766	103,390
%	77.33	85.33	84.68
DROP OUT	2,235	16,464	18,699
%	22.67	14.67	15.32
Total	9,859	112,230	122,089
%	100.00	100.00	100.00

Table 12 shows the distribution of high school graduates by gender, DEP status and race. According to the data presented in the table, black males were more likely to attrite from DEP than other males. On the other hand, female recruits who were white were more likely to attrite from DEP than other females. Moreover, it is interesting that black females showed lower attrition rates than white females and other race females. Overall, blacks tended to leave the Marine Corps DEP more often than other races.

Table 12.   Distribution of High School Graduates in USMC DEP By Gender, DEP Status, and Race

RACE	BLACK	DECLINE	OTHER	WHITE	Total
MALE					
SHIPPED	7,969	16,510	2,977	68,310	95,766
%	83.45	84.79	86.04	85.66	85.33
DROP OUT	1,581	2,961	483	11,439	16,464
%	16.55	15.21	13.96	14.34	14.67
Total	9,550	19,471	3,460	79,749	112,230
%	100.00	100.00	100.00	100.00	100.00
FEMALE					
SHIPPED	943	1,396	292	4,993	7,624
%	78.39	79.73	77.25	76.50	77.33
DROP OUT	260	355	86	1,534	2,235
%	21.61	20.27	22.75	23.50	22.67
Total	1,203	1,751	378	6,527	9,859
%	100.00	100.00	100.00	100.00	100.00
ALL					
SHIPPED	8,912	17,906	3,269	73,303	103,390
%	82.88	84.37	85.17	84.96	84.68
DROP OUT	1,841	3,316	569	12,973	18,699
%	17.12	15.63	14.83	15.04	15.32
Total	10,753	21,222	3,838	86,276	122,089
%	100.00	100.00	100.00	100.00	100.00

2. High School Seniors

Table 13 shows the distribution of high school seniors in the DEP by marital status, fiscal year and gender. As expected, there was a small representation of married high school seniors, only 0.91 percent of the sample. There was a decrease in married high school seniors between fiscal years 2000 and 2003. There was a small increase in the proportion of married recruits in fiscal years 2004 and 2005. Female married recruits were more likely to participate in DEP than married males.

Table 13.   Distribution of High School Seniors in USMC DEP By Marital Status, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
MARRIED	204	197	157	144	150	119	971
%	1.24	1.01	0.79	0.70	0.75	0.75	0.87
SINGLE	16,231	19,397	19,646	20,391	19,778	15,693	111,136
%	98.76	98.99	99.21	99.30	99.25	99.25	99.13
Total	16,435	19,594	19,803	20,535	19,928	15,812	112,107
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
MARRIED	29	25	22	16	19	20	131
%	2.65	1.68	1.46	1.03	1.21	1.39	1.52
SINGLE	1,064	1,460	1,480	1,531	1,549	1,417	8,501
%	97.35	98.32	98.54	98.97	98.79	98.61	98.48
Total	1,093	1,485	1,502	1,547	1,568	1,437	8,632
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
MARRIED	233	222	179	160	169	139	1,102
%	1.33	1.05	0.84	0.72	0.79	0.81	0.91
SINGLE	17,295	20,857	21,126	21,922	21,327	17,110	119,637
%	98.67	98.95	99.16	99.28	99.21	99.19	99.09
Total	17,528	21,079	21,305	22,082	21,496	17,249	120,739
%	100.00	100.00	100.00	100.00	100.00	100.00	100.0

Table 14 shows the distribution of high school seniors in the DEP by race, fiscal year and gender. White males represent 71.23 percent of the male population and white females represent 64.21 percent of the female population; overall whites represent 70.71 percent of the sample. Black females were more likely to enter DEP than black males. The percentage of blacks decreased from 11.95 percent to 6.69 percent between fiscal years 2000 and 2005. Furthermore, there were sudden decreases in the representation of other races after fiscal year 2003; however, this might be because of the increase in recruits who declined to list their race.

Table 14.   Distribution of High School Seniors in USMC DEP By Race, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
BLACK	1,879	2,270	1,854	1,389	1,321	986	9,699
%	11.43	11.59	9.36	6.76	6.63	6.24	8.65
DECLINE	1,368	1,466	1,210	5,248	5,872	4,165	19,329
%	8.32	7.48	6.11	25.56	29.47	26.34	17.24
OTHER	561	709	662	479	479	358	3,248
%	3.41	3.62	3.34	2.33	2.40	2.26	2.90
WHITE	12,627	15,149	16,077	13,419	12,256	10,303	79,831
%	76.83	77.31	81.18	65.35	61.50	65.16	71.21
Total	16,435	19,594	19,803	20,535	19,928	15,812	112,107
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
BLACK	215	274	215	133	186	168	1,191
%	19.67	18.45	14.31	8.60	11.86	11.69	13.80
DECLINE	104	122	132	401	457	388	1,604
%	9.52	8.22	8.79	25.92	29.15	27.00	18.58
OTHER	35	62	63	44	45	47	296
%	3.20	4.18	4.19	2.84	2.87	3.27	3.43
WHITE	739	1,027	1,092	969	880	834	5,541
%	67.61	69.16	72.70	62.64	56.12	58.04	64.19
Total	1,093	1,485	1,502	1,547	1,568	1,437	8,632
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
BLACK	2,094	2,544	2,069	1,522	1,507	1,154	10,890
%	11.95	12.07	9.71	6.89	7.01	6.69	9.02
DECLINE	1,472	1,588	1,342	5,649	6,329	4,553	20,933
%	8.40	7.53	6.30	25.58	29.44	26.40	17.34
OTHER	596	771	725	523	524	405	3,544
%	3.40	3.66	3.40	2.37	2.44	2.35	2.94
WHITE	13,366	16,176	17,169	14,388	13,136	11,137	85,372
%	76.26	76.74	80.59	65.16	61.11	64.57	70.71
Total	17,528	21,079	21,305	22,082	21,496	17,249	120,739
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 15 shows the distribution of high school seniors in the DEP by dependent status, fiscal year and gender. High school seniors with dependents represent only 0.59 percent of the high school senior data. The percentage of both male and female recruits with dependents began to decrease in fiscal year 2001. Overall, there was a noticeable decrease in the percentage of recruits who had no dependents. Again, this might be because of the decrease in married high school seniors.

Table 15.   Distribution of High School Seniors in USMC DEP By Dependent Status, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
DEPEND	231	159	42	61	71	99	663
%	1.41	0.81	0.21	0.30	0.36	0.63	0.59
NODEPEND	16,204	19,435	19,761	20,474	19,857	15,713	111,444
%	98.59	99.19	99.79	99.70	99.64	99.37	99.41
Total	16,435	19,594	19,803	20,535	19,928	15,812	112,107
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
DEPEND	27	14	2	2	3	2	50
%	2.47	0.94	0.13	0.13	0.19	0.14	0.58
NODEPEND	1,066	1,471	1,500	1,545	1,565	1,435	8,582
%	97.53	99.06	99.87	99.87	99.81	99.86	99.42
Total	1,093	1,485	1,502	1,547	1,568	1,437	8,632
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
DEPEND	258	173	44	63	74	101	713
%	1.47	0.82	0.21	0.29	0.34	0.59	0.59
NODEPEND	17,270	20,906	21,261	22,019	21,422	17,148	120,026
%	98.53	99.18	99.79	99.71	99.66	99.41	99.41
Total	17,528	21,079	21,305	22,082	21,496	17,249	120,739
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 16 shows the distribution of high school seniors by age, fiscal year and gender. Most of the high school seniors who participated in DEP were 17 or 18 years old. Young females were more likely to join the DEP than young males. Moreover, the percentage of young high school senior recruits decreased from 79.98 percent to 74.98 percent between fiscal year 2000 and fiscal year 2005.

Table 16.   Distribution of High School Seniors in USMC DEP By Age, Fiscal Year, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
AGE_1718	13,096	15,151	15,188	15,928	15,348	11,774	86,485
%	79.68	77.32	76.70	77.57	77.02	74.46	77.15
AGE_19UP	3,339	4,443	4,615	4,607	4,580	4,038	25,622
%	20.32	22.68	23.30	22.43	22.98	25.54	22.85
Total	16,435	19,594	19,803	20,535	19,928	15,812	112,107
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
AGE_1718	923	1,259	1,251	1,272	1,296	1,160	7,161
%	84.45	84.78	83.29	82.22	82.65	80.72	82.96
AGE_19UP	170	226	251	275	272	277	1,471
%	15.55	15.22	16.71	17.78	17.35	19.28	17.04

Total	1,093	1,485	1,502	1,547	1,568	1,437	8,632
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
AGE_1718	14,019	16,410	16,439	17,200	16,644	12,934	93,646
%	79.98	77.85	77.16	77.89	77.43	74.98	77.56
AGE_19UP	3,509	4,669	4,866	4,882	4,852	4,315	27,093
%	20.02	22.15	22.84	22.11	22.57	25.02	22.44
Total	17,528	21,079	21,305	22,082	21,496	17,249	120,739
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 17 shows the distribution of high school seniors by fiscal year, DEP status and gender. Between fiscal years 2000 and 2005, out of 120,739 high school senior recruits, 29,418 (24.36 percent of the sample) never went to basic training. Female high school seniors were more likely to drop out of DEP than male high school seniors. There was a sudden increase in the DEP attrition rate beginning in 2001 and this increase continued until fiscal year 2005.

Table 17.   Distribution of High School Seniors in USMC DEP By Fiscal Year, DEP Status, and Gender

FY	2000	2001	2002	2003	2004	2005	Total
MALE							
SHIPPED	13,530	14,939	15,085	15,726	14,893	11,744	85,917
%	82.32	76.24	76.18	76.58	74.73	74.27	76.64
DROP OUT	2,905	4,655	4,718	4,809	5,035	4,068	26,190
%	17.68	23.76	23.82	23.42	25.27	25.73	23.36
Total	16,435	19,594	19,803	20,535	19,928	15,812	112,107
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FEMALE							
SHIPPED	748	923	939	1,005	948	841	5,404
%	68.44	62.15	62.52	64.96	60.46	58.52	62.60
DROP OUT	345	562	563	542	620	596	3,228
%	31.56	37.85	37.48	35.04	39.54	41.48	37.40
Total	1,093	1,485	1,502	1,547	1,568	1,437	8,632
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00
ALL							
SHIPPED	14,278	15,862	16,024	16,731	15,841	12,585	91,321
%	81.46	75.25	75.21	75.77	73.69	72.96	75.64
DROP OUT	3,250	5,217	5,281	5,351	5,655	4,664	29,418
%	18.54	24.75	24.79	24.23	26.31	27.04	24.36
Total	17,528	21,079	21,305	22,082	21,496	17,249	120,739
%	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 18 summarizes the distribution of high school seniors by marital status, DEP status and gender. As expected, married and male recruits were more likely to ship to basic training. On the other hand, recruits who were female and married showed lower attrition rates than recruits who were single and male.

Table 18.   Distribution of High School Seniors in USMC DEP By Marital Status, DEP Status, and Gender

GENDER	FEMALE	MALE	Total
MARRIED			
SHIPPED	101	829	930
%	77.10	85.38	84.39
DROP OUT	30	142	172
%	22.90	14.62	15.61
Total	131	971	1,102
%	100.00	100.00	100.00
SINGLE			
SHIPPED	5,303	85,088	90,391
%	62.38	76.56	75.55
DROP OUT	3,198	26,048	29,246
%	37.62	23.44	24.45
Total	8,501	111,136	119,637
%	100.00	100.00	100.00
ALL			
SHIPPED	5,404	85,917	91,321
%	62.60	76.64	75.64
DROP OUT	3,228	26,190	29,418
%	37.40	23.36	24.36
Total	8,632	112,107	120,739
%	100.00	100.00	100.00

The data in Table 19 gives us information about the distribution of high school seniors by gender, DEP status and race. Female recruits were more likely to leave the DEP. Black recruits who are male or female had the highest attrition rates in the pool.

