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THESIS

THE EFFECT OF THE UNITED STATES NAVAL ACADEMY FOUNDATION PREPARATORY PROGRAM ON THE PERFORMANCE OF NAVAL ACADEMY MIDSHIPMEN

by

John P. Drosinos

December 2004

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THE EFFECT OF THE UNITED STATES NAVAL ACADEMY FOUNDATION PREPARATORY PROGRAM ON THE ACADEMIC PERFORMANCE OF NAVAL ACADEMY MIDSHIPMEN

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ABSTRACT

This study examines the relationship between participation in the United States Naval Academy Foundation Preparatory School Program and subsequent midshipmen performance at the United States Naval Academy. A program review was conducted and several multivariate regression models were developed to analyze the effect of attending a Foundation Prep School on the performance of Academy Midshipmen. The data set consists of the USNA classes 1988–2002. The program evaluation assessed the curriculums of each of the current Foundation Prep schools, midshipmen performance variables, and used a decision matrix to rank each prep school. Multivariate regression was used to evaluate if military prep schools or prep schools with a stronger academic curriculum are more likely to enhance midshipmen performance at the Naval Academy. The results find few significant effects of attending a military prep school or prep school with a stronger curriculum on midshipman performance however, attending a 4-year college did improve plebe CQPR and overall CQPR.

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I.   INTRODUCTION

A.   BACKGROUND

The United States Naval Academy was established in 1845 at Fort Severn, Annapolis, Maryland. This 4 year military program combines character development, professional training and an undergraduate education to provide a major source of officers instilled with values of naval service and career motivation (SECNAV 1531.2A, 1996). Through required courses in engineering, natural sciences, social sciences, the humanities, professional military subjects, and physical education, the Naval Academy gives you a balanced education (ACDEANINST 1531.105, 2003). The Naval Academy offers 19 majors in engineering, science, mathematics, social sciences, and the humanities. Graduates are awarded the degree of Bachelor of Science and are commissioned as an Ensign in the Navy or a Second Lieutenant in the Marine Corps. Upon graduation, there is a service commitment of a minimum of five years of active duty.

The admission process is the first step in becoming a Midshipman. To have basic eligibility for admission, candidates must be citizens of the United States, of good moral character, at least 17 and not more than 23 years of age on July 1 of their plebe (freshman) year, unmarried, not pregnant, and without legal obligation to dependents. A nomination is required in order to receive an appointment to attend the United States Naval Academy. A midshipman candidate must apply to congressmen, senators, or the Vice President of the United States to receive a nomination.

Every year the Naval Academy receives over 10,000 applications for admission.

This process is extremely competitive, only admitting just over 1,000 midshipmen for each new class. The Academy is looking for a well rounded student who has a sound academic record and was involved in extra curricular activities and athletics. The most important aspect of a midshipmen candidate is cognitive ability. The candidate's cognitive abilities can be measured by the high school academic record and college entrance exams such as the SAT or ACT. This is the most competitive and selective pre-college characteristic. This is where the United States Naval Academy Foundation Preparatory (Prep) Program contributes to the admissions process.

The Foundation Preparatory Program assists talented candidates who are not appointed to the Naval Academy in their first attempt at admission. This one year of post-high school education is designed to improve the candidate's qualifications for admission. Since 1944, the Foundation has assisted many candidates with good leadership, scholastic and athletic potential, who have evidenced a genuine interest in attending the Naval Academy (USNA, 2003b). The Foundation sponsors 60-100 candidates each year at 29 military and civilian preparatory schools that offer a wide range of curriculums and objectives.

B.   PURPOSE

The Purpose of this research is to review the United States Naval Academy Foundation Preparatory Program, compare prep school curriculums and analyze their affect on the performance of Academy Midshipmen who enter via Preparatory Program. This study will compare the

performance of Foundation students who attend the United States Naval Academy with other comparable students.

This examination of the relationship between the Foundation Program and Midshipmen performance will have a significant benefit for the United States Naval Academy and the Foundation. This thesis may be used to implement improvements in the process for selecting Foundation participants and in evaluating Foundation schools.

C.   SCOPE AND METHODOLOGY

    1.   Research Questions

This study will examine the following questions: The research questions are: (1) What is the effect of the United States Naval Academy Foundation Preparatory Program on the performance of Naval Academy midshipmen? (2) How are Foundation program participants selected by the admissions board? (3) How does the USNA Foundation Program support the mission of the Academy? (4) Which USNA Foundation preparatory schools are most effective in producing successful midshipmen? (5) Does attending a Foundation military prep school increase military performance at USNA? (6) Does attending a Foundation prep school with a stronger curriculum increase academic performance at USNA? (7) Do USNA midshipmen who attend a Military Foundation school or a school with a stronger curriculum differ in their performance during their fourth-class year? (8) Does attending a Foundation military prep school increase the likelihood of graduating from the United States Naval Academy? (9) Does attending a Foundation prep school with a

stronger academic curricula increase the graduation probability from the United States Naval Academy?

2.   Scope

A program evaluation will be conducted on the United States Naval Academy Foundation in an attempt to look at the impact of the Foundation experience on midshipmen performance. The scope of this thesis will include: (1) a review of the Naval Academy admissions process; (2) a review of Naval Academy instructions that govern midshipmen performance, physical activities, honor/conduct; and (3) a program review of the current USNA Foundation Preparatory Scholarship System. The thesis will conclude with recommendations for improvement to the process of selecting Foundation participants and topics for further study. The United States Naval Academy will benefit from a more efficient Foundation Preparatory Program.

3.   Methodology

The methodology used in this thesis research consists of three major steps. First, a comprehensive literature review was conducted. Journal articles, CD-ROM systems, and other library information resources on the topic of post-secondary education and the admissions practices of highly selective college/ universities were used to gain expertise in this area of study. Next, a thorough program review was conducted of the USNA Foundation. Finally, analyses were performed using data gathered by the United States Naval Academy Institutional Research (IR). Both descriptive and inferential statistics were used to analyze the data.

Midshipmen performance (the dependent variable) is based on military and academic credentials and can be measured in a variety of ways. Midshipmen performance can

best be evaluated through the mission of the Naval Academy. The mission of the United States Naval Academy is to "develop Midshipmen morally, mentally and physically…." Several variables stand out as predictors of this mission. Both military and academic grade point average and academic honors were chosen to predict mental development. Moral development is difficult to predict; for this element of the mission, honor/conduct violations will be examined. Physical development will be explained by athletic participation, the Physical Readiness Test (PRT) and physical education grades.

The greatest influence of any college preparatory program is demonstrated during the first year of college. In this case, the Foundation's greatest effect would emerge during a midshipman's fourth class year. However, other academic outcomes are investigated. For the purposes of the study, eight aspects of performance will be evaluated: (1) Fourth Class academic quality point rating; (2) Fourth Class military quality point rating; (3) Fourth Class Core Classes (Chemistry, Calculus, and English)(4) Cumulative academic quality point rating at graduation; (5) Cumulative military quality point rating at graduation; (6) Varsity athletics/PRT; (7) Honor/Conduct violations; and (8) Graduation Rate.

The effectiveness of the Foundation Prep School Program can best be evaluated by the performance of the midshipmen who matriculated from the individual prep schools. These prep schools will be compared in order to predict the effectiveness of their programs in producing successful midshipmen.

The objective of this thesis is to determine whether the USNA Foundation Program produces more successful

Midshipmen. This question will be tested through a program review and a series of regression analyses on data from midshipmen graduating between the years 1988-2002.

D.   ORGANIZATION OF STUDY

This section briefly describes the organization of each chapter of this thesis. This study is organized into five chapters.

Chapter I includes the background, purpose, scope and methodology, and organization of study. The background section describes the role of the United States Naval Academy and a brief review of the Naval Academy's Admission's process. This section identifies the purpose of this research and introduces the United States Naval Academy Foundation Preparatory Program. The scope and methodology section identifies the primary and secondary research questions of the thesis and describes the process of conducting the research.

Chapter II reviews applicable studies of student performance in college. The literature review also includes the history of college preparatory schools, pre-college characteristics of selective colleges/universities, the USNA admissions process and the USNA Foundation.

Chapter III explains the participants, data and statistical procedures used in this thesis. A description of the dependent and independent variables are also provided in this chapter.

Chapter IV describes the USNA Foundation Program evaluation. This chapter also includes the data screening

and the statistical findings of the regressions models on Midshipmen performance.

Chapter V provides inferences concerning the USNA Foundation and its influence on Midshipmen performance. This chapter will also include recommendations for improvement and areas for further research.

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II. LITERATURE REVIEW

A. BACKGROUND

There is a significant amount of literature on the subject of the impact of college preparatory schools on subsequent college academic performance. Admission to a highly selective college like the United States Naval Academy is very complex. By attending a college preparatory school, an applicant can better prepare themselves for the difficult admissions process.

This chapter is divided into 8 Sections. The first section reviews the history and origins of college prep schools. The second section discusses the college admission process at highly selective colleges and universities. The third section explores the prep school impact on higher education success. The fourth section discusses the United States Naval Academy's pre-college characteristics for success. The fifth section briefly describes the United States Naval Academy's admissions process. The Sixth section reviews the characteristics of United States Naval Academy Foundation Applicants. The final two sections cover the research methods to analyze the performance of USNA Midshipmen.

The United States Naval Academy's Class of 2007 includes 31.5 percent (387) who entered via college and post-high school preparatory programs (USNA, 2003a). Fifty seven percent (220) of these prep school students attended the Naval Preparatory School (NAPS). The Naval Academy Foundation provides the next highest percentage (20%) of prep school students. There has been some research conducted concerning prep school candidates. However, few

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address in detail the experiences of United States Naval Academy Foundation midshipmen while they are at the Naval Academy.

B.   HISTORY OF COLLEGE PREP SCHOOLS

The history of the American college preparatory school stems from private education. Private education is defined as education programs that are managed and financed by private individuals or groups rather than by government. The advent of the private school or independent school occurred in one of three ways: like minded families, educational entrepreneurship and reinvention of existing schools. Over the last century, the Preparatory School System has changed from schools based on social status to college schools whose goal is preparation.

1.   Preparatory School Beginnings

Often the initiative to start an independent school has come directly from a family or group of families (Powell, 1996). At the end of the 19th century, families with like minded values and attitudes begun to worry about United States public education in the U.S. Families did not want the government to interfere with their children's education. The shared values of these schools sometimes reinforced educational values that lacked widespread support in the larger community; but sometimes the values shared were more social than educational (Powell, 1996).

The age of educational entrepreneurship started in the nineteenth century. Many private schools did not originate with parents. The time between roughly 1880 and the Depression was the great age of educational

entrepreneurship (Powell, 1996). During this time in American history, most ambitious Americans were attracted to industry to make their living. Some of these American entrepreneurs would choose to become leaders in education instead of industry. By founding educational institutions instead of factories, these entrepreneurs would be able to make their fortunes and influence the community with their personal values and attitudes towards education. Early in the great educational age, the entrepreneurs realized that they needed to rely on friends and family to put together the student body.

This tendency was also apparent in the attempts of floundering existing schools to reinvent themselves (Powell, 1996). Some older schools established during the colonial times and earlier found that reinventing their school could provide an opportunity to upgrade their buildings and faculty. The transformation from a free public school to a private school seemed the logical solution for an under funded school. With increasing affluence due to the industrial revolution, many rich families wanted to provide a quality education for their children. This provided an incentive for the floundering public schools to be converted to the private sector.

2. Types of Private Schools

Many private schools had beginnings as religious organizations. Today, private schools fall into two main categories, religious or non-religious. The school may provide lodging (boarding school) or not (day school). Approximately 85 percent of all private school students attend schools affiliated with religious organizations, and

about 50 percent of all private schools students attend Catholic Schools (Encarta Encyclopedia, 2004). Many non-religious schools offer some religious subject matter but emphasize academics and moral development.

3.   The Growth of Preparatory Schools

Before World War II, prep schools were often places of arranged acquaintanceship (Powell, 1996). Education was put on the back burner in private schools throughout America. Fewer than half of all the students who completed high school went on to college (Otte, 2002). Through acquaintanceship, outcomes like establishing social relationships, business connections and marriages were emphasized to increase one's status. Schools around the country were well known for the families that attended them instead of the education it provided.

The aftermath of World War II saw an influx of veterans in the suburban parts of the country. The veterans and their families shared in the same values and experiences. This caused the formation of very close knit school communities. They lived in the same area and went to the same social events. The shared values of the communities help to link the community with the private schools. Many schools were linked to chains of institutions in the community such as camps, country clubs, colleges, fraternities and churches (Powell, 1996).

What changed after World War II was the increased interest in college education. Although students often attribute their academic motivation to parents, peers and teachers, lurking behind these close-by influences is the concern about college (Powell, 1997). The colleges around

America were overflowing. In the quarter century from 1972-1997, the United States went from having fewer than half of its high school graduates going on to college to having more than two thirds (Otte, 2002). This influx of students caused the admissions criteria for the entering college freshmen were becoming stricter. The mind set of the private school began to change from educating the American upper class to preparing America's elite for college admittance. The private schools began to refer to themselves as preparatory or prep schools. If prep schools wished to retain the reputations associated with getting their graduates admitted to colleges, they needed students who possessed what the colleges wanted (Powell, 1996).