Table 19.   Distribution of High School Seniors in USMC DEP By Gender, DEP Status, and Race

RACE	BLACK	DECLINE	OTHER	WHITE	Total
MALE					
SHIPPED	6,960	14,817	2,546	61,594	85,917
%	71.76	76.66	78.39	77.16	76.64
DROP OUT	2,739	4,512	702	18,237	26,190
%	28.24	23.34	21.61	22.84	23.36
Total	9,699	19,329	3,248	79,831	112,107
%	100.00	100.00	100.00	100.00	100.00
FEMALE					
SHIPPED	725	996	209	3,474	5,404

%	60.87	62.09	70.61	62.70	62.60
DROP OUT	466	608	87	2,067	3,228
%	39.13	37.91	29.39	37.30	37.40
Total	1,191	1,604	296	5,541	8,632
%	100.00	100.00	100.00	100.00	100.00
ALL					
SHIPPED	7,685	15,813	2,755	65,068	91,321
%	70.57	75.54	77.74	76.22	75.64
DROP OUT	3,205	5,120	789	20,304	29,418
%	29.43	24.46	22.26	23.78	24.36
Total	10,890	20,933	3,544	85,372	120,739
%	100.00	100.00	100.00	100.00	100.00

3. Summary

Married recruits represented a small percentage of the DEP pool among high school graduates and high school seniors. Married females were more likely to enter DEP than married males. In general, there was a decrease in the married recruit percentage and also in the black recruit percentage among both high school graduates and high school seniors from fiscal year 2000 to 2005. The population of recruits with dependents was very small. However, with data on hand, we can say that recruits with dependents had lower attrition rates than recruits without dependents. Moreover, there was a decrease in the proportion of recruits who had dependents.

As expected, high school seniors were predominantly young recruits; however, high school graduates were mostly older. Together, the percentage of younger recruits (ages 17 and 18) for both high school graduates and high school seniors decreased from fiscal year 2000 to 2005. High school graduates who were black males and white females increased their attrition rates; however, being a black high school graduate female decreased the probability of dropping out of DEP. Black high school seniors showed high attrition rates whether they were male or female.

D. DISCHARGE CODES

1. High School Graduates

Table 20 shows the discharge codes (reasons why recruits are leaving the DEP) by gender. For high school graduates, the highest probability of DEP attrition is found to be for the reason "Refused to enlist" (28.02 % for males and 36.33% for females). For male recruits, the other important reasons for leaving were "Positive drug test" (19.62%) and "Apathy/Personal Problem" (18.29%). "Apathy/Personal Problem" (21.07%) and

"pregnancy" (8.64%) were the two main reasons female high school recruits left the Marine Corps DEP between fiscal years 2000 and 2005. Overall, "Refused to enlist" (29.02%), "Apathy/Personal Problem" (18.62%) and "Positive drug test" (17.93%) were the three main reasons for leaving the DEP for high school graduates.

Table 20.   Percentage Distribution of High School Graduate DEP Participants by Discharge Code and Gender

Code	Percent		
	MALE	FEMALE	TOTAL
Apathy/Personal Problem	18.29	21.07	18.62
Concealment of prior service	0.07	-	0.06
DAT positive	19.62	5.46	17.93
Death	0.26	0.27	0.26
Dependency Disqualification	0.26	0.40	0.25
Didn't report on date scheduled for active duty	3.75	3.94	3.78
Enlisted in other Service	0.04	0.04	0.04
Enlistment misunderstanding	0.12	0.22	0.13
Marriage	0.03	0.22	0.05
Medical Disqualification (EPTS)	4.19	3.98	4.17
Médical Disqualification (Non-EPTS)	7.09	7.92	7.19
Moral Disqualification (EPTS)	5.09	1.16	4.62
Moral Disqualification (Non-EPTS)	5.96	2.19	5.51
No longer qualified for option and decl	0.13	0.09	0.13
Other reasons	4.44	4.74	4.48
Personal Hardship	0.61	0.76	0.63
Pregnancy	-	8.64	1.03
Pursuit of higher education	1.63	2.37	1.72
Refused to enlist	28.02	36.33	29.02
Religious training	0.12	-	0.11
Temporarily disqualified	0.30	0.18	0.28
Total	100.00	100.00	100.00

Table 21 shows the pattern of discharge codes by time spent in DEP. It is interesting that discharge code "Positive drug test" was the biggest reason for the attrition of recruits who spent two or fewer months in DEP. It should be noted that the Marine Corps signs enlistment contracts with recruits before medical test results are examined. When test results become available and they are positive, all those recruits are removed from DEP. The author believes that, since drug users are in DEP for a short time because of the policy of medical testing in the Marine Corps, they may affect the nature of DEP characteristics.

The other codes "Refused to enlist" and "Apathy/Personal Problem" showed an increasing pattern with DEP time. This increase is parallel with the literature. As time spent in DEP increases, recruits can search for new job opportunities outside the military or they can be negatively affected by their friends or parents while they are still in DEP.

Table 21.   Percentage Distribution of High School Graduate DEP Participants by Discharge Code, and Time Spent in DEP

Code	Time Spent In DEP (Month)											
	1	2	3	4	5	6	7	8	9	10	11	12
Apathy/Personal Problem	1.19	3.68	12.53	17.02	18.14	21.93	23.76	24.3	29.15	28.74	29.02	26.21
Concealment of prior service	0.08	0.12	0.09	0	0.14	0.07	0	0.22	0	0	0.07	0
DAT positive	86.87	57.51	7.5	1.85	1	0.79	0.48	0.59	0.23	0.15	0.72	0.24
Death	0.32	0.58	0.82	0.3	0.21	0.66	0.14	0.07	0	0	0	0.05
Dependency Disqua.	0.04	0.12	0.55	0.59	0.21	0.26	0.14	0.3	0.47	0.3	0.26	0.14
Didn't report on date Scheduled for active duty	0.28	1.21	3.84	4.37	3.57	4.66	5.17	6.06	4.42	5.44	4.84	4.49
Enlisted in other Service	0	0.06	0	0.07	0.14	0	0.27	0	0	0	0	0
Enlistment misunderst	0.08	0.06	0.18	0.07	0.29	0.2	0.07	0.37	0.16	0	0.13	0.1
Marriage	0	0	0	0.07	0.07	0	0.2	0	0.16	0	0.07	0.1
Medical Disqua.(EPTS)	0.95	4.89	5.03	5.4	5.86	4.14	4.56	4.73	4.34	4.84	3.59	4.3
Medical Disqua.(Non-E	0.6	3.28	6.86	8.44	9.07	7.35	8.65	8.49	9.38	8.86	10.39	9.69
Moral Disqua. (EPTS)	3.34	7.31	11.71	7.11	6.93	4.79	4.02	3.4	2.95	2.76	2.35	2.05
Moral Disqua. (Non-EP	1.79	3.97	7.5	7.7	6.21	7.49	6.13	6.57	7.21	5.73	4.84	5.06
No longer qualified	0	0.12	0.09	0.07	0.14	0.07	0.14	0.07	0	0.37	0.26	0.24
Other reasons	1.71	2.76	5.58	4.44	6	4.73	5.72	6.28	5.27	5.14	3.99	4.87
Personal Hardship	0.16	0.35	0.73	0.44	0.5	0.53	1.02	0.74	1.16	0.97	0.65	0.72
Pregnancy	0.04	0.75	1.65	2.37	2	2.04	1.23	0.74	0.78	1.04	0.26	0.67
Pursuit of higher education	0.16	0.35	1.65	1.78	1.29	2.3	2.38	2.44	2.17	2.53	2.94	2
Refused to enlist	2.39	12.84	33.58	37.45	38.07	37.69	35.6	33.97	31.63	32.09	35.03	38.42
Religious training	0	0	0.09	0.15	0	0.13	0	0.3	0.16	0.37	0.13	0.1
Temporarily disqua.	0	0.06	0	0.3	0.14	0.2	0.34	0.37	0.39	0.67	0.46	0.57
Total	100	100	100	100	100	100	100	100	100	100	100	100

2.   High School Seniors

Table 22 shows the discharge codes by gender for high school seniors. For this group, the most common reason for DEP attrition is "Refused to enlist" (27.39 % for males and 31.54% for females). For male recruits, the other important reasons were "Apathy/Personal Problem" (18.66%) and "Failure to graduate from high school" (13.96%). "Apathy/Personal Problem" (20.17%) and "pregnancy" (11.06%) were the

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two main reasons why female high school recruits left the Marine Corps DEP. Overall, "Refused to enlist" (27.84%), "Apathy/Personal Problem" (18.83%) and "Failure to graduate from high school" (13.29%) were the three main reasons for leaving the DEP for high school seniors.

Table 22.   Distribution of High School Senior DEP Participants by Discharge Code

Codes	Male	Female	Total
Apathy/Personal Problem	18.66	20.17	18.83
Concealment of prior service	0.02	0.06	0.02
DAT positive	8.26	1.83	7.55
Death	0.36	0.06	0.33
Dependency Disqua.	0.07	0.12	0.07
Didn't report on date scheduled for act	2.66	2.63	2.66
Enlisted in other Service rec.error	0.11	0.06	0.11
Enlistment misunderstanding	0.07	0.15	0.08
Failure to graduate from high school	13.96	7.87	13.29
Marriage	0.01	0.22	0.03
Medical Disqua.(EPTS)	3.00	3.50	3.05
Medical Disqua.(Non-EPTS)	7.08	8.49	7.23
Moral Disqua. (EPTS)	2.83	0.74	2.60
Moral Disqua. (Non-EPTS)	5.82	2.01	5.40
No longer qualified for option and decl	0.13	0.12	0.13
Other reason	5.11	4.62	5.05
Personal Hardship	0.47	0.50	0.47
Pregnancy	-	11.06	1.21
Pursuit of higher education	3.67	3.90	3.70
Refused to enlist	27.39	31.54	27.84
Religious training	0.08	0.06	0.08
Temporarily disqualified	0.24	0.28	0.24
Total	100.00	100.00	100.00

Table 23 shows the pattern of discharge codes of high school seniors during time spent in DEP. As with the high school graduates, the attrition pattern for high school seniors reflected the effect of drug use on attrition in the first few months of DEP. The other important codes for leaving the DEP were: "Apathy/personal problems," "Failure to graduate from high school," and "Refused to enlist." These showed an increase with increasing DEP time.

Table 23.   Percentage Distribution of High School Senior DEP Participants by Discharge Code, and Time Spent in DEP

Code	Time Spent In DEP (Month)											
	1	2	3	4	5	6	7	8	9	10	11	12
Apathy/Personal Probl	1.4	2.6	10.36	14.49	18.88	16.98	19.41	19.04	20.38	22.99	23.59	19.69
Concealment of prior	0.06	0	0	0	0	0	0.06	0.05	0.04	0	0	0.02
DAT positive	90.71	72.46	12.04	4.29	1.67	1.13	0.3	0.43	0.32	0.31	0.28	0.14
Death	0.83	1.24	3.36	1.43	1.08	0.81	0.48	0.29	0.36	0.15	0.04	0.03
Dependency Disqua.	0	0.11	0.84	0	0.12	0	0.06	0.1	0.16	0.06	0.04	0.06
Didn't report on date	0.06	1.02	1.96	2.33	2.15	2.99	3.23	3.1	3.04	2.88	2.65	2.91
Enlisted in other Ser	0	0	0.28	0	0	0.4	0.36	0.05	0.08	0.15	0.11	0.06
Enlistment misunderst	0.06	0.23	0.28	0	0.12	0.08	0	0.19	0.04	0.03	0.09	0.08
Failure to graduate	0.25	1.47	6.72	12.88	8.48	11.56	12.96	14.89	13.82	15.05	14.22	15.91
Marriage	0	0	0	0.18	0.12	0.08	0	0	0.04	0.09	0	0.02
Medical Disqua.(EPTS)	0.45	1.58	4.2	4.11	4.54	3.07	4.84	3.29	3.24	3.16	2.69	3.1
Medical Disqua.(Non-E	0.13	1.58	4.48	6.62	6.33	7.11	6.09	7.63	7.19	7.42	7.98	8.81
Moral Disqua. (EPTS)	1.4	6.66	10.92	5.55	3.35	3.07	3.76	2.67	2.33	2.33	2.09	2.02
Moral Disqua. (Non-EP	0.89	3.16	8.4	8.59	7.05	6.14	5.68	6.82	6.04	5.55	5.23	5.33
No longer qualified f	0	0.11	0	0	0	0.16	0.18	0.1	0.08	0.28	0.15	0.12
Other reason	2.23	2.26	6.16	5.9	4.06	5.74	5.5	4.39	5.61	4.66	3.89	6.28
Personal Hardship	0	0.23	0	0.18	0.96	0.81	0.78	0.81	0.59	0.4	0.39	0.43
Pregnancy	0	0.34	1.96	3.04	3.23	2.67	2.03	2.29	1.11	1.23	1.31	0.6
Pursuit of higher edu	0.13	0.23	1.96	3.22	4.9	5.17	4.84	3.82	5.02	4.2	4.35	3.35
Refused to enlist	1.4	4.63	26.05	27.19	32.74	31.93	29.15	29.87	30.21	28.79	30.51	30.53
Religious training	0	0	0	0	0	0	0.18	0.05	0.12	0.12	0.09	0.08
Temporarily disqualif	0	0.11	0	0	0.24	0.08	0.12	0.14	0.2	0.15	0.3	0.4
Total	100	100	100	100	100	100	100	100	100	100	100	100

3.   Summary

For both male and female recruits, whether they were graduates or seniors, "Apathy/Personal problem" and "Refused to enlist" were two main reasons why recruits dropped out of DEP between fiscal year 2000 and fiscal year 2005. "Pregnancy" was one of the major reasons for DEP attrition for female recruits. For male high school graduates "Positive drug test" and for male high school seniors "Failure to graduate" were major reasons for DEP attrition.