C.   ADMISSIONS

Colleges and Universities are constantly trying to improve the admissions process. The admission process uses predictors of college performance to admit the best students. Spitzer (2000), studied predictors of college success and found that learning variables predict college grade point average. Further research indicates learning variables such as high school grades are the best predictor of college success. Previous grades are about twice as good as standard tests at predicting first semester grades (Micceri, 2001). High school rank is another predictor of college success. High school rank holds a moderate correlation with college GPA. The correlation was positive for both first semester GPA ($r=.30$) and cumulative GPA ($r=.41$) (Ferry, 1997). Standard admissions tests like the SAT/ACT provide little information on college performance. However, research indicates that inclusion of the SAT

increases early grade prediction (first semester grades) by an average of 5 percent (Micceri, 2001). The standard admission tests are weak predictors of college performance because they provide redundant information.

1. Highly Selective College Entrance Criteria

The United States Naval Academy is a highly selective institution. Highly selective schools are very similar. They place various demands on the whole student, not just academics. The demands allow the school to pick the best students that apply. Depending on the college to which the student applies, these admission criteria may include combinations of college success predictors such as high school grade point average (GPA), high school class rank, SAT/ACT scores, high school teacher recommendations, campus interviews, essays, participation in sports, extra curricular activities and community service and demographic/social characteristics (Owings, 1995). Barron's Profiles of American Colleges (2003) describes the "Most Competitive" group of colleges as those requiring incoming students to have grade point averages of B+ to A and to be ranked in the top 10-12 percent of their high school graduating class. The average SAT scores at these colleges range from 1200-1600 (perfect score= 1600). These students typically took many honors and advance placement classes during high school. More than a million students in 14,000 high schools took 1,750,000 AP exams, a 10 percent increase over 2002 and twice the number of these college-level tests taken in 1996 (Newsweek, 2003). They also are extremely motivated and demonstrate leadership potential.

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2. Benefit of Highly Selective Colleges

The interest in a highly selective school has been increasing. Hoxby (2001) studied highly selective schools and showed that investing in a highly selective school education will aid in career earnings. Income is a major factor in today's economy. The number of years it takes to breakeven on the investment in a more selective college ranges is about 0.3yrs as compared to other colleges, 5.8yrs (Hoxby, 2001). This shows that students who attend highly selective colleges are paying back their loans much quicker than their peers at other colleges. The Data from this study reveals that people who invest in education at more selective colleges earn back their investment several times over their careers, and that the return has been growing over time. This monetary security is very attractive to potential college students. Prep schools prepare the potential college student to apply to and to be successful at the highly selective school.

D. PREP SCHOOL IMPACT ON STUDENT READINESS/SUCCESS

Today, like minded families and shared values are crucial to the Prep school experience, but have become less dominated by social background and more by educational attributes and beliefs (Powell, 1996). Preparatory schools are now associated with college preparation. College preparatory schools are commonly the wealthiest, well known, and most costly of all private schools. College preparatory schools share several characteristics: High academic expectations; highly qualified teachers; small classes; and educational resources and shared values.

Both the administration and the students share high academic expectations. Many private secondary schools require applicants to pass a scholastic test before being granted admittance. Having a high work ethic is a mind set of the student majority. The approach of working hard and doing well at academics is the number one priority for the prep school student. The effect of the prep school peer group is an important positive influence on the students. One student said, "A lot of people work so you also want to work and study hard, because everyone is doing it. You use your friends to stay motivated." (Powell, 1996).

Over many decades prep schools have embraced a distinct notion of the role of good secondary school teachers, including the ways good teachers influence individual students (Powell, 1996). The schools recruit highly qualified teachers. Many prep school teachers have passed the appropriate state and federal education qualifications. Some have traveled abroad and others are well known in the field of education. The prep school teachers enjoy teaching and have a passion for the material they teach (Powell, 1996).

The class size for Prep school is significantly smaller that public schools. In the 2001-2002 academic year the average class size was 17 in private secondary schools, compared to an average class size of 24 in public secondary schools (Alt & Peter, 2002). The smaller class size will help the teachers to become more familiar with their students and better evaluate each student's needs.

In today's education system resources, especially Information Technology, are in high demand. Most prep schools are financed by tuition, fees, contributions, and

investments rather than by public taxes. This financing
allows the schools to buy the resources that they need. The
acquisition information technology resources provide an
advantage over public schools.

Shared values are a key characteristic for many prep
schools. Most college prep schools' primary shared value is
academic excellence. Secondary values may revolve around
specific subjects (art/entertainment), whereas others focus
on developing students ethically. This academic excellence
and moral development is very important to a United States
Naval Academy candidate.

E.   USNA PRE-COLLEGE CHARACTERISTICS IN PREDICTING SUCCESS

The vision of the United States Naval Academy is to
produce leaders of great character, competence, vision and
drive (USNA, 2003d). Cognitive ability, leadership
potential and personality are directly related to
graduation from the Naval Academy and, consequently, the
Naval Academy Admissions Office takes these factors into
consideration (USNA, 2003a). The most influential pre-
college characteristic in predicting success at the United
States Naval Academy is cognitive ability (USNA, 2003a).
Among investigation of college outcomes using pre-college
characteristics (cognitive ability), SAT or ACT scores and
high school GPA consistently explained the largest variance
in college outcomes (Bauer & Liang, 2003).

There have also been considerable examinations in
leadership and military performance. Leadership performance
is an important part of the overall Midshipmen development.
Prior to freshman year, leadership potential can be
assessed though both cognitive and personality variables

(Bartone, Snook & Tremble 2002). The most common assessment of pre-Naval Academy leadership comes from leadership roles in extra curricular activities (ECAs).

Personality is the last component in the selection process for admission to the Naval Academy. Studies have shown that a candidate's ability to cope with stress will affect their performance in a higher education setting. The ability to deal successfully with the multitude of emotional stresses encountered in college life appeared to be an import factor in student retention and GPA (Pritchard & Wilson 2003).

F.   USNA ADMISSIONS PROCESS

Gaining admittance to the United States Naval Academy is very difficult. The Academy accepts about 1,200 of its more than 10,000 applicants a year, admission to the academy is highly competitive (GAO, 2003). This process requires a substantial amount of time and energy and competition for an appointment to the Naval Academy is relentless. Besides reviewing a applicant's academic record, he will be evaluated on medical health, physical fitness, leadership potential, and motivation to be a midshipman and an officer in the Navy or Marine Corps (USNA Catalog, 2003).

There are several basic requirements for Naval Academy application eligibility. First an applicant must be a United States Citizen (except for limited quotas of international students). An applicant must be of excellent moral character. All applicants must be at least 17 years of age and must not have passed their 23rd birthday on July 1 of the year of admission. Additionally they must be unmarried, not pregnant and have no incurred obligations or

dependents. All candidates must receive a political nomination. They are many sources of nomination, and candidates should apply to all sources (USNA Catalog, 2003).

Once an applicant has met the basic requirements, he/she must complete and return the preliminary application. The preliminary application is available at the admissions office or online at the Admissions web site (Director of Admissions, 2003). After the preliminary application is reviewed by the Admissions Board, the applicant will be identified as an official midshipman candidate and receive a candidate number. The application packet includes SAT/ACT results, high school transcript, recommendations, Strong Interest Inventory, extracurricular activities, personal data record and the physical aptitude exam (Director of Admissions, 2003). This application should be returned between April of their junior year in high school and January of their senior year in high school (USNA Catalog, 2003).

The United States Naval Academy Admissions Board uses the factors of cognitive ability, physical fitness, leadership potential and personality to rank the midshipmen candidates. The admissions process constructs a *Whole Person Multiple* in an attempt to numerically determine each candidate's potential. The multiple is computed from identified predictors of success at the Naval Academy: SAT scores, High School Class Rank/GPA, Recommendations, ECAs, physical aptitude test, Technical Interest and Career Interest [Interest is determined through the Strong Interest Inventory now just SII] (Fitzpatrick, 2001). From

this *Whole Person Multiple*, the Admissions Board will recommend that some applicants become candidates for the Naval Academy Foundation.

G.   USNA FOUNDATION APPLICANT

One goal of the USNA Foundation is to support scholar-athlete-leaders (Foundation, 1996). The Admission Board recommends 500-600 candidates for consideration for Naval Academy Foundation sponsorship. Since 1944, the Foundation has prepared more than 2,500 service-oriented candidates with excellent leadership, scholastic and athletic potential for the rigors of the Naval Academy and the military (USNA, 2003b). These factors can be very subjective and may not be measured by the Whole Person Multiple. The Admissions Board may identify a candidate with these characteristics who will be placed in the potential Foundation pool. Annually, 80 percent of Foundation students are academically qualified, but suffer from being in a highly competitive congressional district (Fitzpatrick, 2001).

The Naval Academy Foundation Athletic and Scholarship Program is now a part of the Naval Academy Alumni Association. The Program is presently managed by the Vice President of Athletic and Scholarship Programs, CAPT Ed Wallace, USN (Ret). Through the scholarship program, the Foundation is able to provide one year post-high school education to qualified young men and women who need further academic preparation to enter the Naval Academy (USNA, 2003b). Alumni-sponsored scholarships will be awarded to

80-90 candidates. These candidates will attend one year of post-high school study at one of 24 preparatory schools and 4 military junior colleges.

This alternate route to the United States Naval Academy has provided a great opportunity for selected candidates. Ninety five percent of the candidates will eventually become fourth class midshipmen. Of the candidates who attend, 86 percent will graduate which compares to the Brigade average of 77 percent (Foundation, 2003).

H.   PROGRAM EVALUATION

A program evaluation uses a wide variety of methods to evaluate all parts of a program in an organization. A program is an organized collection of activities designed to reach certain objectives (Royse, Thyer, Padgett and Logan, 2001). Organizations use their vision statement and mission to distinguish their goals. These goals must be reached to complete their mission. Each of the goals often becomes a program in the organization. Programs are organized to provide certain related services to a group. Programs are interventions or services that are expected to have some kind of an impact upon the program participants (Royse, Thyer, Padgett and Logan, 2001).

Program evaluation involves careful collecting information about a program or some part of a program in order to assess its effectiveness for the organization. Program evaluation is applied research and is used as part of the managerial process (Royse, Thyer, Padgett and Logan, 2001). A variety of analyses can be used to conduct the evaluation. Some of the most common types of analysis

include: needs assessment; qualitative evaluation; formative/process evaluation; goal attainment; client satisfaction and cost-effectiveness (Royse, Thyer, Padgett and Logan, 2001). The type of analysis used to improve a program depends on what the organization wants to learn about the program. A program evaluation will be very useful in looking at the Naval Academy Foundation Preparatory Program.

I.   REGRESSION ANALYSIS

Organizational research questions are derived from what information is wanted concerning a program. Research design establishes procedures to obtain cases (group or individuals) for study and to determine how scores (data) will be obtained from those cases (Schwab, 1999).

Regression analysis determines the values of parameters for a function to best fit a set of observations. Multiple regression analysis is used to predict the score on the dependent variable (DV) from scores on several independent variables (IV) (Tabachick and Fidell, 2001). This analysis is very useful when looking at the multiple outcomes the describe Midshipmen performance.

J.   CHAPTER SUMMARY

This thesis examines the relationship between the Foundation Preparatory School Program and Midshipmen performance.   This literature review highlights that college admissions boards use a variety of pre-college characteristics to select the best students. The literature indicates that preparatory schools better prepare students

for college. A prep school education may be the edge a student needs to attend a highly selective college or university.

The literature explains that the Naval Academy is using the correct predictors in selecting future Naval and Marine Corps Officers. Cognitive ability, leadership potential and personality are directly related to graduation from the Naval Academy. Some candidates may have a strong disposition, enthusiasm, leadership potential and athletic ability, but may be weak in other areas such as the SAT, or come from a highly competitive political district. The Admissions Board may identify these candidates and recommend them to attend the Naval Academy Foundation Preparatory Program for one year. The goal of the prep school experience is to strengthen the candidate's weaknesses.

This study will conduct a program review of the United States Naval Academy Foundation Preparatory Program. The study will compare prep school curriculums and use multivariate regression to analyze their effect on the performance of Academy Midshipmen. The assessment of the performance of Foundation students who attend the Naval Academy is very important to future admissions decisions. This study could be used to implement improvements in the process of selecting Foundation participants and in evaluating of the 24 Foundation prep schools.

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III.   RESEARCH METHODOLOGY

A.   INTRODUCTION

The purpose of this study is to examine the relationship between participation in the Naval Academy Foundation Preparatory School Program on Midshipmen performance at the United States Naval Academy. The research methodology is divided into two sections. A program evaluation and a multivariate regression will be conducted to assess the effectiveness of the Foundation prep schools.

The program evaluation will assess the curriculums of each of the current Foundation Prep schools. Next a comparison of midshipmen performance variables, specifically freshman year, will be evaluated against the different prep schools. Finally, a decision matrix will be conducted to rank each prep school.

The second area, multivariate regression, will evaluate if military prep schools or prep schools with a stronger academic curriculum are more likely to enhance midshipmen performance at the Naval Academy. By dividing the prep schools by military and strong academic curriculums, a model for predicting midshipmen performance can be developed.

The major objectives of this thesis are to review the Foundation Prep Schools and to model the statistical relationship between the Foundation prep schools and Midshipmen performance. The research questions are: (1) What is the effect of the United States Naval Academy Foundation Preparatory Program on the performance of Naval Academy midshipmen? (2) How are Foundation program

participants selected by the admissions board? (3) How does the USNA Foundation Program support the mission of the Academy? (4) Which USNA Foundation preparatory schools are most effective in producing successful midshipmen? (5) Does attending a Foundation military prep school increase military performance at USNA? (6) Does attending a Foundation prep school with a stronger curriculum increase academic performance at USNA? (7) Do USNA midshipmen who attend a Military Foundation school or a school with a stronger curriculum differ in their performance during their fourth-class year? (8) Does attending a Foundation military prep school increase the likelihood of graduating from the United States Naval Academy? (9) Does attending a Foundation prep school with a stronger academic curricula increase the graduation probability from the United States Naval Academy??

B.   DATA SAMPLE

This thesis examines United States Naval Academy graduates from the classes of 1988 to 2002 assembled from data files maintained by the United States Naval Academy's Office of Institutional Research (USNA IR). Two files have been combined for this thesis: (1) a file containing USNA Foundation midshipmen performance criteria and (2) a file containing admissions applicant demographics.

The data includes 1272 Foundation midshipmen over 14 years. An alpha code is assigned on induction day, so the data include all Foundation midshipmen that were inducted to the Naval Academy. The alpha code is a specific identification number for each midshipman. Of the 1272 Foundation sponsored midshipmen, 84.4% (1074) graduated.

The data incorporates various demographic characteristics. The midshipmen population demographic variables are identified in Appendix A.

C.   FOUNDATION PROGRAM EVALUATION

The program evaluation will consist of gathering of information about the Foundation Preparatory Program schools. A variety of analyses can be used to conduct the evaluation. The evaluation assesses Foundation curriculums and compares each Foundation prep school.

1.   Curriculum Comparison

A goal of the Foundation is to provide one year of post high school education to candidates who need further academic preparation. It is important that the objective of the goal is well defined. One of the primary objectives for this goal is to prepare candidates for Plebe Year academics. The core plebe courses are chemistry, calculus and English. The Foundation core curriculum states that each Foundation student will take two semesters of chemistry, calculus and English while at one of 24 prep schools.

It is difficult to comprehend the impact of each prep school without first understanding each individual curriculum. The purpose of the curriculum evaluation is to provide a basis for decision making. From military to Ivy League college prep programs, there is a wide range of educational experiences between the prep schools. The curriculum evaluation section of the program evaluation consists of a thorough examination of the current curriculums of the 24 prep schools.   This will help to

identify the need for and direction of change. While evaluation is an ongoing process, consistent and systematic evaluation will lead to a Foundation program that is representative current, relevant and responsive to the changing needs of the United States Naval Academy.

2.   Midshipmen Performance Comparisons

The next section of the program review is the midshipmen performance comparison. Midshipmen performance is the combination of both academic and military performance measures. Midshipmen performance can best be evaluated through the mission of the Naval Academy, to "develop Midshipmen morally, mentally and physically…"(USNA Catalog, 2003). Several variables stand out as indicators of this mission. Both plebe (first year) and cumulative (over 4 years) military and academic grade point averages were chosen to predict mental development. Since the prep school's greatest impact is on freshmen year, plebe academics were also chosen. The three most important courses for a freshman at the Naval Academy are chemistry, calculus and English. These course grades were also included. Moral development is difficult to measure but for this element of the mission, honor/conduct violations will be examined. Physical development will be measured by athletic participation, the Physical Readiness Test (PRT), and physical education grades.

The first semester courses of chemistry, calculus and English can vary due to the skill level of each student. During the first few days of induction, the fourth class midshipmen take a series of validation and placement exams. Based on the test scores the midshipmen will be placed in

the appropriate course according to skill level. Appendix B lists the chemistry, calculus and English course descriptions and the number of Foundation students placed in each course.

Plebe chemistry is one of the most difficult courses for in-coming freshmen. The chemistry GPA variable is calculated by taking the grades from the chemistry courses and dividing by the number of semesters (2). Plebe chemistry GPA is the average grade after taking the two chemistry courses.

Plebe calculus is another difficult course for the first year midshipmen. Calculus is very important for the midshipmen as it is the basis for the technical core curriculum at the Naval Academy. The calculus GPA variable is calculated by taking the grades from the calculus courses and dividing by the number of semesters (2). Plebe Calculus GPA is the average grade after taking two calculus courses.

Plebe English is the final core course for entering freshmen. English is very important to the curriculum at the Naval Academy and the Fleet. Midshipmen have to write numerous reports throughout their Naval Academy careers. Once a midshipman is commissioned they will be called upon to write Military Fitness Reports (FITREP) and other reports. Plebe English is the basis for the high writing demands of an officer. The English GPA variable is calculated by taking the grades from the English courses and dividing by the number of semesters (2). Plebe English GPA is the average grade after taking two English classes.

Plebe AQPR is calculated by weighting plebe academic grades by the credit hours of the course. Plebe MQPR is calculated using several components. The first component is physical education grades. The second component is the Physical Readiness Test (PRT). The third component is the military performance grade. The final components are the grades in the professional courses such as leadership, ethics, and navigation. This variable is evaluated to test the hypothesis that prep schools with military curricula enhance military performance during plebe year.

Plebe military performance and plebe PRT scores are components of plebe MQPR. When comparing the Foundation prep schools, these two components are very important. These variables are performance variables that will be used in the fleet. The Academy scores do not carry over to the fleet, but as an officer these performance variables are used in a fitness report. The fitness report is used to evaluate military performance and for promotion purposes.

Plebe conduct is not a component of MQPR but will influence the military performance grade. The grade is on a 4.0 scale, 4.0 indicating no conduct violations. Conduct grades are assigned based on the amount of conduct infractions (3.0-1.0).

CAQPR and CMQPR consist of the same variables as in plebe AQPR and plebe MQPR. Both variables will be calculated using the same methodology, as for CAQPR and CMQPR however, these variables are cumulative and cover all four years at USNA.

Final PRT is the last physical evaluation of a first class midshipman prior to commissioning. This variable is

important because it displays the physical readiness of the midshipmen prior to his entrance to the fleet. The Naval Academy prides itself on physical readiness. This variable is a good indicator of the physical readiness of the newly commissioned officer.

Graduation rate is a reliable measure of prep school success. Many of the top prep schools in the United States use graduation rate from highly competitive colleges to evaluate and rank themselves. In this study, graduation rate is an important aspect of overall Midshipmen performance.

These variables will be compared among the Foundation prep schools and the Brigade as a whole. These comparisons will help to evaluate each prep school.
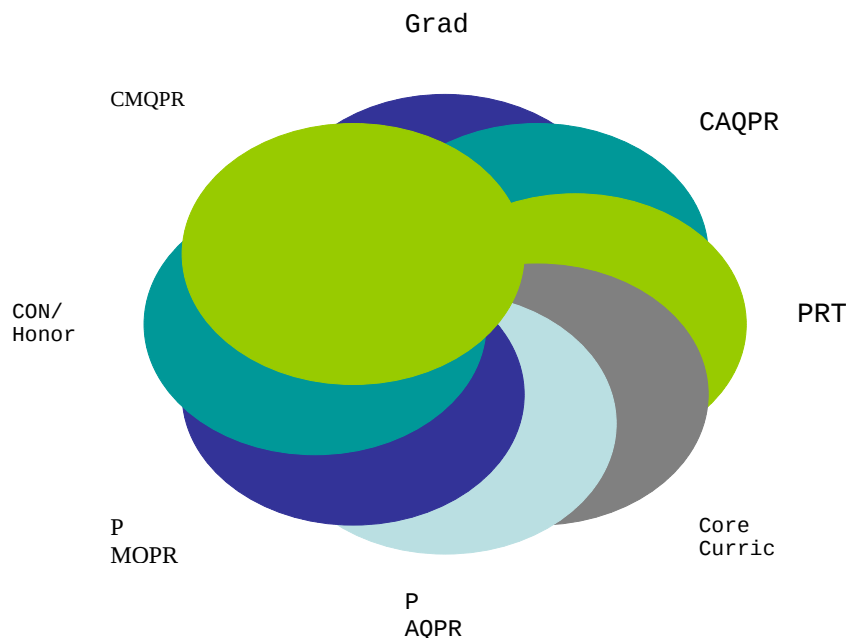
3.   Decision Matrix

The variables that were used in the Foundation comparisons will also be used to rank each prep school. A decision matrix is a table that permits an organization to methodically identify, analyze, and rank the strength of relationships between sets of information. The matrix is especially useful for looking at large numbers of decision factors and assessing each factor's relative importance.

A decision matrix is used to evaluate goals and performance and to weigh factors and variables. It can be used to develop a process of steps for change if needed. For quality improvement, a decision matrix can be useful in selecting a project, in evaluating alternative solutions to problems, and in designing a plan.

This study will use a Pugh (1990) concept decision matrix. Developed in the early 1980's this concept selection process compares alternatives against selection criteria (Mallis, 2002). There are five steps in constructing of the decision matrix. First, identification of the criterion must be established. For this study the selection criteria will be midshipmen performance. The factors that contribute to midshipmen performance are: (1) fourth class academic quality point rating; (2) fourth class military quality point rating; (3) fourth class core classes (chemistry, calculus, and English)(4) cumulative academic quality point rating at graduation; (5)cumulative military quality point rating at graduation; (6) PRT; (7) Honor/conduct violations; and (8) Graduation rate. The criteria are constructed so that a high score for the criterion represents a favorable result.

Figure 1.   Variables   that   Contribute   to   Foundation
                      Midshipmen Performance.

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Identifying the factors that influence midshipmen performance will be the next step. These factors are the 24 Foundation prep schools. Each prep school is an alternative for the potential Foundation student. All of the schools will be compared in the same degree of detail and using a similar method.

The third step is to assign weights to the criterion factors. Assigning weights will identify the more important factors. The variables are divided into three groups: Academic/Graduation, Military performance, and Conduct/PRT. All academic variables and graduation rate are assigned a weight of three. Military performance factors are assigned a weight of two. Conduct and PRT variable are assigned a weight factor of one. The weight factors have been reviewed and approved by the Foundation Preparatory Program.

The final step is to combine the scores. After totaling the scores for each prep school each school will be ranked 1-24 depending upon their combined score. The High, Medium, and Low scoring system, developed in step four, is applied by taking the total score and dividing by the number of Midshipmen performance variables.

A ranking of the Foundation schools will be very valuable feedback for each individual prep school. From this the prep school may modify its program for Foundation students or the Foundation may opt to change which schools are approved for attendance.

D. FOUNDATION REGRESSION ANALYSIS

All analyses will be performed using data gathered by the United States Naval Academy Office of Institutional Research (IR). Both descriptive and inferential statistics

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will be used to illustrate the data. The descriptive analyses employed will examine the relationship between the Foundation students and their demographic characteristics. These demographic characteristics are important because they are to be used as control variables in this study. The control variables will consist of race, gender, and high school characteristics.

The high school characteristics were controlled for because they are important factors when computing the Candidate Multiple. The multiple is used to rank each candidate. There are seven predictors that make up the candidate multiple: (1) SAT/ACT verbal; (2) SAT/ACT math; (3) High School Class Rank; (4) High School ECA/Athletics; (5) Recommendations; (6) Technical Interest score; and (7) Career Interest score. Since recommendations and personality tests are subjective they will not be used in this study. Four of the seven predictors will be controlled for (high school class rank, high school athletics and SAT verbal/math).

To examine the relationship between Foundation and Midshipman performance, a linear regression model will be employed. Linear regression models will be used for the continuous dependent variables. A Logistic regression model will be used to examine graduation status which is a dichotomous variable. An analysis will be conducted on the academic and military performance variables of U.S. Naval Academy midshipmen who matriculated from a Foundation prep school.

1. The Dependent Variables

The methods that best evaluate midshipmen performance (the dependent variable) for this analysis include: fourth

class academic quality point rating, fourth class military
quality point rating, and fourth class military
performance. The descriptive statistics for the Dependent
variables are displayed in Table 1.

Table 1.   Descriptive Statistics for the Dependent
Variables.