Another interesting reason for leaving was "Positive drug test." While other reasons showed a parallel increase with time spent in DEP, drug users generally had one or two months in DEP, then they dropped out of DEP because of positive drug test results.

Figure 6 shows the attrition rates in relation to time spent in DEP. Drug users are not included in this figure. As was noted in the literature review, attrition rates increase as DEP time is increases.
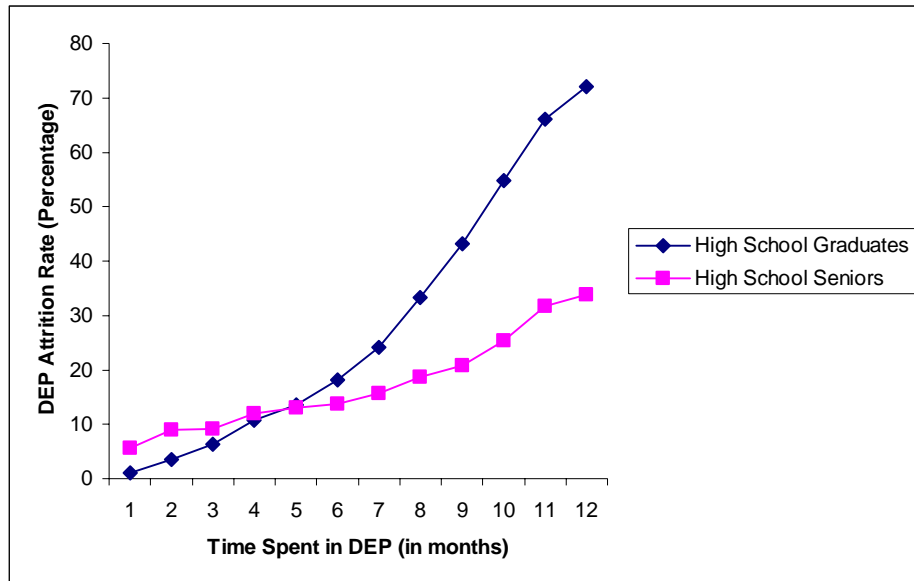
Figure 5.   DEP Attrition Rates By DEP Time (Without Drug Users)

E.   METHODOLOGY

A recruit who enters the Delayed Entry Program has only two options: drop out of the Delayed Entry Program or ship to boot camp. Since there are only two options, a binary dependent variable (DEP Discharge), which is an example of a limited dependent variable, is chosen. A limited dependent variable is defined as a dependent variable whose range of values is substantively restricted.[45] In this study, DEP Discharge, which is the binary dependent variable in the models, takes on only two values, zero or one.

$Y_i = 0$, if the recruit "i" goes to boot camp

$Y_i = 1$, if the recruit "i" leaves the DEP

The Linear Probability Model, Logit Model and Probit Model are appropriate for models that require binary dependent variables. However, the Linear Probability Model

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[45] Jeffrey M. Wooldridge, *Introductory Econometrics*, Third ed. (USA: Thomson South-Western, 2006), 582.

has certain drawbacks for a binary response. The two most important disadvantages are that the fitted probabilities can be less than zero or greater than one and the partial effect of any explanatory variable is constant. These limitations of the Linear Probability Model can be overcome by using Logit or Probit Models.[46] For this study the Logit Model was selected.

The logistic regression model in this study uses maximum-likelihood techniques to predict the probability of attrition of high school graduates and high school seniors.

In the binary response model, the response probability is:

$P(y=1|x) = P(y=1|x_1, x_2, \ldots \ldots x_k)$ where x is the full set of explanatory variables

$P(y=1|x) = G(\beta_0 + \beta_1 x_1 + \ldots \ldots + \beta_k x_k)$ where G is a function taking on values strictly between zero and one: $0 < G(z) < 1$, for all real numbers z.

In the logit model, G is the logistic function:

$G(z) = \exp(z)/[1+\exp(z)]$

The partial derivatives or the slopes of the x variables can be calculated as follows:

$\partial p(x)/ \partial x_j = g(\beta_0 + \beta_1 x_1 + \ldots \ldots + \beta_k x_k) \beta_j$, where $g(z) = dG/dz$

In the logit case, $g(z) = \exp(z)/[1+\exp(z)]^2$ [47]

Figure 5 is the graph of the logistic function $G(z) = \exp(z)/[1+\exp(z)]$. It approaches zero at the lower end and one at the upper end of the probabilities.

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[46] Jeffrey M. Wooldridge, *Introductory Econometrics*, Third ed. (USA: Thomson South-Western, 2006), 583.

[47] Ibid., 585.
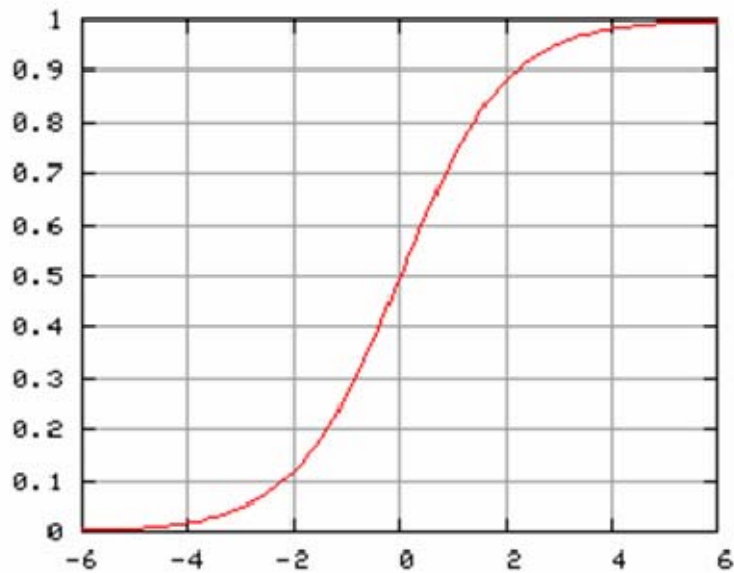
Figure 6.   Example of a logistic curve

F.   RESTRICTIONS

This study is limited to high school seniors and high school graduates. Since the data sets did not include observations for non-high school graduates and recruits who were waivers, they were not included in the study. Because there was no information about where the recruits lived (ZIP codes), the unemployment rates of the Metropolitan Statistical Areas (where recruits' Marine Corps Recruiting Stations are located) were used to examine the effects of economic conditions.

IV. MODEL ESTIMATION

A. MODELS

To understand which personal background characteristics influence recruits to leave the Delayed Entry Program and to determine if there are differences in the effect of personal background characteristics on USMC DEP attrition between high school graduates and high school seniors, a binary DEP attrition variable (DEPDISCH) was regressed on explanatory variables that were selected based upon previous studies.

Initially two regression models were planned: one for high school graduates and one for high school seniors. However, as discussed in the third chapter, drug users were found to show a different pattern of behavior in DEP for both groups. Because of this, two additional regression models that excluded drug users were added to the study. Four models were estimated separately: (1) A high school graduates model, (2) A high school graduates model that excludes drug users, (3) A high school senior model and (4) A high school seniors model that excludes drug users.

Table 24.   Descriptions of Regression Models

Model	Description
1	High school graduates
2	Non-drug user high school graduates
3	High school seniors
4	Non-drug user high school seniors

B. MODEL SPECIFICATION

For all models, the same theoretical regression model was specified and estimated. The binary discharge variable (DEPDISCH) was regressed on fiscal years (FY00, FY01, FY02, FY03, FY04, and FY05), Marine Corps' District Commands (MCD1, MCD4, MCD6, MCD8, MCD9 and MCD12), time spent in DEP (DPMNTH1 DPMNTH2 DPMNTH3 DPMNTH4 DPMNTH5 DPMNTH6 DPMNTH7 DPMNTH8

DPMNTH9 DPMNTH10 DPMNTH11 DPMNTH12), AFQT score (AFQT_1 AFQT_2 AFQT_3A AFQT_3B), race (WHITE BLACK DECLINE OTHER), separation month (JAN FEB MAR APR MAY JUNE JUL AUG SEPT OCT NOV DEC), gender (MALE, FEMALE), age (AGE_CONT), component (RES, REG), marital status (SINGLE, MARRIED), dependent status (DEPEND, NODEPEND), day of enlistment (WEEK_123, WEEK_4, L_DAY), unemployment rate (UNEMPLY).

The specification of the general model is:

$$
\begin{aligned}
DEPDISCH = {} & \beta_0 + \beta_1(FY01) + \beta_2(FY02) + \beta_3(FY03) + \beta_4(FY04) + \\
& \beta_5(FY05) + \beta_6(MCD4) + \beta_7(MCD6) + \beta_8(MCD8) + \\
& \beta_9(MCD9) + \beta_{10}(MCD12) + \beta_{11}(DPMNTH2) + \\
& \beta_{12}(DPMNTH3) + \beta_{13}(DPMNTH4) + \beta_{14}(DPMNTH5) + \\
& \beta_{15}(DPMNTH6) + \beta_{16}(DPMNTH7) + \beta_{17}(DPMNTH8) + \\
& \beta_{18}(DPMNTH9) + \beta_{19}(DPMNTH10) + \beta_{20}(DPMNTH11) + \\
& \beta_{21}(DPMNTH12) + \beta_{22}(AFQT\_2) + \beta_{23}(AFQT\_3A) + \\
& \beta_{24}(AFQT\_3B) + \beta_{25}(BLACK) + \beta_{26}(DECLINE) + \\
& \beta_{27}(OTHER) + \beta_{28}(FEB) + \beta_{29}(MAR) + \beta_{30}(APR) + \\
& \beta_{31}(MAY) + \beta_{32}(JUNE) + \beta_{33}(JUL) + \beta_{34}(AUG) + \\
& \beta_{35}(SEPT) + \beta_{36}(OCT) + \beta_{37}(NOV) + \beta_{38}(DEC) + \\
& \beta_{39}(AGE\_CONT) + \beta_{40}(REG) + \beta_{41}(MARRY) + \\
& \beta_{42}(DEPEND) + \beta_{43}(FEMALE) + \beta_{44}(WEEK\_4) + \\
& \beta_{45}(L\_DAY) + \beta_{46}(UNEMPLY)
\end{aligned}
$$

C.   VARIABLES

1.   Definitions

Table 25 shows the descriptions of the variables used in the model. These variables were selected based on previous studies. The variables are categorical except for the unemployment rate and age at the time of entrance into the DEP.