Variable	Cases	Mean/Percent	Std Deviation	Range
Plebe AQPR	1074	2.58	0.486	1.11-4.0
Plebe MQPR	1074	3.11	0.377	1.81-4.0
CAQPR	1213	2.66	0.478	0.33-4.0
CMQPR	1219	3.06	0.379	1.55-4.0
Graduate	1272	86%	0.368	0-1.0

Plebe AQPR is calculated by weighing plebe academic
grades by the credit hours of the course. This variable is
being evaluated to test the hypothesis that prep schools
with a stronger academic curriculum enhance freshmen
academic performance at the Naval Academy. The null
hypothesis is that there is no statistical difference in
Plebe AQPR between midshipmen who attended prep schools
with a stronger academic curriculum and those who did not.

Plebe MQPR is calculated using several components. The
first component is physical education grades. The second
component is the Physical Readiness Test (PRT). The third

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component is the military performance grade. The final component is the professional courses grades. This variable is evaluated to test the hypothesis that prep schools with military curricula enhance military performance Plebe year. The null hypothesis is that there is no statistical difference in Plebe MQPR between midshipmen who attended military prep schools and those who did not.

CAQPR is the same as the Plebe CAQPR but it will encompass all four years at the Academy. This variable will evaluate if prep schools with a stronger academic curriculum enhance overall academic performance at the Naval Academy. The null hypothesis is that there is no statistical difference in CAQPR between midshipmen who attended prep schools with a stronger academic curriculum and those who did not.

CMQPR is the same as the Plebe MQPR but it will encompass all four years at USNA. This variable will be used to evaluate if prep schools with a military curricula enhance overall military performance prior to commissioning to the fleet. The null hypothesis is that there is no statistical difference in CMQPR between midshipmen who attended prep schools with a stronger academic curriculum and those who did not.

Graduation status is a binary variable depicting whether or not a Midshipman graduated. The variable is coded '1' if they graduated and a '0' if they did not graduate. This variable is being analyzed to test two theories. First, attending a Foundation military prep school increases the likelihood of graduating from the Untied States Naval Academy. The second is that attending a Foundation school with a stronger academic curriculum

increases graduation probability from the Naval Academy. The null hypothesis is that Foundation graduation rate is no different between midshipmen who attended prep schools with a stronger academic curriculum or a military prep school and those who did not.

2.   The Independent Variables

The effectiveness of the Foundation Prep School Program can best be evaluated by the performance of the midshipmen who matriculated from the individual prep schools. The Foundation prep schools will be categorized into several subgroups on the basis of their curriculum and objectives: (1) military academy preparation (NW Prep); (2) 4 year civilian college (College); (3) military prep school (Military Prep); (4) civilian prep school (Civilian Prep); (5) prep schools with a college curriculum (College Curriculum); and (6) prep schools with a high school curriculum (HS Curriculum). Each of the subgroups are identified as separate dummy variables (1,0). These six subgroups will serve as the independent variables for this thesis in order to predict the effectiveness of their programs in producing successful midshipmen.

NW Prep is a variable representing Foundation students who attend Northwestern Preparatory School. This prep school is very unique. This program is specifically designed for entrance to a military academy.

College is a variable that signifies Foundation students who attend 4 year civilian colleges. Some of the Foundation students elect to attend a civilian college or university rather than a prep school.

The variable Military Prep represents Foundation students who attended a military prep school. These students are predicted to enhance military performance at the Naval Academy because of the added year of military experience.

Civilian Prep is a variable that represents Foundation students who attend private civilian prep school. These prep schools are some of the best prep schools in the nation. Several are feeder schools for Ivy League universities. All of the schools are "90% schools." This means that over 90% of their students attend a four year college.

The variable College Curriculum represents prep schools with stronger academic curriculums. A post-high school curriculum is used to prepare a student for college. By being exposed to this type of curriculum prior to attending college, the student will be able to adjust to the rigors of college life and academics.

HS Curriculum is a variable that signifies a prep school that uses a high school curriculum. Although the curriculum is high school, the prep school frames the curriculum toward college preparation.

The variables that will be controlled will be gender, minority, and three high school characteristics (high school class rank, high school athletics and SAT). These demographic and pre-Naval Academy variables may influence the model. In order to single out midshipmen performance from these factors, they must be included in the model.

Gender and Minority are variables that represent the female candidates and minorities respectively. For gender, 1 will equal female and 0 equal male. For minority, 1 will equal minority and 0 will equal Caucasian. Since other

programs such as BOOST and NAPS prepare underrepresented groups for entrance to the Naval Academy, the Foundation concentrates on the individual's record as opposed to gender/minority status.

The SAT variable is the combined verbal and math SAT score. If another type of college admittance test is taken it is converted to an SAT score. SAT is a predictor of freshmen performance and accounts for 36% of the candidate multiple (12% verbal, 24% math).

The high school class rank variable represents the final high school ranking at graduation. This variable is a major factor into the USNA admission process. This variable accounts for 27% of the candidate multiple.

High school athlete is a variable that represents a candidate that played varsity athletics in high school. For this variable, 1 will equal varsity sports participation and 0 equals no participation in varsity sports. This variable accounts for 8% of the candidate multiple.

3. Model Description

Multivariate regression models will be developed to estimate the effect of a Foundation preparatory school background on Midshipmen performance. Midshipmen performance, based on military and academic credentials, can be measured in a variety of ways. Five Midshipmen performance measures (Plebe MQPR, CMQPR, Plebe AQPR, CAQPR and Graduation status) will be used as the dependent variable in six separate regression models.

The first two linear models will consist of control variables (Gender, Minority, SAT, HS class rank and HS athletics) and prep school types (NW Prep, College,

Military Prep and Civilian Prep) as the independent variables. The dependent variable for the first model will be plebe MQPR and for the second CMQPR. The next two linear models will consist of the same demographic variables as the first two and prep school curriculums (NW prep, College, College Curriculum, and HS Curriculum) as the independent variables. The dependent variable for the third model will be plebe AQPR and for the fourth model CAQPR.

The last two models will use logit models to determine if prep school type or curriculum influences midshipmen graduation. The fifth model will use demographic variables and prep school types as the IVs. The DV for this model will be Graduation Status. The final model will use demographic variables and prep school curriculum as the IVs. The DV will again be Graduation Status.

E.   CHAPTER SUMMARY

The rationale for the program review as well as the regression analysis is to compare, rank and evaluate the twenty four Foundation prep schools. A comparison of the means and decision matrix will be used for the ranking of the prep schools. The linear regression models are designed to determine if prep school type or curriculum enhance Midshipmen academic and military performance. The logit models are designed to evaluate the likelihood of graduation from the Naval Academy. Upon the results of the analysis, prep schools may choose to modify their Foundation program or the Foundation may opt to change which schools are approved for attendance.

IV. DATA ANALYSIS

A.   INTRODUCTION

This chapter has four parts. Both descriptive and inferential statistics are used to illustrate the data gathered.   Section B examines the unique differences between the 24 Foundation prep schools. Section C displays the mean scores of the 11 midshipmen performance variables for each Foundation prep school. Section D displays the results of the decision matrix rankings. Section E employs a linear regression model to examine the relationship between Foundation and midshipman performance.

Linear regression models are estimated to analyze the continuous dependent variables. A logistic model is used to examine graduation status, which is a dichotomous variable. An analysis will be conducted on the academic and military performance variables of U.S. Naval Academy midshipmen who matriculated from the various Foundation prep schools.

B.   FOUNDATION SCHOOL EVALUATION

There are many reasons why a Foundation candidate chooses the prep school they attend. Table 1 provides some basic factors that influence the decision of the candidates. Table 2 shows that the 23 schools vary along several dimensions. These dimensions are factors that are considered by the candidates prior to attending a Foundation prep school. These include location, gender, school size, tuition, curriculum and average class size.

1. Differences in Foundation Characteristics

The Foundation prep schools' characteristics varied by location, school size, tuition, curriculum and gender. These characteristics are used by a candidate when choosing which Foundation prep school to attend.

The majority of the Foundation schools were located in New England (10) and Pennsylvania (6). The remaining schools were located from coast to coast including New Jersey, New Mexico, Virginia, Ohio, Alabama and California. It was not surprising to see the majority of the Foundation prep schools located in the New England area and were considered feeder schools to some of the finest higher education institutions, including Princeton, Brown, Yale, Harvard, and the military academies. It was also not surprising to see that USNA prep schools were located in Pennsylvania and California because those states tended to be very competitive for USNA nominations. I was surprised that the Foundation does not sponsor any prep schools in Maryland. This would make sense because Maryland has been a competitive state for nominations, and the fact that the Naval Academy is located in Maryland. For the candidates that attend the prep school, location is a factor to consider.

Another characteristic was school size. The Foundation prep schools varied in size from 30 (Northwestern Prep) to 1045 (Phillips Exeter). This was a factor candidates consider because the students would benefit from small class sizes. The smaller the class, the more interaction the students would have with their professors. The class size varied from 8-15. Even the schools with more students did not have a class size greater than 15.

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Tuition is the number one factor for most students. Tuition also varies from school to school. The cost of the Foundation prep school ranges from $32,850 (Pomfret School) to $6,900 (Northwestern Prep). The sponsorship cost from the Foundation will generally include room and board. The Foundation does offer tuition assistance in concurrence with the financial need of the candidate's family. Additional fees such at books, laundry, uniforms and travel are the candidate's responsibility.

Curricula types included high school, post-high school/college prep, and junior college. Nineteen of the 24 Foundation prep schools were private high schools. All of the high schools selected by the Foundation had 90% of their graduates attend a 4-year college or university. Two prep schools were post-high school college prep programs. These curriculums provided an extra year of preparation and maturity. The final curriculum type was junior college. This curriculum was very similar to the college curriculum the candidates would see at the United States Naval Academy.

Besides curriculum type, the candidate could choose between a military or civilian school. Four of the 24 Foundation schools were military prep schools. The military schools were similar in regiment to USNA. This structured environment is supposed to aid in the adjustment to Naval Academy life. The Foundation candidates entered the program with a wide range of capabilities. The candidates had the opportunity to choose which curriculum and environment fits their needs the best. In some cases, the Foundation would recommend a curriculum to the candidate.

All of the Foundation schools strived for diversity. Eighteen of the 24 prep schools were co-ed. This gender diversity was beneficial, since about 18% of the Brigade of Midshipmen have historically been female. However, six of the schools were male-only. These schools included: Avon Old Farms, Bridgton Academy, Hargrave Military Academy, The Kiski School, Salisbury School and Valley Forge Military Academy.

When choosing which school is the best fit, a candidate will first evaluate the school based on its characteristics. The characteristics of location, school size, tuition, curriculum and gender will effect the decision of which school to attend.

Table 2.   Foundation Prep School Features.

School	Attend USNA (88-02)	Location	Gender	School Size	03-04 Tuition ($)	Curri-culum	Avg Class size
Avon Old Farms	7	Avon, CT	Male only	369	$31,125	HS	12
Blair Academy	22	Bliarstown, NJ	Co-ed	428	$29-31000	HS	8 to 12
Bridgton Academy	59	N. Bridgton, ME	Male only	178	$28,000	Post HS	8 to 16
Gould Academy	9	Bethel, ME	Co-ed	223	$30-32000	HS	12
The Gunnery	11	Washington, CT	Co-ed	275	$31,500	HS	16
Hargrave Military Academy	33	Chatham, VA	Male only	405	$20,550	HS	10 to 15
The Hill School	50	Pottstown, PA	Co-ed	485	$30,500	HS	15
The Hun School	26	Princeton, NJ	Co-ed	473	$32,000	HS	14
Kent School	27	Kent, CT	Co-ed	551	$31,900	HS	12
The Kiski School	29	Saltsbury, PA	Male only	210	$27,500	HS	10
Marion Military Institute	56	Marion, AL	Co-ed	150	$14-16150	JC	9
Mercersburg Academy	35	Mercersburg, PA	Co-ed	444	$30,900	HS	12
New Mexico Military Academy	117	Roswell, NM	Co-ed	1000	$9,700	JC	15
Northfield Mount Hermon School	47	Northfield, MA	Co-ed	1035	$30,300	HS	13
Northwestern Prep School	253	Lake Arrow Head, CA	Co-ed	30	$6,950	Post HS	15
Peddie School	48	Hightstown, NJ	Co-ed	511	$30,400	HS	12
Perkiomen School	26	Pennsburg, PA	Co-ed	216	$29,500	HS	12
Phillips Exeter Academy	6	Exeter, NH	Co-ed	1045	$30,000	HS	12
Pomfret School	N/A	Pomfret, CT	Co-ed	340	$32,850	HS	10
Salisbury School	4	Salisbury, CT	Male only	260	$32,200	HS	12
Valley Forge Miitary Academy	8	Wayne, PA	Male only	400	$25,680	JC	13
Vermont	10	Saxton River, VT	Co-ed	255	$32,200	HS	11
Western Reserve Academy	24	Hudson, OH	Co-ed	400	$26,700	HS	12
Wyoming Seminary	33	Kingston, PA	Co-ed	450	$31,000	HS	13

Source: Peterson's Education.(2004) Peterson's Website

2. Foundation Curriculums

The Foundation requires three of the courses per semester to include one in calculus, chemistry and English. These courses are required to aid the candidates in the areas that are most difficult. Every prep school approved by the Naval Academy Foundation is listed among the most selective in the country. Each school offers a different perspective concerning college preparation. The following evaluations are based on information derived from the individual prep school web pages and catalogs.

a. Avon Old Farms School

Avon Old Farms School is a male only prep school located in Avon, Connecticut. Avon Old Farms emphasizes the individual development of each student. The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet six days a week, which includes Saturday morning classes. There is a two hour supervised study hall in the dormitories or library five nights a week. The average class size is 12 and the student-to-teacher ratio is 6:1. Students are expected to take a minimum of five courses per semester. The school offers the Foundation required courses of pre-calculus, calculus, chemistry, English and a variety of other courses. A honors program is also available to present are additional challenge for capable students. Each student is required to participate in a sport during the year. The

school year is divided into two semesters and the grade system is A-F (Peterson's, 2004).

     b.   Blair Academy

Blair Academy is a co-educational prep school located in Blairstown, New Jersey. Blair stresses "personal commitment to education." The academic curriculum is a traditional high school college prep program and is accredited by the Middle States Association of Colleges and Schools and is a member of the National Association of Independent Schools. Classes meet four times per day in a six-day week; Wednesday and Saturday are shortened days with afternoons devoted to athletics and drama. There is a two hour (8-10pm) supervised study hall in the dormitories or for some students having academic problems. The average class size is 8-12 and the student-to-teacher ratio is 6:1.

The school offers several English, mathematics, laboratory sciences as well as a full complement of other courses. Introductory through advance placement skill levels are offered for most courses. Participation in athletics or supervised recreational sports is mandatory. The school year is divided into three semesters and the grade system is a 6.0 system in which 2.0 is passing (Peterson's, 2004).

     c.   Bridgton Academy

Bridgton Academy is a male only prep school located in North Bridgton, Maine. Bridgton strives to develop academic skills, self-discipline, maturity and confidence. The academic curriculum is a post-high school college prep

program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. This one-year program is intended to duplicate the college experience and atmosphere. Classes meet five days a week. The average class size is 8-16 and the student to teacher ratio is 9:1. Students are expected to take a minimum of four courses per semester. The school offers the Foundation required courses (pre-calculus, calculus, college chemistry, college writing, Englis) and numerous other college courses. There is a two hour (7:30-9:30) mandatory supervised study period five nights a week. A unique element of Bridgton Academy is the College Articulation Program (CAP). This program, with the collaboration of local colleges, offers courses that carry college credit. Although there are no structured physical education courses, most students participate in organized athletics. The school year is divided into two semesters and the grade system is A-F (Peterson's, 2004).

d. Gould Academy

Gould Academy is a co-educational prep school located in Bethel, Maine. Gould emphasizes the development of future leaders. The goals of the Gould Academy are very similar to the mission of the Naval Academy. The student must be physically, intellectual and morally sound. The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet six days a week, which

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includes Saturday morning classes. There are 2 ½ hrs of supervised study hall five nights a week. The average class size is 12 and the student-to-teacher ratio is 3:1. Students are expected to take a minimum of five courses per semester. The school offers mathematics, science, English and a variety of other courses. Advanced placement and honors course are offered for talented students. All students must participate on a athletic team or in other organized activities each season. The school year is divided into three semesters and the grade system is numerical: a passing grade is a 60; grades of 85-91 are honors; grades of 92-100 are high honors (Peterson's, 2004).

e. The Gunnery

The Gunnery co-educational prep school located in Washington, Connecticut. This school's goals include: academic excellence, competitive athletics and a strong nonsectarian moral guidance. The academic curriculum is a high school/college prep program which emphasizes liberal arts. The Gunnery is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet six days a week, Wednesday and Saturday classes are scheduled for mornings only. A study period is held from 7:30-9:30 for all non-honor roll students. The average class size is 14 and the student-to-teacher ratio is 6:1. Students are expected to take a minimum of five courses per semester. The school offers mathematics, laboratory science, English and a variety of other courses. The courses are diverse and many levels of difficulty are

offered including advanced placement. Each student is required to participate in a sport during the year. The school year is divided into three semesters and the grade system uses designations of distinction. The designations, high honors, honors, high pass, pass, low pass and fail indicate a students performance in a course (Peterson's, 2004).

f. Hargrave Military Academy

Hargrave Military Academy is a male only military prep school located in Chatham, Virginia. Hargrave provides a structured scholastic environment. This military prep school considers involvement in athletics, spirituality and ECAs to be an essential part of college preparation. The academic curriculum is a military high school college prep program and is accredited by the Virginia Association of Independent Schools, the Association of Military Colleges and Schools of the United States and is a member of the National Association of Independent Schools. Classes meet six days a week. The academic day ends at 12:00 and military evolutions are conducted in the afternoon. Saturday mornings may be used for military development or formal inspections. There is an evening study period from 7:30-9:40 five nights a week. Lights out during the week is 10:00 pm and on the weekends 11:00 pm. The average class size is 10-15 and the student-to-teacher ratio is 10:1. Students are expected to take a minimum of six courses per semester. The school offers mathematics, science, English, and with other demanding courses. The Hargrave curriculum is known for its strong reading program. Hargrave requires a course in religion for all students. Military drill is

conducted in the afternoon about 4 hours a week. There is not a requirement for athletic participation, but 70 percent of the student population play on an athletic team. The school year is divided into two semesters and the grade system is A-F (Peterson's, 2004).

g.   The Hill School

The Hill School is a co-educational prep school located in Pottstown, PA. Hill emphasizes academic excellence, respect for both mind and body, and high model of individual conduct. The academic curriculum is a high school college prep program and is accredited by the Middle States Association of Colleges and Schools and is a member of the National Association of Independent Schools. Classes meet six days a week, with morning classes only on Wednesday and Saturday. Chapel services are held for students on Tuesday and Friday mornings. There are evening supervised study hours five nights a week. The average class size is 15 and the student-to-teacher ratio is 6:1. Each student is required to take 16 credits per semester. The school offers the Foundation required courses as well as many other courses. Athletics are not required for Hill students, although 42 sports are offered. The school year is divided into three semesters and the grade system is A-F.

h.   The Hun School

The Hun School is a co-educational prep school located in Princeton, New Jersey. A feeder school for Princeton University, Hun is committed to the development of intelligence and character. The school values include:

honor, service, perseverance, responsibility, compassion, respect, and leadership. The academic curriculum is a high school college prep program and is accredited by the Middle States Association of Colleges and Schools and is a member of the National Association of Independent Schools. Classes meet the traditional five days a week. Students having academic problems may be assigned to a supervised study hall during the school day. The average class size is 14 and the student-to-teacher ratio is 10:1. Students on average take five courses per semester. The school offers mathematics, laboratory science, English and over 90 other courses. Most Hun academic courses include skill levels of honors, accelerated and advanced placement. Qualified students may take independent study lessons as well as college-level courses at Princeton University. Students are not required to participate in a sport during the year. The school year is divided into two semesters and the grade system is numerical, with 60 representing a passing grade (Peterson's, 2004).

i.   Kent School

Kent School is a co-educational prep school located in Kent, Connecticut. Kent has a strong relationship with the Episcopal Church. The school is dedicated to understanding, appreciating and living the values of the Judeo-Christian tradition. The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet six days a week, which includes Wednesday and Saturday morning classes. Students are required to attend chapel

services on Tuesday and Thursday. There is no organized study period, but study conditions are upheld throughout the campus from 7:30-9:30. The average class size is 12 and the student-to-teacher ratio is 7:1. The average course load is five courses per semester. The school offers mathematics, lab sciences, English and a variety of other courses. The advance placement program is also available to present additional challenge for capable students to work at a college skill level. There is not a requirement for participation in organized athletics. The school year is divided into two semesters and the grade system is a 6.0 system. Grades vary from a high of 6.0 to a 1.0, indicating failure. The minimum passing grade is 2.0 (passing low) (Peterson's, 2004).

j.   The Kiski School

The Kiski School is a male only prep school located in Saltsburg, Pennsylvania. Kiski emphasizes the preparation of young men for leadership and service. The academic curriculum is a high school college prep program and is accredited by the Middles States Association of Colleges and Schools and is a member of the National Association of Independent Schools. Classes meet six days a week, which includes a half day on Wednesday and Saturday morning. Evening study hall is required for freshman, sophomores and juniors. This study period is held in the dormitories from 7:30-9:30. The average class size is 10 and the student to teacher ratio is 7:1. The school offers the Foundation required courses pre-calculus, calculus, advanced calculus, chemistry, English and a variety of other courses. An advanced placement program is also available in biology,

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chemistry, physics, math, English and history. Every student is required to participate in athletics during the school year. The school year is divided into three semesters and the grade system is A-F (Peterson's, 2004).

k. Marion Military Institute

Marion Military Institute is a co-educational prep school located in Marion, Alabama. Marion Military is devoted to a structured college preparatory program. This Military institution provides an organized military training program that will prepare students for the military service academies. The academic curriculum is a two-year junior college and is accredited by the Southern Association of Colleges and Schools, a member of the Association of Military Colleges and Schools of the United States, and the Southern Association of Junior Colleges. Classes meet five days a week. There is a 2 hour study period from 7:30-10:00pm. The average class size is nine and the student-to-teacher ratio is 14:1. Students are expected to take a minimum of six courses per semester. The school offers the Foundation required courses calculus, chemistry, English. Marion requires each student to take a physical education and a leadership development course per semester. This leaves the Foundation-sponsored student with one elective per semester. The JROTC program allows the student to understand and utilize leadership skills and professionalism. The athletic program is designed to promote physical fitness. Both interscholastic and intramural sports programs are available for the students.

The school year is divided into two semesters and the grade system is numerical with a passing grade of 60 (Peterson's, 2004).

l.   The Mercersburg Academy

The Mercersburg Academy is a co-educational prep school located in Mercersburg, Pennsylvania. Mercersburg maintains a robust commitment to ethical and academic excellence for its students. The academic curriculum is a high school college prep program and is accredited by the Middle States Association of Colleges and Schools and is a member of the National Association of Independent Schools. Classes meet five days a week, which includes a half day on Wednesday. The Friday class day includes the weekly chapel program. This program invites guest speakers to discuss issues dealing with ethics and morality. There are supervised study hours in the dormitories from Sunday through Thursday. The average class size is 12 and the student-to-teacher ratio is 5:1. Students are expected to take a minimum of five courses per semester. The school offers mathematics, science, English and numerous other courses. The advanced placement courses are also available for capable students to prepare for the advance placement test. Athletic participation is not required of the students but is highly encouraged. The athletic program allows students to compete on a interscholastic level and promotes physical fitness. The school year is divided into three semesters and the grade system is numerical. Passing grade is 60 with 80 representing honors and 90 high honors (Peterson's, 2004).

m.   New Mexico Military Institute

New Mexico Military Institute is a co-educational prep school located in Roswell, New Mexico. New Mexico Military uses military structure to provide an excellent education. The academic curriculum is a junior college curriculum and is accredited by the North Central Association of Colleges and is a member of the American Association of Junior Colleges. New Mexico Military participates as a Foundation prep school for all the service academies. Because of this, New Mexico Military has a Service Academy Preparatory Program specifically for the Foundation students. Classes meet five days a week. There are two supervised tutoring sessions held on Thursday and Friday. The average class size is 15 and the student-to-teacher ratio is 16:1. Students are expected to take six courses each semester. The mandatory courses for Service Academy Program are pre-calculus, chemistry, English, history, physical education and military science. The school year is divided into two semesters and the grading system is A-F (New Mexico Military, 2004).

n.   Northfield Mount Hermon School

Northfield Mount Hermon School is a co-educational prep school located in Northfield, Massachusetts. Northfield emphasizes real world context and individual development of each student. The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet five days a week. There is a two hour

supervised study period in the evening five nights a week. The average class size is 13 and the student to teacher ratio is 6:1. Students are expected to take the most rigorous course load in which they can succeed. The school offers pre-calculus, calculus, chemistry, English and a variety of other courses. Each student is required to take courses in religious studies and physical education or participate in a sport during the school year. Advance placement courses are available in 23 academic areas. The school year is divided into two semesters and the grade system is A-F (Peterson's, 2004).

o.   Northwestern Preparatory School

Northwestern Preparatory School is a co-educational prep school located in Lake Arrowhead, California. Northwestern emphasizes the development of candidates for the service academies. Northwestern is a feeder school for all service academies. The academic curriculum is a two-part service academy prep program and is spilt into two terms. The school program concentrates in the service academy academic areas of English, calculus, and chemistry. The curriculum also emphasizes physical fitness and study management. The first term is held at Northwestern from August through December. Classes meet six days a week, which includes Saturday morning classes. There is a three-hour supervised study hall held in the evening. The Northwestern grading system is A-F. During the second term, Northwestern students are required to take college level English, chemistry and calculus. This college level experience will assist the students when they attend a military academy (Northwestern Prep, 2004).