Table 25.   Description of the variables

VARIABLES	DESCRIPTIONS
Attrition	
DEPDISCH	= 1 if discharged from DEP, = 0 if otherwise
Enlistment Year	
FY00	=1 if entered DEP in fiscal year 2000, =0 if otherwise (Base)
FY01	=1 if entered DEP in fiscal year 2001, =0 if otherwise
FY02	=1 if entered DEP in fiscal year 2002, =0 if otherwise
FY03	=1 if entered DEP in fiscal year 2003, =0 if otherwise
FY04	=1 if entered DEP in fiscal year 2004, =0 if otherwise
FY05	=1 if entered DEP in fiscal year 2005, =0 if otherwise
Command	
MCD1	=1 if enlisted by MCD1, =0 if otherwise (Base)
MCD4	=1 if enlisted by MCD4, =0 if otherwise
MCD6	=1 if enlisted by MCD6, =0 if otherwise
MCD8	=1 if enlisted by MCD8, =0 if otherwise
MCD9	=1 if enlisted by MCD9, =0 if otherwise
MCD12	=1 if enlisted by MCD12, =0 if otherwise
Time in DEP	
DPMNTH1	=1 if recruit spent one month in DEP, =0 if otherwise (Base)
DPMNTH 2	=1 if recruit spent two months in DEP, =0 if otherwise
DPMNTH 3	=1 if recruit spent three months in DEP, =0 if otherwise
DPMNTH 4	=1 if recruit spent four months in DEP, =0 if otherwise
DPMNTH 5	=1 if recruit spent five months in DEP, =0 if otherwise
DPMNTH 6	=1 if recruit spent six months in DEP, =0 if otherwise
DPMNTH 7	=1 if recruit spent seven months in DEP, =0 if otherwise
DPMNTH 8	=1 if recruit spent eight months in DEP, =0 if otherwise
DPMNTH 9	=1 if recruit spent nine months in DEP, =0 if otherwise
DPMNTH 10	=1 if recruit spent ten months in DEP, =0 if otherwise
DPMNTH 11	=1 if recruit spent eleven months in DEP, =0 if otherwise
DPMNTH 12	=1 if recruit spent twelve months in DEP, =0 if otherwise

Gender	
MALE	=1 if recruit was male, =0 otherwise (Base)
FEMALE	=1 if recruit was female, =0 otherwise
Component	
RES	=1 if recruit was recruited for reserve component, =0 otherwise (Base)
REG	=1 if recruit was recruited for regular component, =0 otherwise
Age	
AGE_CONT	Recruit's age at the time of DEP entry
AFQT Score	
AFQT_1	=1 if recruit's AFQT was over 92, =0 otherwise (Base)
AFQT_2	=1 if recruit's AFQT was between 65-92, =0 otherwise
AFQT_3A	=1 if recruit's AFQT was between 50-64, =0 otherwise
AFQT_3B	=1 if recruit's AFQT was between 31-49, =0 otherwise
Race	
WHITE	=1 if recruit was white, =0 otherwise (Base)
BLACK	= 1 if recruit was black or African American, =0 otherwise
OTHER	=1 if recruit was American Indian or Alaska Native or Asian Or Native Hawaiian or Pacific Islander, =0 otherwise
DECLINE	=1 if recruit declined to respond his/her race, =0 otherwise
Separation Month	
JAN	=1 if recruits separated from DEP in January, =0 otherwise (Base)
FEB	=1 if recruits separated from DEP in February, =0 otherwise
MAR	=1 if recruits separated from DEP in March, =0 otherwise
APR	=1 if recruits separated from DEP in April, =0 otherwise
MAY	=1 if recruits separated from DEP in May, =0 otherwise
JUNE	=1 if recruits separated from DEP in June, =0 otherwise
JUL	=1 if recruits separated from DEP in July, =0 otherwise
AUG	=1 if recruits separated from DEP in August, =0 otherwise
SEPT	=1 if recruits separated from DEP in September, =0 otherwise

OCT	=1 if recruits separated from DEP in October, =0 otherwise
NOV	=1 if recruits separated from DEP in November, =0 otherwise
DEC	=1 if recruits separated from DEP in December, =0 otherwise
Marital Status	
SINGLE	= 1 if recruit was single, =0 otherwise (Base)
MARRY	= 1 if recruit was married, =0 otherwise
Dependent	
NODEPEND	= 1 if recruit had no dependents, =0 otherwise (Base)
DEPEND	= 1 if recruit had dependents, =0 otherwise
Time of Enlistment	
WEEK_123	=1 if recruit was enlisted in the first three weeks of the month, =0 otherwise (Base)
WEEK_4	=1 if recruit was enlisted in last week minus the last day of the month, =0 otherwise
L_DAY	=1 if recruit was enlisted on the last day of the month, =0 otherwise
Unemployment rate	
UNEMPLY	The unemployment rate at the time of separation from DEP

2.   Descriptive Statistics

a.   *High School Graduates (Model 1)*

Table 26 shows the descriptive statistics for variables used for the High School Graduates Model (Model 1). An average high school graduate recruit was 20.36 years old. The youngest high school graduate recruit was 17 years old; the oldest one was 35 years old. Between fiscal year 2000 and fiscal year 2005, the minimum unemployment rate was 2.1 percent and the highest unemployment rate was 8.3 percent. The average unemployment rate was 4.99 percent.

Table 26.   Descriptive Statistics for Model 1: All High School Graduates

Variable	% of Total or Mean
FY00	0.111
FY01	0.180
FY02	0.193
FY03	0.189
FY04	0.169
FY05	0.157
MCD1	0.173
MCD4	0.158
MCD6	0.169
MCD8	0.170
MCD9	0.148
MCD12	0.183
DPMNTH1	0.263
DPMNTH2	0.182
DPMNTH3	0.132
DPMNTH4	0.101
DPMNTH5	0.083
DPMNTH6	0.069
DPMNTH7	0.050
DPMNTH8	0.033
DPMNTH9	0.024
DPMNTH10	0.020
DPMNTH11	0.019
DPMNTH12	0.024
AFQT_1	0.064
AFQT_2	0.387
AFQT_3A	0.252
AFQT_3B	0.298
WHITE	0.707
BLACK	0.088
DECLINE	0.174
OTHER	0.031
JAN	0.128
FEB	0.077
MAR	0.081
APR	0.076
MAY	0.094
JUNE	0.060
JUL	0.057
AUG	0.067
SEPT	0.083
OCT	0.101
NOV	0.091

DEC	0.086
MALE	0.919
FEMALE	0.081
AGE_CONT (Years)	20.362
RES	0.207
REG	0.793
SINGLE	0.953
MARRY	0.047
NODEPEND	0.975
DEPEND	0.025
WEEK_123	0.720
WEEK_4	0.201
L_DAY	0.079
UNEMPLY (Rate)	4.999
N=122,089	

b.   *High School Graduates without Drug Users (Model 2)*

The high school graduate data included 3,352 observations whose medical exam results showed a "Positive Drug Test." These drug users were excluded in Model 2 and 118,737 observations remained. Descriptive Statistics for Model 2 are displayed in Table 27. The descriptive statistics are similar to those for Model 1. An average high school graduate recruit was 20.35 years old. The youngest high school graduate recruit was 17 years old; the oldest was 35 years old. Between fiscal year 2000 and fiscal year 2005, the minimum unemployment rate was 2.1 percent and the highest unemployment rate was 8.3 percent. The average unemployment rate was 5 percent.

Table 27.   Descriptive Statistics for Model 2: High School Graduates without Drug Users

Variable	% of Total or Mean
FY00	0.109
FY01	0.180
FY02	0.194
FY03	0.190
FY04	0.170
FY05	0.157
MCD1	0.172
MCD4	0.157
MCD6	0.168
MCD8	0.171
MCD9	0.148
MCD12	0.184
DPMNTH1	0.252
DPMNTH2	0.179

DPMNTH3	0.135
DPMNTH4	0.104
DPMNTH5	0.086
DPMNTH6	0.070
DPMNTH7	0.051
DPMNTH8	0.034
DPMNTH9	0.025
DPMNTH10	0.021
DPMNTH11	0.019
DPMNTH12	0.024
AFQT_1	0.065
AFQT_2	0.388
AFQT_3A	0.251
AFQT_3B	0.296
WHITE	0.707
BLACK	0.087
DECLINE	0.174
OTHER	0.032
JAN	0.130
FEB	0.076
MAR	0.081
APR	0.075
MAY	0.095
JUNE	0.059
JUL	0.056
AUG	0.066
SEPT	0.083
OCT	0.102
NOV	0.091
DEC	0.086
MALE	0.918
FEMALE	0.082
AGE_CONT (Years)	20.358
RES	0.209
REG	0.791
SINGLE	0.952
MARRY	0.048
NODEPEND	0.974
DEPEND	0.026
WEEK_123	0.721
WEEK_4	0.200
L_DAY	0.078
UNEMPLY (Rate)	5.000
N=118,737	

c. High School Seniors (Model 3)

Table 28 shows the descriptive statistics for high school seniors. As expected, high school seniors are younger than high school graduates. An average high school senior recruit was 17.99 years old. The youngest high school senior recruit was 17 years old, and the oldest was 24 years old. The average unemployment rate was 4.97 percent.

Table 28. Descriptive Statistics for Model 3: All High School Seniors

Variable	% of Total or Mean
FY00	0.145
FY01	0.175
FY02	0.176
FY03	0.183
FY04	0.178
FY05	0.143
MCD1	0.161
MCD4	0.153
MCD6	0.176
MCD8	0.167
MCD9	0.164
MCD12	0.180
DPMNTH1	0.033
DPMNTH2	0.028
DPMNTH3	0.029
DPMNTH4	0.037
DPMNTH5	0.052
DPMNTH6	0.074
DPMNTH7	0.088
DPMNTH8	0.092
DPMNTH9	0.101
DPMNTH10	0.106
DPMNTH11	0.121
DPMNTH12	0.239
AFQT_1	0.033
AFQT_2	0.352
AFQT_3A	0.290
AFQT_3B	0.325
WHITE	0.707
BLACK	0.090
DECLINE	0.173
OTHER	0.029
JAN	0.039
FEB	0.025

MAR	0.021
APR	0.021
MAY	0.048
JUNE	0.205
JUL	0.189
AUG	0.166
SEPT	0.140
OCT	0.074
NOV	0.042
DEC	0.030
MALE	0.929
FEMALE	0.071
AGE_CONT (Year)	17.993
RES	0.117
REG	0.883
SINGLE	0.991
MARRY	0.009
NODEPEND	0.994
DEPEND	0.006
WEEK_123	0.713
WEEK_4	0.207
L_DAY	0.081
UNEMPLY (Rate)	4.973
N=120,739	

d.   *High School Seniors without Drug Users (Model 4)*

The high school seniors' data included 2,222 observations who were drug users. After excluding these drug users, 118,517 recruits remained. Table 29 shows descriptive statistics for high school senior recruits after excluding drug users. Continuous variables (Age and Unemployment rate) showed the same characteristics as in Model 3.

Table 29.   Descriptive Statistics for Model 4: High School Seniors Without Drug Users

Variable	% of Total or Mean
FY00	0.145
FY01	0.175
FY02	0.176
FY03	0.183
FY04	0.178
FY05	0.142
MCD1	0.160
MCD4	0.152

MCD6	0.176
MCD8	0.167
MCD9	0.164
MCD12	0.181
DPMNTH1	0.022
DPMNTH2	0.023
DPMNTH3	0.029
DPMNTH4	0.038
DPMNTH5	0.053
DPMNTH6	0.075
DPMNTH7	0.090
DPMNTH8	0.094
DPMNTH9	0.102
DPMNTH10	0.108
DPMNTH11	0.124
DPMNTH12	0.243
AFQT_1	0.034
AFQT_2	0.354
AFQT_3A	0.289
AFQT_3B	0.323
WHITE	0.707
BLACK	0.090
DECLINE	0.174
OTHER	0.029
JAN	0.039
FEB	0.024
MAR	0.020
APR	0.019
MAY	0.047
JUNE	0.207
JUL	0.191
AUG	0.167
SEPT	0.141
OCT	0.074
NOV	0.042
DEC	0.029
MALE	0.928
FEMALE	0.072
AGE_CONT (Years)	17.987
RES	0.118
REG	0.882
SINGLE	0.991
MARRY	0.009
NODEPEND	0.994
DEPEND	0.006
WEEK_123	0.714

WEEK_4	0.206
L_DAY	0.080
UNEMPLY (Rate)	4.975
N=118,517	

3.   Variables and Hypothesized Relationships

Explanatory variables for this study were selected based on previous DEP attrition studies. The hypothesized signs for the variables are suggested by the literature review.

a.   Fiscal Years

Dummy variables were used to capture the effects of changing unobserved factors on DEP attrition rates for each fiscal year. Between fiscal years 2000 and 2005, many events occurred that might affect attrition rates negatively or positively. Examples of changes include the September 11 attacks, the long lasting operations in Iraq, the global war on terrorism, implementation of "stop-loss" policies, low unemployment rates, and others. It is very difficult to predict the effects of these events on DEP attrition. However, the author believes that, in fiscal year 2001 and 2002, because of the September 11 attacks which caused an increase in patriotism, there might be a decrease in attrition rates relative to fiscal year 2000. However, due to the long lasting operations in Iraq, and the implementation of stop-loss policies, the author expects that there might be an increase in DEP attrition rates between fiscal years 2003 and 2005.

b.   MCRCs

To capture the fixed effects of regional differences on DEP attrition, dummy variables for each recruiting command were used. In chapter 3, the descriptive statistics that are displayed in Table 5 indicate that recruits who were enlisted by eastern recruit commands (MCD 1, MCD 4, and MCD 6) were more likely to be a DEP attrite than the recruits who were enlisted by western recruit commands (MCD 8, MCD 9 and MCD 12). Studies show that there has been an increase in population percentage of new recruits from the West region who may be less likely to change their minds about joining once they have entered the DEP. This shows that recruits from the West region of the country are becoming more likely to join military.[48] The effect of being enlisted by MCD

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[48] Since FY 1996, the percentage of new recruits from the Northeast region has decreased with a corresponding increase in the percentage of recruits from the West region, *Population Representation in the Military Service, Fiscal Year 2004,*(Department Of Defense, 2006), http://www.dod.mil/prhome/poprep2004/download /2004report.pdf/ [Accessed December 12, 2006].