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p.   The Peddie School

The Peddie School is a co-educational prep school located in Highstown, New Jersey. Peddie emphasizes the scholastic excellence of each student. Worth Magazine ranked the top high schools in the nation (Yaqub, 2002). This ranking is based on the percentage of students that attends the high competitive Ivy League schools. The Peddie School was ranked in the top 100 (84) as a feeder school to the Ivy League. The academic curriculum is a high school college prep program and is accredited by the Middle States Association of Colleges and is a member of the National Association of Independent Schools. Classes meet six days a week, which includes half days on Wednesday and Saturday. There is a two hour supervised study hall in the evening. The average class size is 12 and the student-to-teacher ratio is 6:1. Students are offered calculus, chemistry, English and a variety of other courses. Advanced placement courses are offered in many subject areas including chemistry, calculus, physics and history. Each student is required to participate in a sport or physical education course during the academic year. The school year is divided into three semesters and the grade system is A-F (Peterson's, 2004).

q.   Perkiomen School

The Perkiomen School is a co-educational prep school located in Pennsburg, Pennsylvania. Perkiomen strives to develop the individual learning skills of each student. The academic curriculum is a high school college prep program and is accredited by the Middle States Association

of Colleges and Schools and is a member of the National Association of Independent Schools. Classes meet five days a week and there is a two hour supervised study hall in the dormitories (7:30-9:30). The average class size is 12 and the student-to-teacher ratio is 7:1. The school offers calculus, chemistry, English and a variety of other courses. Honors and advance placement programs are also available to present a challenge for competent students. There is no requirement for students to participate in athletics. The school year is divided into three semesters and the grade system is A-F (Peterson's, 2004).

r.   Phillips Exeter Academy

Phillips Exeter Academy is a co-educational prep school located in Exeter, New Hampshire. Phillips Exeter is known for its style of teaching. Exeter uses the Harkness style of education, which uses the teacher as a facilitator rather than an instructor. The students sit around an oval table while the teacher facilitates. This style fosters participation for all the students. Exeter is a feeder school for Yale University and is ranked 11th (by Worth Magazine) as a feeder school for Ivy League Universities (Yaqub, 2002). The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet five days a week, which includes some Saturday classes. Wednesdays and Saturdays are half days. There is a two and a half hour supervised study hall from 8-10:30 in the evenings. The average class size is 12 and the student-to-teacher ratio is 5:1. Students typically take five courses

per semester. The school offers calculus, chemistry, English and 350 other courses. Capable students are given opportunities to take advance placement courses as well as to study college level courses. Each student is required to participate in physical activities. These activities include competitive, intramural, fitness and physical education. The school year is divided into three semesters and the grade system is A-E (Peterson's, 2004).

s.   Pomfret School

The Pomfret School is a co-educational prep school located in Pomfret, Connecticut. Pomfret emphasizes educational excellence. Valuing creative thinking, Pomfret requires students to enroll in art courses. The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet five days a week, which includes Wednesday and Saturday morning classes. There is a two hour supervised study period five nights a week. The average class size is 10 and the student to teacher ratio is 5:1. Students are expected to take one course in religious study. The school offers calculus, chemistry, English, as well as a wide range of other courses. Each student is required to participate in an athletic activity each season. The school year is divided into three semesters and the grade system is A-E (Peterson's, 2004).

t. Salisbury School

The Salisbury School is a male only prep school located in Salisbury, Connecticut. This Salisbury's mission is to develop self confidence, intelligence, morality, religious faith and physical fitness of young men. The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet six days a week and Wednesday and Saturday classes are held in the morning. The two hour study hall takes place from 7:30-9:30 and all students must be in their dorm room by 10:15. The average class size is 12 and the student to teacher ratio is 6:1. The school offers calculus, chemistry, English and a variety of other courses. Each student is required to participate in athletics during the afternoon sports period. The school year is divided into three semesters and the grade system is A-F (Peterson's, 2004).

u. Valley Forge Military Academy

Valley Forge Military Academy is a male only prep school located in Wayne, Pennsylvania. Valley Forge Military's mission is to educate young men and to develop them ethically, mentally and physically. The academic curriculum is a junior college program and is accredited by the Middle States Association of College and Schools. Classes meet five days a week and Monday afternoon is reserved for military events. There is a two-hour supervised study hall five nights a week and students with unsatisfactory grades must attend extra instruction. Taps

is held at 10:00 for all students. The average class size is 13 and the student-to-teacher ratio is 9:1. Students are expected to take a minimum of six courses per semester. The school offers calculus, chemistry, English and several other courses. Students are evaluated and placed in one of three skill levels (honors, intermediate and standard). All students attend JROTC instruction. The school year is divided into two semesters and the grade system is A-F with pluses and minuses (Peterson's, 2004).

v.   Vermont Academy

Vermont Academy is a co-educational prep school located in Saxton River, Vermont. Vermont Academy emphasizes the enhancement of confident independent students. The academic curriculum is a high school college prep program and is accredited by the New England Association of Schools and Colleges and is a member of the National Association of Independent Schools. Classes meet six days a week, which includes Wednesday and Saturday morning classes. A supervised study hall is held in the dormitories and the library from 8-10:00 during the week. The average class size is 11 and the student-to-teacher ratio is 7:1. On average, students take five courses per semester. The school offers calculus, chemistry, English and a variety of other courses. A honors program is also available to challenge able students. Advanced placement instruction is offered in any subject for students who want to attain college credit. The school year is divided into two semesters and the grading system is A-F with pluses and minuses (Peterson's, 2004).

w.   Western Reserve Academy

Western Reserve Academy is a co-educational prep school located in Hudson, Ohio. Western Reserve is a liberal arts college preparatory school. The academic curriculum is a high school college prep program and is accredited by the Independent Schools Association of Central States and is a member of the National Association of Independent Schools. Classes meet five days a week. There is a study hall in the dormitories or library five nights a week. The average class size is 12 and the-student to-teacher ratio is 6:1. Students are expected to take a minimum of five credits per semester. The school offers calculus, chemistry, English and a variety of other courses. Qualified students are given opportunities to take advance placement courses as well as to study college level courses at Kenyon College. The school year is divided into two semesters and the grading system is A-F (Peterson's, 2004).

x.   Wyoming Seminary

Wyoming Seminary is a co-educational prep school located in Kingston, Pennsylvania. Wyoming Seminary emphasizes competitive environment for academics. The academic curriculum is a high school college prep program and is accredited by the Middle States Association of Colleges and Schools and is a member of the National Association of Independent Schools. Classes meet five days a week. There is a two hour and 20 minute study period in the dormitories five nights a week (Sunday-Thursday. The average class size is 13 and the student-to-teacher ratio

is 8:1. Students are expected to take a minimum of five courses per semester. The school offers pre-calculus, calculus, chemistry, English, and over 100 other courses. Capable students may attend advanced courses and obtain college credit at Wilkes University or King's College. The school year is divided into three semesters and the grading system is A-F (Peterson's, 2004).

C. MIDSHIPMEN PERFORMANCE DATA COMPARISON

The Midshipmen that matriculate from the Foundation preparatory programs have different levels of performance. Midshipmen performance is based on both academic and military performance measures. Since the Foundation prep school's greatest impact is on the first year at the Academy, several plebe performance measures were evaluated. These measures represent all three USNA mission areas -- mental, moral and physical. Cumulative performance measures are also included to review the midshipmen performance over 4 years at USNA.

The differences in the performance of midshipmen can be use to identify differences in the prep school programs. The comparisons of midshipmen performance variables provide some information on the performance of each prep school. The 11 midshipmen performance variables were compared across the 24 Naval Academy Foundation Prep Schools. Table 3 shows the mean scores for each variable by Prep school attended. The mean of each performance variable is compared to see which schools perform well. They are also compared to the non-Foundation Brigade average (see bottom of Table 3). The overall Foundation average meets the satisfactory standard of a 2.0 in every performance variable. In two of

the performance variables, plebe MQPR and plebe conduct, the Foundation means equaled mean for the rest of the Brigade. The Foundation average was higher than the Brigade average in four performance variables (plebe military performance, plebe PRT, 1/C PRT, and graduation rate).

Table 3.   Midshipmen Performance By Prep School Attended (1988-2002)

School	Plebe Chem GPA	Plebe Calc GPA	Plebe Eng GPA	Plebe AQPR	Plebe MQPR	Plebe MILPERF	Plebe COND	Plebe PRT Score	CAQPR (Grad)	CMQPR (Grad)	1/c PRT Score	GRAD (#/ rate)
Avon Old Farms	2.07	2.58	2.92	2.57	2.23	3.29	3.86	NA	2.79	3.16	86.60	7/ 100%
Blair Academy	2.02	2.73	2.71	2.59	2.22	3.33	3.98	82.18	2.73	3.26	87.89	21/ 95%
Bridgton Academy	2.19	2.45	2.80	2.60	3.08	2.93	3.87	70.88	2.60	3.00	79.83	49/ 83%
4yr College	2.67	2.65	2.75	2.74	3.16	3.13	3.87	71.60	2.78	3.08	76.00	138/ 88%
Gould Academy	2.63	2.44	2.88	2.77	3.19	3.31	3.81	NA	2.76	3.01	70.90	8/ 89%
The Gunnery	2.50	2.77	2.68	2.67	3.13	3.27	4.00	NA	2.81	3.10	81.65	11/ 100%
Hargrave Military Academy	2.20	2.50	2.61	2.56	3.18	3.28	3.96	NA	2.63	3.01	79.10	27/ 82%
The Hill School	2.11	2.30	2.72	2.50	3.09	3.10	3.98	82.15	2.67	3.04	85.91	44/ 88%
The Hun School	2.02	2.69	2.60	2.54	3.01	3.10	3.80	63.80	2.63	3.01	85.96	21/ 81%
Kent School	2.07	2.31	2.78	2.49	3.13	3.20	3.94	72.90	2.70	3.15	77.89	27/ 100%
The Kiski School	2.36	2.64	2.74	2.62	3.14	3.18	3.96	NA	2.74	3.13	89.26	25/ 86%
Marion Mil Institute	2.00	2.36	2.902 2	2.55	3.19	3.24	3.87	NA	2.59	3.06	87.82	46/ 82%

Mercersburg Academy	2.08	2.45	2.88	2.56	3.06	2.97	3.95	82.73	2.74	3.09	82.83	32/ 91%
New Mexico Military Academy	2.19	2.55	2.74	2.60	3.07	2.98	3.91	82.34	2.65	3.06	86.25	97/ 83%
Northfield Mount Hermon School	2.14	2.21	2.81	2.55	3.18	3.17	3.97	NA	2.60	3.11	87.93	39/ 83%
NW Prep School	2.22	2.35	2.80	2.55	3.10	3.05	3.90	82.65	2.65	3.04	80.38	204/ 81%
Peddie School	2.22	2.60	2.84	2.62	3.06	2.84	3.79	82.04	2.73	3.10	89.32	41/ 85%
Perkiomen School	2.27	2.75	2.82	2.57	2.98	2.89	3.95	83.00	2.65	3.00	80.50	22/ 85%
Phillips Exeter Academy	2.00	1.83	3.17	2.38	2.92	3.17	4.00	73.77	2.58	3.11	80.20	3/ 100%
Salisbury School	1.88	1.63	2.75	2.20	3.02	3.25	4.00	NA	2.57	3.14	NA	4/ 100%
Valley Forge Miitary Academy	2.36	3.00	2.21	2.57	3.04	3.29	4.00	86.97	2.61	3.11	78.57	7/ 88%
Vermont	1.50	1.81	2.63	2.22	3.02	2.94	4.00	75.20	2.55	2.96	85.30	8/ 80%
Western Reserve Academy	2.29	2.71	2.82	2.66	3.19	3.21	3.97	89.68	2.80	3.17	87.90	8/ 71%
Wyoming Seminary	2.05	2.46	2.59	2.44	2.92	2.82	3.86	NA	2.45	2.93	83.41	17/ 85%
Foundation Average	2.23	2.46	2.77	2.58	3.11	3.08	3.91	81.23	2.66	3.06	84.06	28/ 84%
Brigade Average	2.38	2.56	2.92	2.69	3.11	3.02	3.91	78.50	2.86	3.13	83.38	14614/ 77%

D.   FOUNDATION DECISION MATRIX

The variables that were used in the Foundation school comparison will also be used to rank each prep school. Weights were assigned to the performance variables to stress the more important factors. The 12 variables are divided into three groups. Group one included all academic performance variables (class GPA and cumulative QPR) and

the graduation rate. Variables in group one were assigned a weight of 3.0. Group two included military performance factors (Military performance grade and CMQPR) and all variables were assigned a weight of 2.0. Group three includes conduct and PRT scores and all variables were assigned a weight of 1.0. The maximum matrix score is 93. The formula is constructed as follows (See appendix C for more detail):

3(AC+GRAD)+2(MILPERF)+(CON+PRT)= Matrix Score (max=93)

After totaling the scores for each prep school they were ranked based on their combined score. The max matrix score is a 93 and the minimum is 0. This ranking of the Foundation schools will provide valuable feedback for each individual prep school. Table 4 displays the final matrix scores and the rank of each of the 24 current Foundation prep schools. As there were several ties, Prep Schools were actually ranked from 1 to 16. Even with the ties, the variation in total scores was not great with only 10.4 points separating the top and bottom ranked schools.

Table 4.   Foundation Decision Matrix Scores

Ranking	Total Score	Foundation School
1	80.3	Blair Academy
2	79.9	Attending Civilian College
3	78.6	Western Reserve Acad
3	78.6	Gunnery
4	78.0	Mercersburg Academy
4	78.0	Kent School
5	77.9	Peddie School
6	77.5	Perkiomen School
6	77.5	Avon Old Farms School
7	77.0	New Mexico Military Institute
8	76.7	Gould Academy
8	76.7	Hill School
9	76.2	NW Prep School
10	75.0	Bridgtion Academy
10	75.0	Hun School
11	74.5	Salisbury School
12	73.0	Hargrave Military Acad
12	73.0	Northfield Mount Hermon School
12	73.0	Marion Military Academy
13	72.6	Deerfield Academy
14	71.6	Valley Forge Military Jr. College
15	70.7	Wyoming Seminary
16	70.2	Phillips Exeter Academy
16	69.9	Vermont Academy

E.   REGRESSION ANALYSIS OF USNA PERFORMANCE OF FOUNDATION PREP SCHOOL GRADUATES

The final analysis of the data used linear and logistic regression modeling. The regression analyses attempted to isolate the independent effect of Foundation school participation on military and academic performance at USNA. The logistic regression analyzes whether attending

a military prep school or a stronger academic curriculum increases the likelihood of graduation at USNA.

1. Data Screening

The total sample consisted of 1,272 midshipmen who attended a Foundation school between 1988-2002. The results of the data screening revealed that 202 academic records were incomplete, so these cases were not used in the analysis of plebe MQPR and AQPR analysis (N=1,070). The complete sample (N=1,272) was used to analyze graduation status.

2. Correlations

The correlation matrix for the variables used in the regression models is displayed in Table 4. As shown, only one type of Foundation program was significantly correlated with midshipmen performance. The civilian college program is significantly and positively related to plebe AQPR (r=.132, p<.01). So a midshipman who attended a civilian college program sponsored by the USNA Foundation has a higher plebe AQPR than the other prep school graduates.

Table 5.   Correlations Between Attending A Foundation
           School and Midshipmen Performance.

		Military Prep Schools	NW Prep School	4yr Civilian College	Civilan Prep School	Prep school w/ College Curriclum	Co-ed Prep Schools
Plebe AQPR	Pearson Correlation	-.019	-.028	.132(**)	-.050	-.014	.001
	Sig. (2-tailed)	.542	.353	.000	.101	.650	.979
Plebe MQPR	Pearson Correlation	.030	-.018	.048	-.046	.044	-.013
	Sig. (2-tailed)	.322	.563	.114	.129	.150	.677
USNA GRAD	Pearson Correlation	-.021	-.052	.036	.038	-.014	-.004
	Sig. (2-tailed)	.446	.062	.201	.174	.629	.890

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
a Cannot be computed because at least one of the variables is constant.

3.   Linear Regression Models

The first regression model tests the hypothesis that attendance at a military prep school will enhance plebe military performance at USNA compared to attendance at a civilian prep school. The dependent variable for the plebe military performance model is the plebe MQPR grade. This estimated regression model accounts for 6.7% of the variance in plebe MQPR. This model was significant with $F(1070,1)=11.22$ ($p<.05$), R squared= .073, and Adjusted R squared=.067. However, in Table 6 the military prep school variable is not significant. The coefficient of Northwestern Prep is negative and significant ($p<.05$) suggesting that attending NW prep school does not enhance plebe military performance and may, in fact reduce performance.

The second model tests the hypothesis that Foundation prep schools with college-based curricula enhance academic performance as compared to schools with high-school-based curricula. Academic performance is defined as the plebe AQPR grade. The estimated plebe AQPR regression model accounts for 13% of the variance in plebe AQPR with $F(1070,1)=22.38$ $(p<.05)$, R squared= .136, and Adjusted R squared= .130. The variable College Curriculum (Prep school with a stronger academic curriculum) is not significant in the model. However, in Table 6, Model 2, the variable '4-yr-College' is significant $(p<.05)$ and has a positive effect. Attending a 4-year college sponsored by the Foundation appears to enhance plebe academic performance.

The variables minority, gender, SAT scores and H.S. rank were used as control variables in Models 1 and 2. Gender, SAT scores, and H.S. rank are all significant predictors of plebe MQPR and AQPR.

Table 6.   Plebe Performance Linear Regression Models
              (Dependent Variables=MQPR and AQPR).

Model 1: Dep Var= Plebe MQPR Variables	B	SE B	Beta	t	Sig.	R^2	Adj. R^2
						.073	.067
Intercepts	2.215	.196		11.31	.000		
Minority	.091	.082	.034	1.12	.269		
Gender	-.199	.048	-.129	-4.15	.000		
SAT	.001	.000	.169	5.08	.000		
HS Class Rank	-.001	.000	-.175	-5.70	.000		
HS Varsity Ath	.004	.014	.009	.290	.772		
Military Prep	.009	.027	.011	.328	.743		
NW Prep	-.070	.033	-.073	-2.11	.035		
Model 2: Dep Var= Plebe AQPR							
Variables	B	SE B	Beta	t	Sig.	R^2	Adj. R^2
						.136	.130
Intercepts	.867	.227		3.818	.000		
Minority	-.010	.102	-.003	-.102	.919		
Gender	-.237	.059	-.120	-4.01	.000		
SAT	.001	.000	.243	8.14	.000		
HS Class Rank	-.002	.000	-.205	-6.89	.000		
HS Varsity Ath	-.001	.017	-.003	-.083	.934		
College Curriculum	-.015	.071	-.006	-.218	.828		
4yr College	.166	.043	.116	3.89	.000		

The third model tests the hypothesis that military
prep schools enhance overall military performance at USNA,
defined as the CMQPR grade. This regression model accounts
for 5.1% of the variance in CMQPR. This model was
significant with $F_{(1070,1)}=9.77$ ($p<.05$), R squared=.057,
and Adjusted R squared=.051. The coefficient of the
military prep school variable in Table 7 is significant
($p<.10$), but has a negative relationship (B= -.048) with
military performance. In Model 3, Table 7, NW Prep was also
significant ($p<.05$) with a negative relationship (B= -.065)
with midshipmen performance. Attendance at a military prep

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school does not enhance overall military performance and attendance at NW Prep may reduce performance.

The fourth model in Table 7 tests the hypothesis that Foundation prep schools with stronger college curricula enhance overall academic performance, where academic performance is defined as the CAQPR grade. This regression model accounts for 9% of the variance in CAQPR. This model was significant with $F_{(1070,1)}=16.95$ ($p<.05$), R squared=.096, and Adjusted R squared=.090. Although the College Curriculum (Prep school with a stronger academic curriculum) was not significant, this model did find that the variable '4yr-College' is significant and positive ($p<.05$). The coefficient of a '4-year College Curriculum' increases the CAQPR by .11 points.

Table 7.   Overall Midshipmen Performance Linear Regression
Model (Dependent Variables=MQPR and AQPR).

Model 3: Dep Var= CMQPR Variables	B	SE B	Beta	t	Sig.	R^2	Adj. R^2
						.057	.051
Intercepts	2.654	.183		14.51	.000		
Minority	-.084	.074	-.033	-1.14	.254		
Gender	-.151	.045	-.100	-3.38	.001		
SAT	.000	.000	.084	2.67	.008		
HS Class Rank	-.001	.000	-.189	-6.50	.000		
HS Varsity Ath	.041	.013	.090	3.05	.002		
Military Prep	-.048	.026	-.057	-1.85	.064		
NW Prep	-.065	.031	-.068	-2.08	.038		

Model 4: Dep Var= CAQPR Variables	B	SE B	Beta	t	Sig.	R^2	Adj. R^2
						.096	.090
Intercepts	1.321	.213		6.19	.000		
Minority	.058	.091	.018	.640	.522		
Gender	-.124	.055	-.065	-2.27	.024		
SAT	.001	.000	.193	6.72	.000		
HS Class Rank	-.002	.000	-.213	-7.44	.000		
HS Varsity Ath	.035	.017	.062	2.12	.034		
College Curriculum	-.051	.067	-.022	-.751	.453		
4yr College	.111	.041	.077	2.684	.007		

4.   Logit Regression Models

The first logit model tests the hypothesis that
military prep schools enhance the probability of graduation
from USNA as compared to other types of schools. This
regression model accounts for 5.7% of the variance in
graduation status. This model was significant with Chi-
Square(1272,1)=35.76   (p<.05),   and   Nagelkerke   R
squared=.057. However, in Table 8 the coefficient of
military prep schools is not statistically significant. In

the first model, NW prep was significant but has a negative effect on the graduation probability.

The second model tests the hypothesis that Foundation prep schools with stronger college curricula enhance the likelihood of graduation at USNA. This model accounts for 5.1% of the variance in graduation status and has a Chi-squared(1272,1)=32.07 (p<.05), and Nagelkerke R squared=.051. However, in Table 8 the variable College Curriculum (Prep school with a stronger academic curriculum) is not significant in the model. In the second model, none of the school type variables are significant.

Table 8.   Logit Regression Model (Dependent Variable= Graduation).

Model 1: Dep Var= Graduation						
Variables	B	SE B	Wald	Sig.	R^2	Nagelkerke^2
					.031	.057
Intercepts	.394	1.47	.072	.789		
Minority	−.765	.485	2.49	.115		
Gender	−.852	.312	7.46	.006		
SAT	.001	.001	1.07	.301		
HS Ranking	−.002	.002	1.83	.176		
HS Athlete	.574	.122	22.19	.000		
Military Prep	−.278	.210	1.74	.187		
NW Prep	−.496	.243	4.17	.041		
Model 2: Dep Var= Graduation						
Variables	B	SE B	Wald	Sig.	R^2	Nagelkerke^2
					.027	.051
Intercepts	1.227	1.37	.773	.379		
Minority	−.812	.483	2.82	.193		
Gender	−.899	.309	8.46	.004		
SAT	.000	.001	.114	.736		
HS Ranking	−.002	.002	1.70	.192		
HS Athlete	.582	.122	22.75	.000		
College Curriculum	.287	.454	.399	.528		
4yr College	.183	.273	.452	.501		

5. Regression Summary

Overall, this study found attending a Foundation military prep school or a Foundation prep school (not 4-year-college) with a stronger academic curriculum does not affect midshipmen performance scores or graduation status. The results of the regressions do not support the study's hypotheses that: (1) Foundation military school participation would increase military performance at USNA; (2) Attending a Foundation school with a stronger academic curriculum increases academic performance at USNA; and (3) Attendance at a Foundation military prep or stronger academic curricula increases the likelihood of graduation. However, the regressions did reveal that attending a 4-year college sponsored by the Foundation did increase academic performance as compared to other programs.

F. CHAPTER SUMMARY

The four parts of this chapter evaluated the Foundation prep program from several different angles. The 24 Foundation prep schools each have their own strengths. The characteristics of the prep schools were used to create he mean scores of the 11 midshipmen performance variables. The mean scores were integrated into a decision matrix that was used to rank each school. This ranking is very important for the evaluation of each Foundation school. The regression section examined the relationship between Foundation and midshipman performance. This analysis of the dependent variables--plebe MQPR, plebe AQPR, CMQPR, CAQPR and graduate probability-- compares the statistical performance of midshipmen who attended various Foundation

prep schools. This evaluation will help the United States Naval Academy Foundation to develop future policies. Conclusions and recommendations from this study will help the Foundation establish a strong program to aid future midshipmen candidates.

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V. CONCLUSION

A. SUMMARY

The purpose of this study was to review the United States Naval Academy's Foundation Preparatory Program, to compare prep school curriculums, and to analyze their effect on the performance of midshipmen who enter The Naval Academy via Foundation-sponsored preparatory schools. Several variables from the USNA IR data files were used to predict performance of the Foundation midshipmen at USNA. This study of the relationship between the Foundation program and midshipmen performance may have a significant benefit for the United States Naval Academy and the Foundation. The findings from this thesis suggest that attendance at one type of Foundation prep schools in some cases may be better than another. This result may be helpful in implementing improvements for the Foundation prep program.

Chapter I described the role of the United States Naval Academy, provided a brief review of the Naval Academy's Admission's process, and introduced the United States Naval Academy Foundation Preparatory Program. The chapter also revealed the nine research questions which this study investigated: (1) What is the effect of the United States Naval Academy Foundation Preparatory Program on the performance of Naval Academy midshipmen? (2) How are Foundation program participants selected by the admissions board? (3) How does the USNA Foundation Program support the mission of the Academy? (4) Which USNA Foundation preparatory schools are most effective in producing successful midshipmen? (5) Does attending a Foundation

military prep school increase military performance at USNA? (6) Does attending a Foundation prep school with a stronger academic curriculum increase academic performance at USNA? (7) Do USNA midshipmen who attend a military Foundation school or a school with a stronger curriculum differ in their performance during their fourth-class (plebe) year? (8) Does attending a Foundation military prep school increase the likelihood of graduating from the United States Naval Academy? (9) Does attending a Foundation prep school with a stronger academic curriculum increase the graduation probability from the United States Naval Academy?