4 and MCD 6 on DEP attrition is unknown when we compare with the notional person who enlisted in MCD 1, since these are all located in the eastern region.

c. Time Spent in DEP

The DEP time variable shows the time spent in DEP in months. An increase in DEP time is expected to increase the probability of dropping out of DEP. Long DEP time means more time for recruits to seek opportunities outside of the military. While they are waiting for shipment, recruits may find a civilian job and they may be negatively affected by their parents, friends or environment.

Studies show that high school seniors are more likely to attrite than high school graduates. This may be because of the difference in DEP length between seniors and graduates. The mean DEP time for high school graduates is 98 days (100 days if we exclude drug users); however, this time is about 243 days for high school seniors (247 days if we exclude drug users). Seniors are enlisted while they are in school, and they can not be shipped before graduation. They have more time to change their minds than graduates.[49]

d. AFQT

AFQT, a general measure of trainability and predictor of on-the-job performance, is the primary index of recruit aptitude.[50] There is no common finding about the effect of AFQT score on DEP attrition in the literature. High school graduates and high school seniors who were in the AFQT_2 and AFQT_3A categories are expected to show higher attrition rates than the notional person who is in AFQT_1 score category. High school graduates who have very low AFQT scores (AFQT_3B) are expected to be less likely to leave the DEP than those in the AFQT_1 category, because the chance of finding a job outside the military is very low for these recruits. However, high school seniors with low AFQT scores (AFQT_3B) are expected to be more likely to attrite because their likelihood of graduating from high school is lower than for high-scoring recruits.

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[49] Buddin, "Success of First-Term Soldiers: The Effects of Recruiting Practices and Recruit Characteristics,"24.

[50] *Population Representation in the Military Service, Fiscal Year 2004* (Department Of Defense, 2006), http://www.dod.mil/prhome/poprep2004/download/2004report.pdf/ [Accessed December 12, 2006].

e. *Race*

"White," "black," "other race" and "declined to respond" are subgroups of the race variables. Minorities are expected to be less likely to drop out of DEP than their white peers. It is believed that there are fewer job opportunities outside the military for minorities. On the other hand, because of the decrease in the black adult population who would recommend military service to a young person who came to them for advice,[51] black recruits are expected to be more likely to leave the Marine Corps' DEP than white recruits. Since there is no evidence about their race, the effect of recruits who declined to respond on DEP attrition is unknown.

f. *Separation Month*

This variable was derived from discharge month/shipment month to basic training. The reason for including this variable is to determine if there are specific months in which recruits are more likely to leave the DEP. By identifying a specific month, recruiters may be made aware of this critical period and they may give more attention to these recruits to prevent them from dropping out of DEP.

Just before graduation, high school seniors have to make decisions about their futures. Some of them choose to join the military and go to basic training, some of them seek a job, and others go on to higher education. High school seniors are expected to drop out from DEP in the months (March and April) just before graduation, because they may change their minds about military service when they consider their alternatives. Also, high school seniors who learn that they will not be able to graduate might trigger attrition during these months. The effect of the other months on high school seniors' DEP attrition is unknown. Furthermore, since there is no specific date that is clearly likely to affect the decisions of high school graduates, the author couldn't specify a relationship between separation month and high school graduates' DEP attrition.

g. *Gender*

Of all the services, the USMC has the smallest proportion of women recruits. Since the military is a male environment and as a result of the limited number of

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[51] Lawrence Kapp, *Recruiting and Retention: An Overview of FY2005 and FY2006 Results for Active and Reserve Component Enlisted Personnel,* 7.

positions open to women in the Marine Corps, females are expected to be more likely to drop out of DEP than males. Another reason for attrition may be pregnancy for females.

h.   Age

The age variable shows the recruit's age at the time of DEP entrance. Previous studies show that discharge probability increases with age. Older recruits are expected to be more likely to be a DEP drop out than younger recruits. High school graduate recruits who were older might find a civilian job easily while they are waiting for shipment because they are in the labor market for a long time. Being an older high school senior may be a sign of not being likely to graduate and this may increase attrition rates.

i.   Component

Those enlisting in the USMC reserve component might do so primarily to receive money for higher education (college), and they might be more likely to drop out than their peers who enlisted in the regular component because of the high probability of being shipped to long lasting operations, which would mean that they would have to cancel their education plans. In other words, we can expect that recruits who enlist in the regular component are more likely to ship to the basic training than recruits who enlist in the reserve component.

j.   Marital Status

Data about the marital status of recruits who were in all the volunteer forces shows that USMC recruits are unlikely to be married (only about 2%-4% are married).[52] Recruits who are married are expected to be less likely to attrite from DEP than single recruits because these recruits have more responsibilities. They have a family whose needs they must consider.

k.   Dependents

The dependent variable shows the recruits who have dependent/dependents at the time of entrance to the DEP. Recruits with dependents are expected to be less likely to attrite from DEP. These recruits have more responsibilities than the recruits who have no dependents. They have to find a job because they have to look after their dependents.

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[52] *Population Representation in the Military Service, Fiscal Year 2004 (Department* Of Defense, 2006), http://www.dod.mil/prhome/poprep2004/download/2004report.pdf/ [Accessed December 12, 2006].

l.   *Day of the Month of Enlistment*

Recent studies showed that there is a strong relationship between DEP attrition and day of the month of enlistment. Bruno (2005) and Buddin (2005) found that recruits who enlisted at the end of the month are more likely to attrite. In theory, because of the pressure of monthly recruiting goals, recruiters who desire to achieve their recruiting goals enlist recruits with less desirable qualities. Because of this, attrition rates for this group are higher than for recruits who were enlisted at the beginning of the month.

m.   *Unemployment rates*

Unemployment rates of the Metropolitan Statistical Areas are used to determine the effect of economic conditions on DEP attrition. The state of the economy is important to recruiting success. A low unemployment rate in the civilian economy makes signing up new recruits harder because they have relatively more opportunities in the private sector.[53] High school graduates are expected to be affected by unemployment rates more than high school seniors. High school graduates who are in the labor market have only two choices: to go to basic training or to find a job in the civilian market. Unemployment rates are expected to have a negative effect on DEP attrition.

The hypothesized relationships between DEP attrition and the explanatory variables are shown in Table 30. These hypotheses are based on the literature review.

Table 30.   Hypothesized Relationships

Variables	Model 1	Model 2	Model 3	Model 4
FY00	Base	Base	Base	Base
FY01	-	-	-	-
FY02	-	-	-	-
FY03	+	+	+	+
FY04	+	+	+	+
FY05	+	+	+	+
MCD1	Base	Base	Base	Base
MCD4	?	?	?	?
MCD6	?	?	?	?
MCD8	-	-	-	-
MCD9	-	-	-	-
MCD12	-	-	-	-
DPMNTH1	Base	Base	Base	Base

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[53] Golding and Adedeji, "Recruiting, Retention, and Future Levels of Military Personnel,"," 16.

DPMNTH2	+	+	+	+
DPMNTH3	+	+	+	+
DPMNTH4	+	+	+	+
DPMNTH5	+	+	+	+
DPMNTH6	+	+	+	+
DPMNTH7	+	+	+	+
DPMNTH8	+	+	+	+
DPMNTH9	+	+	+	+
DPMNTH10	+	+	+	+
DPMNTH11	+	+	+	+
DPMNTH12	+	+	+	+
AFQT_1	Base	Base	Base	Base
AFQT_2	+	+	+	+
AFQT_3A	+	+	+	+
AFQT_3B	-	-	+	+
WHITE	Base	Base	Base	Base
BLACK	+	+	+	+
DECLINE	?	?	?	?
OTHER	-	-	-	-
JAN	Base	Base	Base	Base
FEB	?	?	?	?
MAR	?	?	?	?
APR	?	?	+	+
MAY	?	?	+	+
JUNE	?	?	?	?
JUL	?	?	?	?
AUG	?	?	?	?
SEPT	?	?	?	?
OCT	?	?	?	?
NOV	?	?	?	?
DEC	?	?	?	?
MALE	Base	Base	Base	Base
FEMALE	+	+	+	+
AGE_CONT	+	+	+	+
RES	Base	Base	Base	Base
REG	-	-	-	-
SINGLE	Base	Base	Base	Base
MARRY	-	-	-	-
NODEPEND	Base	Base	Base	Base
DEPEND	-	-	-	-
WEEK-123	Base	Base	Base	Base
WEEK_4	+	+	+	+
L_DAY	+	+	+	+
UNEMPLY	-	-	-	-

D. MODEL RESULTS

The models were estimated using SAS software. Tables 32, 33, 34, and 35 show the parameter estimates ($\beta's$), standard errors, p-values, odds ratios and partial effects for the explanatory variables. Parameter estimates ($\beta's$) are used to compute the partial effects of the variables.

A "notional person" is used to develop the baseline probability of USMC's DEP attrition.[54] For all four models, the notional person is defined as a single, white male who did not have dependents. He was enlisted in the first three weeks of the month in fiscal year 2000 by MCD1. He enlisted in a reserve component and spent only one month in DEP. He scored over 92 points in AFQT (AFQT_1 category). The notional recruit is described in Table 31.

Table 31.   Description of the Notional Person

VARIABLES	DESCRIPTIONS
Enlistment Year	Entered in DEP in fiscal year 2000
Command	Enlisted by MCD1
Time in DEP	Spent one month in DEP
Gender	Was a male
Component	Enlisted in a reserve component
Age	Average age of the sample (different for each model)
AFQT Score	Score over 92 (AFQT_1 Category)
Race	Was white
Separation Month	Separated (shipped/dropped out) from DEP in January
Marital Status	Was single
Dependent	Had no dependents
Time of Enlistment	Enlisted in the first three weeks of the month,
Unemployment rate	Average unemployment rate of the sample

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[54] Ogren, "Delayed Entry Program Attrition: A Multivariate Analysis,"," 50

The partial effect shows the effect of a one unit change in a continuous independent variable on DEP attrition probability. For example, if the partial effect of "AGE_CON" is -0.05, it means that one year increase in age decreases the probability of DEP attrition by about 5 percentage points as compared to the notional person. For dummy variables, the partial effect shows the effect of changing the status of an independent variable on the DEP attrition probability. For example, if the partial effect of "black" is -0.01, this means that being a black recruit decreases the probability of DEP attrition about 1 percentage point compared to the notional individual who is white. In other words, a black recruit is 1 percent less likely to drop out of DEP than a white recruit.

1.   High School Graduates (Model 1)

Table 32 shows the regression results for high school graduates (Model 1). The coefficients of the fiscal year variables are negative and significant at the 0.01 level, except fiscal years 2003 and 2005. This shows that there has been a decrease in DEP attrition compared with fiscal year 2000. All partial effects of district recruiting commands are significant at the 0.01 level and they show that being enlisted in the eastern recruit commands increases the probability of being discharged.

An increase in DEP time is expected to increase the probability of dropping out of DEP. However, the variable DPMNTH2 is not significant and also the variable DPMNTH3 produced an unexpected sign. Since this model includes drug users and the drug users are discharged from DEP as soon as their medical exam results are received, this result is not unexpected. As expected, the largest partial effect for DEP months is produced by DPMNTH12. A high school graduate who spent 12 months in DEP is 52.9 percentage points more likely to drop out of DEP than the notional individual who spent only one month in DEP. All race variables are significant at the 0.01 level. Again, as expected, blacks are more likely to leave USMC DEP than whites. A black high school graduate recruit is about 0.9 percentage points more likely to attrite from the DEP than a white individual.

All of the AFQT score related variables are significant and they show that the probability of being discharged increases as AFQT score decreases. However, the probability of being discharged for the individuals in the AFQT_3B score category

compared with a notional person is smaller than the probability of being discharged for the individuals in the AFQT_3A category compared with a notional person. The author estimated another model in which AFQT_3A was chosen as the base case. The results showed that the recruits in the AFQT_3B score category are significantly more likely to join the military than recruits in the AFQT_3A category. This is not surprising; in her literature review Henderson (1999) noted that Celeste (1985) found that Depers in AFQT Categories 2 and 3A had higher attrition rates than did those in Categories 1 and 3B. This might be because of the low chance of finding a job in the civilian market for the recruits who are in the AFQT_3B score category. All separation months are significant at the 0.01 or 0.05 level. The probability of being discharged increases in September, March and April compared with January.

Female recruits are 2.4 percentage points more likely to leave the DEP than male recruits. One year's increase in age increases the probability of DEP attrition about 0.3 percentage point more than the notional person. Moreover, being a regular recruit rather than a reserve recruit increases the discharge probability about 0.5 percentage points. As expected, married recruits and recruits with dependents are less likely to leave the DEP than single recruits and recruits without dependents. Recruits who have dependents are 2.2 percentage points and married recruits are 0.4 percentage points more likely to enter active duty service. Recruits who were enlisted at the end of the month are more likely to drop out of DEP. This result is parallel with the results of previous studies. The unemployment rate has a significant negative, but small, effect on DEP attrition.

Table 32.   Regression Results for Model 1 : High School Graduates (All)

Parameter	Estimate	S.E.	Wald Chi-Square	Pr>ChiSq	Odds Ratio	Partial Effect
Intercept	-4.655***	0.109	1830.689	<.0001		
FY01	-0.096***	0.036	7.075	0.008	0.909	-0.003
FY02	-0.135***	0.039	11.998	0.001	0.874	-0.004
FY03	-0.060	0.039	2.350	0.125	0.942	-0.002
FY04	-0.122***	0.038	10.290	0.001	0.885	-0.004
FY05	-0.005	0.038	0.016	0.900	0.995	0.000
MCD4	-0.190***	0.031	38.247	<.0001	0.827	-0.006
MCD6	-0.220***	0.031	51.298	<.0001	0.803	-0.007
MCD8	-0.234***	0.031	58.691	<.0001	0.791	-0.007
MCD9	-0.291***	0.031	86.386	<.0001	0.748	-0.009
MCD12	-0.303***	0.031	98.427	<.0001	0.739	-0.009
DPMNTH2	0.001	0.033	0.000	0.984	1.001	<0.001

DPMNTH3	-0.097**	0.038	6.491	0.011	0.907	-0.003
DPMNTH4	0.464***	0.037	161.725	<.0001	1.590	0.020
DPMNTH5	0.776***	0.037	448.223	<.0001	2.174	0.039
DPMNTH6	1.105***	0.037	914.944	<.0001	3.020	0.065
DPMNTH7	1.487***	0.038	1529.813	<.0001	4.426	0.105
DPMNTH8	1.925***	0.041	2211.569	<.0001	6.852	0.166
DPMNTH9	2.337***	0.044	2792.913	<.0001	10.346	0.240
DPMNTH10	2.794***	0.047	3480.623	<.0001	16.349	0.340
DPMNTH11	3.265***	0.050	4190.325	<.0001	26.176	0.455
DPMNTH12	3.563***	0.048	5477.740	<.0001	35.261	0.529
AFQT_2	0.345***	0.040	72.969	<.0001	1.411	0.014
AFQT_3A	0.538***	0.042	165.494	<.0001	1.712	0.024
AFQT_3B	0.494***	0.042	140.637	<.0001	1.638	0.021
BLACK	0.229***	0.032	52.427	<.0001	1.258	0.009
DECLINE	-0.078***	0.025	9.438	0.002	0.925	-0.003
OTHER	-0.195***	0.053	13.567	0.000	0.823	-0.006
FEB	0.604***	0.041	214.710	<.0001	1.829	0.028
MAR	0.653***	0.041	254.519	<.0001	1.922	0.031
APR	0.834***	0.041	414.170	<.0001	2.302	0.043
MAY	0.090**	0.042	4.472	0.035	1.094	0.003
JUNE	0.558***	0.045	154.453	<.0001	1.746	0.025
JUL	0.509***	0.047	117.206	<.0001	1.663	0.022
AUG	0.369***	0.046	64.895	<.0001	1.446	0.015
SEPT	1.076***	0.038	786.468	<.0001	2.933	0.062
OCT	-0.119***	0.044	7.335	0.007	0.888	-0.004
NOV	0.269***	0.042	40.645	<.0001	1.308	0.010
DEC	0.351***	0.042	70.102	<.0001	1.420	0.014
FEMALE	0.534***	0.029	336.115	<.0001	1.705	0.024
AGE_CONT	0.071***	0.004	346.116	<.0001	1.074	0.003
REG	0.134***	0.024	32.028	<.0001	1.143	0.005
MARRY	-0.113***	0.047	5.736	0.017	0.893	-0.004
DEPEND	-0.954***	0.083	131.671	<.0001	0.385	-0.022
WEEK_4	0.127***	0.022	32.839	<.0001	1.135	0.005
L_DAY	0.244***	0.032	59.602	<.0001	1.276	0.009
UNEMPLY	-0.019**	0.011	3.036	0.082	0.981	-0.001

N=122,089
R-Square=0.1478
Max-rescaled R-Square=0.2569
Chi-Square=19522.3270 DF(46) P value=<.0001

(***) significant at 0.01 level
(**) significant at 0.05 level
(*) significant at 0.10 level

2. High School Graduates Excluding Drug Users (Model 2)

Results for high school graduates with drug users excluded (Model 2) are displayed in Table 33. Fiscal year 2005 is the only significant variable among the enlistment year variables. Again, all district command variables are significant at the 0.01 level and this model showed the same result for MCDs: being enlisted in the eastern recruiting commands increases the probability of dropping out of DEP. All of the DEP time variables are significant at the .01 level and their signs and partial effects are as expected: as time spent in DEP increases, the probability of being discharged increases.

The probability of being discharged is 55.7 percentage points higher for recruits who spent 12 months in DEP than for the base case individual who spent only one month in DEP.

All AFQT variables are significant at the 0.01 level and showed similar results as in Model 1. The race variables are significant at the 0.01 level and indicate that blacks are more likely to leave the DEP than whites; however, recruits who were from other races are less likely to drop out of DEP. The probability of being discharged increases in September compared with a January separation; however, its partial effect is very small.

Being female and an older recruit increases the probability of being a DEP attrite. Married and regular recruits are less likely to drop out than their single and reserve peers, however, the "married" variable is not significant. Recruits who had dependents at the time of DEP entrance are less likely to be a DEP attrite. Again, being enlisted at the end of the month shows a positive effect and unemployment rates have a significant negative, but small, effect on DEP attrition.

Table 33.   Regression Results for Model 2: High School Graduates (Excluding Drug Users)

Parameter	Estimate	S.E.	Wald Chi-Square	Pr>ChiSq	Odds Ratio	Partial Effect
Intercept	-6.983***	0.136	2648.024	<.0001		
FY01	0.065*	0.043	2.317	0.128	1.067	<0.001
FY02	-0.009	0.046	0.039	0.845	0.991	0.000
FY03	0.058	0.046	1.598	0.206	1.059	<0.001
FY04	-0.031	0.044	0.505	0.477	0.969	0.000
FY05	0.190***	0.045	18.130	<.0001	1.209	0.001
MCD4	-0.119***	0.036	10.852	0.001	0.888	0.000
MCD6	-0.148***	0.036	16.771	<.0001	0.862	-0.001
MCD8	-0.202***	0.035	32.975	<.0001	0.817	-0.001
MCD9	-0.308***	0.036	73.609	<.0001	0.735	-0.001
MCD12	-0.311***	0.035	80.098	<.0001	0.733	-0.001
DPMNTH2	1.214***	0.067	325.922	<.0001	3.366	0.010
DPMNTH3	1.922***	0.065	879.954	<.0001	6.836	0.024
DPMNTH4	2.563***	0.063	1632.517	<.0001	12.974	0.048
DPMNTH5	2.894***	0.064	2073.606	<.0001	18.071	0.066
DPMNTH6	3.227***	0.064	2579.773	<.0001	25.214	0.092
DPMNTH7	3.618***	0.065	3150.290	<.0001	37.261	0.131
DPMNTH8	4.049***	0.066	3731.074	<.0001	57.310	0.190
DPMNTH9	4.465***	0.068	4256.806	<.0001	86.933	0.263
DPMNTH10	4.926***	0.071	4875.061	<.0001	137.825	0.363
DPMNTH11	5.398***	0.073	5504.581	<.0001	220.977	0.477
DPMNTH12	5.720***	0.071	6449.700	<.0001	304.828	0.557
AFQT_2	0.312***	0.044	50.041	<.0001	1.365	0.002
AFQT_3A	0.532***	0.046	133.905	<.0001	1.702	0.003

AFQT_3B	0.500***	0.046	119.062	<.0001	1.649	0.003
BLACK	0.265***	0.038	47.605	<.0001	1.303	0.001
DECLINE	-0.092***	0.029	10.186	0.001	0.912	0.000
OTHER	-0.219***	0.059	13.672	0.000	0.804	-0.001
FEB	0.679***	0.047	208.760	<.0001	1.971	0.004
MAR	0.822***	0.047	306.863	<.0001	2.275	0.005
APR	1.002***	0.047	451.263	<.0001	2.725	0.007
MAY	0.018	0.048	0.139	0.709	1.018	<0.001
JUNE	0.527***	0.052	102.673	<.0001	1.694	0.003
JUL	0.540***	0.056	94.824	<.0001	1.716	0.003
AUG	0.322***	0.054	35.805	<.0001	1.380	0.002
SEPT	1.182***	0.043	742.080	<.0001	3.261	0.009
OCT	-0.185***	0.050	13.892	0.000	0.831	-0.001
NOV	0.272***	0.048	32.575	<.0001	1.313	0.001
DEC	0.401***	0.047	72.126	<.0001	1.494	0.002
FEMALE	0.830***	0.032	655.396	<.0001	2.293	0.005
AGE_CONT	0.088***	0.004	395.888	<.0001	1.092	<0.001
REG	-0.046**	0.027	2.896	0.089	0.955	0.000
MARRY	-0.049	0.053	0.850	0.357	0.952	0.000
DEPEND	-0.870***	0.097	81.308	<.0001	0.419	-0.002
WEEK_4	0.092***	0.026	13.018	0.000	1.097	<0.001
L_DAY	0.183***	0.037	24.528	<.0001	1.200	0.001
UNEMPLY	-0.057***	0.013	20.205	<.0001	0.945	0.000

N=118,737
R-Square=0.2025
Max-rescaled R-Square=0.3808
Chi-Square=27163.3298 DF(46) P value=<.0001

(***) significant at 0.01 level
(**) significant at 0.05 level
(*) significant at 0.10 level

3. High School Seniors (Model 3)

Table 34 shows the regression results for the (all) high school senior model. All fiscal year variables are positive and significant at the 0.01 level. This shows that there has been an increase in DEP attrition compared to fiscal year 20000. Of all the fiscal years, fiscal year 2005 produced the largest partial effect. Recruits who enlisted in fiscal year 2005 were 12.7 percentage points more likely to drop out of DEP than a recruit who enlisted in fiscal year 2000. Furthermore, recruits who enlisted in fiscal year 2000, when no important event occurred (Iraq War, implementing stop loss policies and so forth), were less likely to become an attrite. All of the DEP time variables are significant. Of all the DEP time variables, only DPMNTH11 and DPMNTH12 showed the expected sign. Again, the author thinks that this is because of the influence of drug users. Another interesting issue about DEP time is that the effect of time spent in DEP on attrition is not as powerful for high school seniors as it is for high school graduates. A high school senior who spent 12 months in DEP is 10.7 percentage points more likely to be an attrite than an individual who spent one month in DEP.