Chapter II, Literature Review, examined various studies of student performance in college, the history of college preparatory schools, pre-college characteristics of selective colleges/universities, the USNA admissions process and the USNA Foundation. This chapter highlighted the predictors of college performance and the unique benefits of a private prep school education.

Chapter III described the participants, data and statistical procedures used in this thesis. An explanation of the dependent and independent variables was also provided in this chapter.

Chapter IV subjectively and statistically evaluated the USNA Foundation Program. This chapter looked at the Foundation prep schools' curricula and identified the unique features of each school. The mean scores of several midshipmen performance variables were used to assess the base performance of each school. From the mean score, a decision matrix was developed to rank each prep school.

Finally, a regression analysis was conducted to specifically answer the final research questions five through nine.

B.   CONCLUSION

A program review and regression analyses were used to answer the primary research question (1) What is the effect of the USNA Foundation Preparatory Program on the performance of Naval Academy midshipmen? The program review involved a curriculum comparison and decision matrix to evaluate midshipmen who attended a Foundation sponsored prep school. Finally, linear and logistic regressions were used to analyze academic and military performance at USNA.

1.   Foundation Sponsored Schools Effectiveness

When comparing the Foundation sponsored schools a decision matrix was used to evaluate research question: (4) Which USNA Foundation preparatory schools are most effective in producing successful midshipmen? Several performance variables were assessed and divided into three groups: Academics/Graduation, Military performance and Conduct/PRT. The performance variable averages were weighted to evaluate each school using the following algorithm:

3(AC+GRAD)+2(MILPERF)+(CON+PRT)= Matrix Score

The rankings were broken into three groups: above average (top 25%); average (26%-75%); and below average (bottom 25%). The maximum matrix score was 107 points and the minimum matrix score was zero. Five schools were ranked in the top 25% of the matrix. These prep schools were Blair

Academy (80.3), Western Reserve Academy (78.6), The Gunnery (78.6), Mercersburg Academy (78), and Kent School (78). The Blair Academy (80.3) was ranked as the top prep school in the matrix. Foundation students that attend a four-year college (79.9) were ranked second in the matrix. Two prep schools were tied for the third ranking (Western Reserve Academy and The Gunnery) and two prep school were tied for the fourth ranking (Mercersburg Academy and Kent School). Schools ranked in the top 25% were consistently in the top 25% in each performance variable. Blair Academy was in the top 25% in 9 of the 12 performance variables. This would explain why Blair Academy scored 80 points in the decision matrix.

Three prep schools were ranked in the bottom 25%. These schools included Wyoming Seminary (70), Phillips Exeter Academy (70), and Vermont Academy (69). Although these schools may be great academic institutions, they may need some work in terms of developing future midshipmen. These schools were consistently in the bottom 25% in each performance variable. As shown in table 3, the averages of these schools in the 12 performance variables tend to be lower than both the Foundation and brigade averages. The Vermont Academy was in the bottom 25% in 10 of the 12 performance variables. This low performance would explain why the Vermont Academy scored 69.9 points in the decision matrix.

This decision matrix provided focus for rating the various Foundation sponsored prep schools using 11 criteria. The purpose was to help structure the discussion concerning Foundation prep school sponsorship. The matrix may aid in deciding which schools will remain under

sponsorship and which will not. It may also aid in further developing the preparatory program portion of the strategic plan.

   2.   Foundation Sponsored Schools and Support for USNA Mission

A curriculum review was used to evaluate research question (3)- How does the USNA Foundation Program support the mission of the Academy? Most of the Foundation prep schools were very similar academically. The majority were private high schools which valued the importance of college preparation. Most offered an advanced placement program. They also offered a physical education program and an athletic program.

Several of the Foundation-sponsored schools had unique differences. The differences included religious studies, college exposure, and military structure/training. These differences may have helped a midshipman candidate prior to attending USNA in developing morally, mentally and physically.

Five Foundation prep schools required some type of religious study or participation. These schools included Hargrave Military Academy, The Hill School, Kent School, Mercersburg Academy, and Pomfet School. These five schools valued sound moral judgment. The religious study requirement was designed to aid students in their moral development, which is a part of the Academy's mission statement and is very important in the development of Naval Academy midshipmen.

Nine Foundation prep schools offered college exposure in their academic programs. These schools included Bridgton

Academy, Northwestern Prep School, Philips Exter Academy, Vermont, Western Reserve Academy, Wyoming Seminary. Additionally, three junior colleges also offered college-level curricula: Marion Military Institute, New Mexico Military Academy, and Valley Forge Military Academy. This college exposure would give a candidate an opportunity to experience college level academics prior to taking the rigorous academic requirements at the Naval Academy.

Five Foundation prep schools offered military preparation programs. Four Foundation prep schools were military schools and one was a service academy prep school. These schools included Hargrave Military Academy, Marion Military Institute, New Mexico Military Academy, Valley Forge Military Academy, and Northwestern Prep school. Attending a military prep school allowed candidates to be indoctrinated into the military lifestyle prior to attending USNA.

3.   Regressions Conclusions

The results of the regression refuted the final research questions 5 through 9. Models 1 and 2 examined midshipmen academic and military performance during the first year. In Model 1, the effect of attending NW Prep had a negative and significant (p<.05). NW Prep grads had a 7.0% lower plebe CMQPR than other Foundation prep school graduates. Model 2 showed that attending a four-year college sponsored by the Foundation had a positive and significant effect on plebe ACQPR. The four-year college students had plebe CAQPR's that were 15.6% higher than other Foundation prep school graduates.

Models 3 and 4 examined overall midshipmen academic and military performance through four years at USNA. Model 3 found that two types of Foundation schools had significant effects: Military prep (p<.10) and NW Prep (p<.05). Both types of Foundation-sponsored schools had a negative relationship with overall military performance. The model showed that students who attended a military prep school had 4.8% lower CMQPR scores than other Foundation graduates, while NW Prep graduate had 6.5% lower CMQPR scores. Model 4 showed that attending a four-year college program sponsored by the Foundation is had a positive and significant effect on CAQPR. Those students had 11.1% higher CAQPR's than other Foundation prep school graduates.

Models 5 and 6 examined the likelihood of graduation based upon attendance at a military prep school or a prep school with a stronger academic curriculum. Neither type of school (military or stronger academic curriculum) was found to have a significant effect on grades or graduation probabilities.

The regressions showed that attending a military prep school did not alter military performance at USNA. It also shows that attending a prep school with a stronger academic curriculum was not a good predictor of academic performance at USNA. Although the overall regression models were found to be significant, the military Foundation school and the prep schools with strong curricula did not have significant coefficients.

C. RECOMMENDATIONS

1. Foundation

The Foundation students that were chosen by the Admission Board seem to be the right candidates for the Naval Academy. These service-oriented candidates with excellent leadership, academics, and athletic potential tended to be successful as midshipmen.

This study showed that the Foundation prep schools can be ranked based on midshipmen performance. What makes a good prep school? The schools ranked in the top 25% excel in both academic and military performance areas. This combination is the formula for success at the Naval Academy. The Foundation may be able to use the decision matrix to update the ranking on a yearly basis. This ranking will show which schools are performing well. It will also help to identify the low performing schools and decide if they are deserving of the investment.

2. Recommendations for Further Research

This study examined the individual Foundation prep schools. The next step may be to research how well midshipmen who were sponsored by the Foundation and who graduate from USNA, perform in the fleet. First, an analysis of service selection by graduates could be conducted. What communities are the prior Foundation midshipmen selecting? Fleet retention should be the next area to be examined. Are midshipmen who attend a Foundation prep school staying in the Navy past their minimum service obligations? Another area to examine would be promotion. What are the promotion rates to O-4, O-5, and O-6 of midshipmen who stay past their minimum obligation and who

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attended a Foundation prep school? Examining these areas will further help the Foundation as well as the United States Naval Academy to adjust its program for the future.

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APPENDIX A- DEMOGRAPHICS OF FOUNDATION PARTICIPANTS

Demographic	Frequency (N)	Percentage (%)
Year		
1988	85	6.7
1989	81	6.4
1990	94	7.4
1991	98	7.7
1992	94	7.4
1993	102	8.0
1994	101	7.9
1995	93	7.3
1996	88	6.9
1997	87	6.8
1998	66	5.2
1999	68	5.3
2000	80	6.3
2001	71	5.6
2002	64	5.0
Gender		
Men	1183	93.0
Women	89	7.0
Ethnicity/Race		
Caucasian	1240	97.5
African-American	7	0.6
Hispanic	4	0.3
Other	21	1.7
Recruited Athlete		
N	994	78.1
Y	278	21.9

Demographic	Frequency (N)	Percentage (%)
Home State		
AK	1	0.1
AL	8	0.6
AR	1	0.1
AZ	27	2.1
CA	220	17.3
CO	12	0.9
CT	26	2.0
DC	3	0.2
DE	10	0.8
FL	46	3.6
GA	19	1.5
HI	1	0.1
IA	2	0.2
ID	1	0.1
IL	28	2.2
IN	9	0.7
KS	7	0.6
KY	8	0.6
LA	7	0.6
MA	38	3.0
MD	115	9.0
ME	18	1.4
MI	25	2.0
MN	10	0.8
MO	12	0.9
MS	3	0.2
MT	5	0.4
NC	10	0.8
ND	1	0.1
NE	3	0.2
NH	11	0.9
NJ	109	8.6
NM	7	0.6
NV	3	0.2
NY	76	6.0
OH	33	2.6
OK	4	0.3
OR	10	0.8
PA	124	9.7
RI	6	0.5
SC	11	0.9
TN	5	0.4
TX	53	4.2
UT	4	0.3
VA	100	7.9
VT	2	0.2
WA	20	1.6
WI	7	0.6
WV	5	0.4
WY	1	0.1

APPENDIX B- 1ST SEMESTER CHEMISTRY, CALCULUS, AND ENGLISH COURSES FOR FOUNDATION PARTICIPANTS

Course	Foundation Freq (N)	Description
CHEMISTRY		
SC111	470	Foundations of Chemistry I. First college level chemistry course.
SC112	37	Foundation of Chemistry II. Second semester college level chemistry course.
SC151	48	Modern Chemistry. One semester course which satisfies the plebe requirements for those who are well prepared in chemistry but unable to validate a full year.
CALCULUS		
SM005	8	Pre-Calculus. Course for those who need more preparation in algebra and trigonometry. Summer school is required. Free elective.
SM121	179	Calculus and Analytic Geometry I. First calculus course for those who have not a significant amount of calculus but a strong background in pre-calculus.
SM121A	89	Calculus and Analytic Geometry with Trigonometry I. First calculus course for those who have not a significant amount of calculus.
SM122	118	Calculus and Analytic Geometry II. Second calculus course for one semester validators.
SM122S	14	Calculus and Analytic Geometry II. Second calculus course for one semester validators with a strong background in mathematics.
SM131	144	Calculus I with prior differential calculus experience.
SM161	42	Calculus with computers. Programming using a computer algebra package. Strong background in mathematics and permission of dept. chair.
SM212	2	Differential Equations. Required of majors in most technical disciplines.
SM221P	12	Calculus and Analytic Geometry III. A course for two semester validators
SM481	1	Mathematics Problem solving. Plebe volunteers with extensive mathematical background

Course	Foundation Freq (N)	Description
ENGLISH		
HE101	43	Practical writing. For those whose writing skills need reinforcement prior to taking college English.
HE111	927	Rhetoric and Introduction to Literature I. Stresses writing of rhetorically effective and grammatically correct expository prose. Reading including essays, short stories, and plays.
HE111S	70	Rhetoric and Introduction to Literature I. An honors level course for those who have well developed writing skills.
HE112V	35	Rhetoric and Introduction to Literature II. A continuation of HEIII for one semester validators Reading includes novels and poetry.

APPENDIX C- DECISION MATRIX FORMULA

3(AC variables+Graduation)+2(Military Perfromance variables)+

1(Conduct+PRT variables)=

X3

Plebe Chem gpa	Plebe Calc gpa	Plebe English gpa	Plebe AQPR	Academic CQPR	GRADUATE USNA
4.0	4.0	4.0	4.0	4.0	1.00
12+	12+	12+	12+	12+	3=
63					

X2

MQPR	Plebe	Plebe Military Performance	CQPR	Military
	4.0	4.0	4.0	
	8+	8+	8=	
	24			

X1

Plebe Conduct	p_prt	PRT 1/c
4.0	1.00	1.00
4+	1+	1=
6		

63+24+6=93 (maximum decision matrix points)

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