All of the AFQT variables are significant. Recruits who are in the AFQT_3A category are 4.8 percentage points more likely to be a drop out than the notional individual who was in the AFQT_1 score category. Furthermore, this difference is 7.6 percentage points for the AFQT_3B category. The Black variable is significant at the 0.01 level; however, the other race variables are not significant. Recruits who are black are 6.3 percentage points more likely to become a DEP loss than white individuals. All of the separation months are significant, except May and September. March and April are critical months when high attrition probabilities occur. The probability of being discharged from DEP in March is about 28.1 points percentage higher than in January, and this probability is about 36.1 points percentage higher for April.

Senior female recruits are 16.7 percentage points more likely to drop out of DEP than males. The age variable is significant and produced an unexpected sign. Older high school senior recruits are less likely to leave the DEP. These individuals might have limited opportunity in the civilian market or more mature recruits may make decision that are better thought out. Married recruits are 13.3 percentage points less likely to be DEP attrites than single high school seniors. Recruits with dependents are 18.2 percentage points less likely to be a DEP attrite than high school senior recruits who don't have dependents.

The day of enlistment variables are all significant and enlisting on the last day of the month has a positive effect on DEP attrition. Recruits who enlisted on the last day of the month are 4.7 percentage points more likely to be a DEP loss. Unemployment rates produced an unexpected sign; however, this sign is not significant.

Table 34.   Regression Results for Model 3: High School Seniors (All)

Parameter	Estimate	S.E.	Wald Chi-Square	Pr>ChiSq	Odds Ratio	Partial Effect
Intercept	0.904***	0.183	24.471	<.0001		
FY01	0.334***	0.028	141.688	<.0001	1.397	0.082
FY02	0.380***	0.030	156.873	<.0001	1.462	0.093
FY03	0.351***	0.030	136.794	<.0001	1.421	0.086
FY04	0.386***	0.029	180.754	<.0001	1.471	0.095
FY05	0.516***	0.029	320.432	<.0001	1.675	0.127
MCD4	0.012	0.026	0.233	0.630	1.012	0.003
MCD6	-0.071***	0.025	7.810	0.005	0.932	-0.017
MCD8	-0.043**	0.026	2.770	0.096	0.958	-0.010
MCD9	-0.269***	0.026	108.859	<.0001	0.764	-0.062

MCD12	-0.227***	0.026	75.878	<.0001	0.797	-0.053
DPMNTH2	-0.525***	0.056	88.967	<.0001	0.591	-0.116
DPMNTH3	-1.605***	0.069	542.072	<.0001	0.201	-0.276
DPMNTH4	-1.337***	0.060	501.251	<.0001	0.263	-0.246
DPMNTH5	-1.283***	0.053	578.808	<.0001	0.277	-0.239
DPMNTH6	-1.252***	0.049	663.326	<.0001	0.286	-0.235
DPMNTH7	-1.125***	0.046	596.135	<.0001	0.325	-0.218
DPMNTH8	-0.897***	0.045	401.282	<.0001	0.408	-0.183
DPMNTH9	-0.689***	0.044	244.986	<.0001	0.502	-0.147
DPMNTH10	-0.370***	0.043	72.670	<.0001	0.691	-0.084
DPMNTH11	0.067*	0.042	2.508	0.113	1.069	0.016
DPMNTH12	0.437***	0.041	115.961	<.0001	1.547	0.107
AFQT_2	0.064*	0.044	2.110	0.146	1.066	0.015
AFQT_3A	0.202***	0.045	20.576	<.0001	1.224	0.049
AFQT_3B	0.313***	0.044	49.958	<.0001	1.368	0.077
BLACK	0.263***	0.026	103.610	<.0001	1.300	0.064
DECLINE	-0.015	0.021	0.498	0.480	0.986	-0.003
OTHER	-0.008	0.045	0.028	0.867	0.992	-0.002
FEB	0.519***	0.051	104.914	<.0001	1.681	0.128
MAR	1.160***	0.053	473.201	<.0001	3.191	0.281
APR	1.549***	0.056	779.130	<.0001	4.707	0.361
MAY	-0.002	0.044	0.002	0.967	0.998	0.000
JUNE	-1.460***	0.038	1451.552	<.0001	0.232	-0.260
JUL	-1.225***	0.038	1022.727	<.0001	0.294	-0.232
AUG	-0.971***	0.039	634.982	<.0001	0.379	-0.195
SEPT	0.014	0.037	0.131	0.717	1.014	0.003
OCT	-0.485***	0.043	126.606	<.0001	0.616	-0.107
NOV	0.124***	0.045	7.505	0.006	1.132	0.030
DEC	0.370***	0.048	58.424	<.0001	1.448	0.091
FEMALE	0.678***	0.026	685.007	<.0001	1.970	0.167
AGE_CONT	-0.077***	0.009	77.206	<.0001	0.926	-0.018
REG	-0.345***	0.024	212.554	<.0001	0.708	-0.078
MARRY	-0.619***	0.095	42.814	<.0001	0.538	-0.134
DEPEND	-0.895***	0.135	44.056	<.0001	0.409	-0.183
WEEK_4	0.090***	0.018	24.776	<.0001	1.094	0.022
L_DAY	0.197***	0.026	55.812	<.0001	1.218	0.048
UNEMPLY	0.005	0.009	0.311	0.577	1.005	0.001

N=120,739
R-Square=0.1390
Max-rescaled R-Square=0.2073
Chi-Square=18072.8435 DF(46) P value=<.0001

(***) significant at 0.01 level
(**) significant at 0.05 level
(*) significant at 0.10 level

4.   High School Seniors Excluding Drug Users (Model 4)

The results of the model for High School Seniors with Drug Users excluded (Model 4) are shown in Table 35. All fiscal year variables are significant at the .01 level and all of them have positive effects on DEP attrition when compared with the base case which is fiscal year 2000. As the fiscal year increases, the positive effect on DEP attrition increases. All DEP time variables are significant at the .01 level. DPMNTH12 produced the largest partial effect on DEP attrition. High school seniors who spent 12 months in

DEP are 50.5 percentage points more likely to leave the DEP than the notional individual who spent one month in DEP. Parallel with the studies in the literature review, this model shows that more time spent in DEP means higher attrition rates.

As in model 3, the AFQT_2 variable is not significant. The recruits who are in AFQT_3A are 0.71 percentage points more likely to attrite than the AFQT_1 score category. Furthermore, this difference is 1.2 percentage points for the AFQT_3B category. Recruits who are black are 1.2 percentage points more likely to become a DEP loss than white individuals. "Declined to respond" and other race variables are not significant. All of the separation months are significant, except May and September. Again, March and April are critical months when high attrition probabilities occur. Being discharge from DEP in March is about 9.2 points percentage higher than January, and this probability is about 14.9 points percentage higher for April.

Female recruits are 4.5 percentage points more likely to drop out of DEP than males. Older high school recruits are more likely to leave the DEP. Married recruits are 1.6 percentage points less likely to be a DEP attrite than single high school seniors. Recruits with dependents are 2.2 percentage points less likely to be a DEP attrite than high school senior recruits who do not have dependents.

Recruits who enlisted on the last day of the month are more likely to be a DEP loss. Unemployment rates produced an unexpected sign; however, again, this variable is not significant.

Table 35.   Regression Results for Model 4 : High School Seniors (Excluding Drug Users)

Parameter	Estimate	S.E.	Wald Chi-Square	Pr>ChiSq	Odds Ratio	Partial Effect
Intercept	-3.598***	0.218	271.331	<.0001		
FY01	0.379***	0.029	167.254	<.0001	1.461	0.018
FY02	0.405***	0.032	164.526	<.0001	1.500	0.020
FY03	0.395***	0.031	160.691	<.0001	1.484	0.019
FY04	0.417***	0.030	196.024	<.0001	1.518	0.020
FY05	0.536***	0.030	318.304	<.0001	1.709	0.028
MCD4	0.033	0.027	1.560	0.212	1.034	0.001
MCD6	-0.040***	0.026	2.324	0.127	0.961	-0.002
MCD8	-0.019	0.027	0.530	0.467	0.981	-0.001
MCD9	-0.274***	0.027	104.714	<.0001	0.760	-0.010
MCD12	-0.204***	0.027	56.739	<.0001	0.816	-0.007
DPMNTH2	0.790***	0.113	48.530	<.0001	2.203	0.046
DPMNTH3	0.956***	0.109	77.227	<.0001	2.601	0.060

DPMNTH4	1.358***	0.102	178.002	<.0001	3.889	0.104
DPMNTH5	1.467***	0.098	224.047	<.0001	4.338	0.118
DPMNTH6	1.521***	0.096	252.900	<.0001	4.579	0.125
DPMNTH7	1.673***	0.095	313.645	<.0001	5.330	0.147
DPMNTH8	1.909***	0.094	413.088	<.0001	6.749	0.186
DPMNTH9	2.141***	0.094	521.174	<.0001	8.509	0.229
DPMNTH10	2.482***	0.094	701.585	<.0001	11.961	0.302
DPMNTH11	2.930***	0.093	985.241	<.0001	18.727	0.409
DPMNTH12	3.317***	0.093	1280.538	<.0001	27.573	0.505
AFQT_2	0.040	0.045	0.780	0.377	1.041	0.002
AFQT_3A	0.165***	0.046	13.082	0.000	1.179	0.007
AFQT_3B	0.272***	0.045	35.866	<.0001	1.313	0.012
BLACK	0.274***	0.027	104.364	<.0001	1.316	0.013
DECLINE	-0.015	0.021	0.465	0.496	0.986	-0.001
OTHER	-0.022	0.047	0.219	0.640	0.978	-0.001
FEB	0.555***	0.054	103.951	<.0001	1.742	0.029
MAR	1.260***	0.057	481.824	<.0001	3.524	0.092
APR	1.686***	0.059	805.870	<.0001	5.399	0.149
MAY	0.037	0.047	0.642	0.423	1.038	0.002
JUNE	-1.466***	0.041	1309.395	<.0001	0.231	-0.032
JUL	-1.210***	0.040	895.487	<.0001	0.298	-0.029
AUG	-0.975***	0.041	574.742	<.0001	0.377	-0.026
SEPT	0.030	0.039	0.589	0.443	1.031	0.001
OCT	-0.536***	0.045	139.524	<.0001	0.585	-0.017
NOV	0.087**	0.048	3.281	0.070	1.091	0.004
DEC	0.341***	0.051	44.044	<.0001	1.407	0.016
FEMALE	0.785***	0.026	882.110	<.0001	2.191	0.046
AGE_CONT	0.026***	0.009	7.310	0.007	1.026	0.001
REG	-0.540***	0.025	482.113	<.0001	0.583	-0.017
MARRY	-0.512***	0.098	27.431	<.0001	0.599	-0.016
DEPEND	-0.799***	0.143	31.267	<.0001	0.450	-0.023
WEEK_4	0.071***	0.019	14.133	0.000	1.073	0.003
L_DAY	0.152***	0.028	30.174	<.0001	1.164	0.007
UNEMPLY	0.002	0.009	0.046	0.830	1.002	<0.001

N=118,517
R-Square=0.1466
Max-rescaled R-Square=0.2222
Chi-Square=18783.6536 DF(46) P value=<.0001

(***)   significant at 0.01 level
(**)   significant at 0.05 level
(*)   significant at 0.10 level

5.   Summary

Four regression models were estimated to examine the effects of personal background characteristics of high school graduate and high school senior recruits on DEP attrition. Most of the fiscal year variables are not significant in the high school graduate models (Model 1 and Model 2). However, these variables are significant in the high school senior models (Model 3 and Model 4) and these models show that as the fiscal year increases, the attrition rates increase. Only fiscal year 2003 showed a slight decrease, when compared with fiscal year 2002.

The models for high school graduates show that being enlisted in the western recruiting command rather than an eastern recruiting command decreases the probability of being discharged. However, most of these variables are not significant in the high school senior models.

In the models that included drug users (Model 1 and Model 3), the DEP time variables produced unexpected signs. Furthermore, the DEP time variables with unexpected signs are mostly significant in these models. These results are not parallel with the literature review. However, the models without drug users (Model 2 and Model 4) showed more significant results and all of the results that related to DEP time had the expected signs and effects.

In general, AFQT scores have negative effects on DEP attrition. However, the probability of being discharged for the high school graduate recruits in the AFQT_3B score category compared with a notional person in AFQT_1 is smaller than the probability of being discharged for the high school graduate recruits in the AFQT_3A category compared with a notional person.

March and April are critical months for DEP separations for high school seniors. In these months, the discharge probability increases for high school seniors. There is no specific separation month that increases the attrition probability for high school graduates.

In all of the models, blacks were found more likely to be a DEP loss. As expected, female recruits are more likely to drop out of DEP. Only in Model 3 did the age variable produce an unexpected sign. In all models, except Model 1, regular recruits were found to be more likely to drop out of DEP than reserve recruits. Married recruits and recruits with dependents were found to be less likely to drop out of DEP in all models.

Enlistees who enlisted on the last day or during the last week of the month are more likely to be a DEP loss. Unemployment rates have a negative but small effect on DEP attrition for high school graduates; however, this variable is not significant in the high school senior models (Model 3 and Model 4).

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY

This study focused on high school graduates and high school seniors in the USMC Delayed Entry Program. To examine the effects of personal background characteristics of high school graduate and high school senior recruits on DEP attrition, four different regression models were estimated: (1) A high school graduates model; (2) A high school graduates model excludes drug users; (3) A high school senior model; and (4) A high school senior model excludes drug users. The data used for this study consists of observations on individuals who entered the USMC Delayed Entry Program between fiscal years 2000 and 2005. Findings derived from cross tabulations and regression models include the following,

1. Characteristics of DEP Entrants and Results for Attrition

- Married and female recruits represent a small percentage of the USMC DEP pool among both high school graduates and seniors

- Married females are more likely to be DEP entrants than married males

- There was a decrease in the married recruit percent and also in the black recruit percent among both high school graduates and seniors in the DEP from fiscal year 2000 to fiscal year 2005

- The average age of recruits in DEP, for both high school graduates and seniors, has increased over time.

- "Apathy/Personal Problem" and "Refused to enlist" were two main reasons why recruits dropped out of DEP for both male and female recruits, whether they were graduates or seniors

- The third major reason for attrition for females was "Pregnancy"

- The third major reason for attrition was "Positive drug test" for high school graduate males and "Failure to graduate" for high school seniors

2.   General Influences on DEP Attrition

- Recruits who are high school seniors are found to be more likely to be a DEP loss when compared with high school graduates

- More time spent in DEP means a higher probability of dropping out of DEP

- Recruits who had dependents at the time of DEP entrance showed low attrition rates; however, there was a decrease in the proportion of recruits who had dependents

- Drug users were in DEP only for one or two months, and this behavior affected the characteristics of DEP attrition

- Analysis of samples that excluded drug users produced expected signs and effects that are parallel with previous studies

- AFQT scores have a negative effect on DEP attrition probability for both high school graduates and seniors: as the AFQT score increases, attrition probability decreases; however, high school graduates who are in the AFQT_3B category are less likely to be DEP attrites than high school graduates who are in the AFQT_3A category

- For both high school graduates and seniors, age had a positive effect on the DEP attrition probability; however, the high school seniors model (Model 3) produced an age variable that has a negative effect on DEP attrition

- Married recruits and recruits with dependents are more likely to go to basic training

- Unemployment rates have a negative effect (an increase in the unemployment rate causes a decrease in attrition rates) on DEP attrition probabilities of high school graduates; however, for high school seniors this variable was found insignificant.

- Black recruits and female recruits were found to have a higher DEP attrition probability than whites or males for both high school seniors and graduates

- Enlistees who entered the DEP on the last day or during the last week of the month were found more likely to be a DEP attrite

3. **High School Graduates' DEP Attrition**

- High school graduates who were black males and white females were more likely to be a DEP loss; however, being a black female high school graduate decreased the probability of dropping out of DEP

- Being enlisted by eastern recruiting stations increased the probability of being discharged for high school graduates

- There is no specific separation month for high school graduates when their discharge probability increases

4. **High School Seniors' DEP Attrition**

- Black high school seniors showed high attrition rates whether they were male or female

- High school seniors who enlisted between fiscal years 2001 and 2005 were more likely to be a DEP loss when compared with high school senior recruits who enlisted in fiscal year 2000

- Separation months March and April were found to increase the discharge probability for high school seniors.

B. **CONCLUSIONS**

Most of the major findings of this study are in accordance with those of previous studies. Parallel with the literature, high school seniors showed higher attrition rates than high school graduates in USMC DEP between fiscal years 2000 and 2005. This behavior of high school seniors is not surprising, because high school seniors tend to have more time in DEP than high school graduates and this leads them to have much more time to change their mind or be influenced negatively by others.

This study shows that between fiscal years 2000 and 2005, there was a decrease in the percentage of married recruits and recruits who had dependents at the time of entrance to the DEP. The author believes that long lasting operations and the high probability of being injured in these operations is likely to have caused a decrease in the

participation of married individuals and individuals with dependents in the USMC Delayed Entry Program. Also, as in previous studies, females are found to be more likely to drop out of DEP.

Blacks were found less likely to go to basic training. As mentioned before, this may be because of the decrease in the black adult population who recommends military enlistment. However, black females who were high school graduates, in other words, black high school graduate females who were in the labor market, showed that they are less likely to be a DEP loss. Henderson (1999) found the same behavior for black females and she linked this result to black women's limited career opportunities in the civilian labor market. Ogren (1999) found that other races (Asian or Pacific Islander) are more likely to drop out of DEP. However, in this study, high school graduates who are from other races showed that they are less likely to be a DEP loss than the other races.

Parallel with Ogren's (1999) findings, "Apathy/Personal Problem" and "Refused to enlist" were found to be the two top reasons recruits dropped out of DEP for both male and female recruits, whether they were graduates or seniors. "Pregnancy" was the third major reason for attrition for females. "Positive drug test" and "Failure to graduate" were found to be the third major reason for dropping out of DEP for high school seniors and high school graduate males, respectively. Also, the regression models showed that the inclusion of drug users produced unexpected signs for the DEP time variables, due to their being in DEP for such a short time.

Most of the previous studies found that AFQT scores had a negative effect on DEP attrition probability; as the AFQT score increases, attrition probability decreases. The same result is found for both high school graduates and seniors in this study, however, high school graduates who are in the AFQT_3B category are less likely to be DEP attrites than high school graduates who are in the AFQT_3A category. This may be because of the low chance of finding a job in the civilian market for AFQT_3B category individuals.

Quester and Murray (1986) found that May is the month in which most attrition occurs. However, this study found that the probability of being a DEP loss increases in April and March for high school seniors. These months are just before the graduation

months and high school seniors may change their minds just before graduation. Also, there is no a specific month for high school graduates in which the attrition rates increase.

As mentioned earlier, Buddin (2005) and Bruno (2005) found a significant relationship between the day of the month of enlistment and DEP attrition. All four models showed that recruits who enlisted on the last day or in the last week of the month were more likely to be a DEP attrite.

Henderson (1999), Ogren (1999) and Buddin (2005) investigated the relationship between DEP attrition and unemployment rates and found that the unemployment rate has a negative, but small effect on DEP attrition. In previous studies, regional or county level unemployment rates were used. However, in this study, unemployment rates of metropolitan statistical areas at the time of dropping out of DEP or shipping to boot camp were used and the same effect was found for high school graduates, however, the high school senior models produced insignificant results for the unemployment rate variable. Since the high school seniors are not yet in the labor market and they have more choices in life than getting a job (for example, going to college) they might not be as strongly affected by unemployment rates.

C.   RECOMMENDATIONS

High school graduates are more likely to go to basic training than high school seniors. The main reason for this seems to be that high school seniors cannot be sent to basic training while they are in high school and more time spent in DEP gives them a chance to change their minds. Recruiting high school seniors just two or three months before their graduation dates may prevent them from changing their minds. Also, by recruiting these seniors two or three months before their graduation date, more accurate information may be gathered by recruiters as to whether they will graduate or not. In his study, Buddin (2005) gave a similar recommendation; however, he pointed out that this policy should be implemented by all Services to prevent unlawful competition between Services.

This study shows that March and April are critical months for high school seniors. Attrition rates of high school seniors increase in these months. Recruiters should spend more time with high school seniors in these months.

New medical exam policies should be developed to prevent drug users from entering the DEP. By preventing them from entering the DEP, recruiters might be able to spend more time with other recruits. Also, a new evaluation policy should be developed so that the number of drug users that the recruiter recruited should be linked to the recruiter's success. By doing this, recruiters will be forced to screen drug users more carefully.

LIST OF REFERENCES

Baczkowski Jr., "Robert E. The Effects of End-of-Month Recruiting on Marine Corps Recruit Depot Attrition," Master's Thesis, Naval Postgraduate School, 2006.

Bruno, Michael G. "Analysis of Recruit Attrition from the U.S. Marine Corps Delayed Entry Program." Master's Thesis, Naval Postgraduate School, 2005.

Buddin, Richard J. "Success of First-Term Soldiers: The Effects of Recruiting Practices and Recruit Characteristics." Santa Monica, CA: RAND Corporation, 2005. http://www.rand.org/ (accessed December 14, 2006).

Costs and Benefits of Longevity Payments Time Spend in the Delayed Entry Program. Gaithersburg, MD: U.S. General Accounting Office, 1984, http://archive.gao.gov/d11t3/125249.pdf (accessed December 6, 2006).

Department Of The Navy. *Military Personnel Procurement Manual, Volume 2, Enlisted Procurement*. Vol. Marine Corps Order P1100.72C. Washington, DC: 2004, http://usmilitary.about.com/library/milinfo/marinereg/blmco1100-72b.htm (accessed December12, 2006).

Golding, Heidi and Adebayo Adedeji. *Recruiting, Retention, and Future Levels of Military Personnel*. Washington, DC: Congressional Budget Office, 2006, www.cbo.gov (accessed December 7, 2006).

Henderson, Beulah I. "An Analysis of Delayed Entry Program (DEP) Attrition by High School Seniors." Master's Thesis, Naval Postgraduate School, 1999.

Kapp, Lawrence. *Recruiting and Retention: An Overview of FY2005 and FY2006 Results for Active and Reserve Component Enlisted Personnel*. Washington, DC: Congressional Research Service, 2006, http://fpc.state.gov/documents/organization/60715.pdf (accessed June 15, 2006).

Knox, Braynt W. "Analysis of Navy Delayed Entry Program and Recruit Training Center Attrition." Master's Thesis, Naval Postgraduate School, 1998.

Mathis, Robert L. and John H. Jackson. *Human Resource Management*. 11th ed. Ohio: South-Western, 2006.

Miklaszewski, Jim. "Army, Marines Missed Recruiting Goals Again." NBC News. http://www.msnbc.msn.com/id/7802712/ (accessed December 14, 2006).

Military Attrition: DOD could Save Millions by Better Screening Enlisted Personnel. Washington, DC: U.S. General Accounting Office, 1997, http://www.gao.gov/archive/1997/ns97039.pdf (accessed June 12, 2006).

Murphy, Kevin, Jeanette Cleveland, and William T. Ross. *Evaluate the Marine Corps' Recruiting Effort*. Pennstate: Marine Corps Research University, 2003.

Ogren, Margery A. "Delayed Entry Program Attrition: A Multivariate Analysis," Master's Thesis, Naval Postgraduate School, 1999.

Quester, Aline and Martha Murray. *Attrition from Navy Enlistment Contracts*. Virginia: Center For Naval Analyses, 1986.

Population Representation in the Military Service, Fiscal Year 2004 Department Of Defense, 2006, http://www.dod.mil/prhome/poprep2004/download/2004report.pdf/ [Accessed December 12, 2006].

Stewart, Derek B. *Military Personnel: DOD and Services Need Better Data to Enhance Visibility Over Recruiter Irregularities*. Washington, DC: Government Accountability Office, 2006, http://www.gao.gov/new.items/d06846.pdf (accessed December 14, 2006).

Stewart, Derek B. and David E. Moser. *Military Personnel: Preliminary Observations on Recruiting and Retention Issues within the U.S. Armed Forces*. Washington, DC: Government Accountability Office, 2005, http://www.gao.gov/new.items/d05419t.pdf (accessed December 12, 2006).

Wolter, Jason A. and Micheal J. Kwinn. "U.S. Army Delayed Entry Program Optimization Model." U.S. Military Academy, West Point, 2004.

Wooldridge, Jeffrey M. *Introductory Econometrics*. Third ed. USA: Thomson South-Western, 2006.

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