

---

**TRENDS IN INTENTIONS TO ENLIST  
AND ATTEND COLLEGE**

*Chris Bourg*

---

**INTRODUCTION**

The military's increasing need for high-quality members, combined with dramatic increases in the proportion of youth who enroll in postsecondary education, indicates that the armed services must recognize two- and four-year colleges as viable competitors in the recruiting market. Nontraditional recruiting strategies designed to attract potentially college-bound youth into the military must be based on an understanding of the changing postsecondary intentions and desires of American youth. This chapter provides some of that information by describing the trends in the two-year college, four-year college, and military intentions of high school seniors from 1976 to 1995, and by estimating models of the individual characteristics associated with high school students' stated postsecondary intentions.

The research presented in this chapter shows that there has been a dramatic increase in the past 20 years in high school students' intentions to graduate from a four-year college. During that same time, students' intentions with regard to graduating from a two-year college have become more definite: The proportion of students who state that they definitely do not intend to graduate and the proportion who definitely do intend to graduate from two-year colleges have both increased since 1976. Intentions to join the military have decreased overall.

To assess the relationships among various kinds of postsecondary intentions and other individual-level predictors of intentions, multinomial logit modeling techniques were employed. This multivariate modeling method allows for the estimation of the impacts of these factors on all levels of intentions. Results obtained from this analysis indicate that students who think they probably will join the military are less likely than other students to have positive intentions to graduate from a four-year college, but more likely than others to say they probably will graduate from a two-year college. Results further show that students who definitely intend to join the military are far less likely than other students to have positive intentions to graduate from either a two- or four-year college. These results suggest that educational incentives might be effective in appealing to those students who have positive but uncertain military intentions, but less important to those who are already definite in their plans to serve.

The second section of this chapter contains a description of the general economic model of individual behavior that serves as the underlying framework for my analysis and a statement of the specific research questions addressed by this research. Previous research on both college intentions and enlistment intentions is reviewed in the third section, and in the fourth, the data used in the analysis are described. The fifth and sixth sections describe findings regarding trends in postsecondary educational intentions; the seventh describes the methods used to analyze the individual-level predictors of specific intentions. The eighth section contains a discussion of the results of this analysis, and the final section provides a summary of the main findings and general recommendations for policy and future research.

## **THEORETICAL FRAMEWORK AND RESEARCH OBJECTIVES**

Previous research has conceptualized the general enlistment process as the result of the interaction between supply factors and demand factors (see, for example, Orvis et al., 1996; and Asch et al., 1999). Supply variables include the size and quality of the youth population; demand variables include factors under the control of the military, such as enlistment terms and recruiting quotas. Individual and ag-

gregate levels of propensity,<sup>1</sup> or intention to enlist, also represent important supply-side variables and have received considerable attention in the military research community. Research on individual enlistment decisions demonstrates that educational expectations are strongly associated with a preference for attending college over enlisting (see, for example, Kilburn and Klerman, 1999; and Hosek and Peterson, 1985 and 1990). This research indicates that a fuller understanding of how the intentions of high school seniors affect the supply side of the enlistment equation requires an understanding of both enlistment and educational intentions. The theoretical framework underlying much earlier work on individual enlistment intentions and decisions was derived from the general random utility model (see, for example, Kilburn and Klerman, 1999). The basic assumption of the model is that an individual faced with choices will choose the activity that yields the greatest expected utility. In other words, an individual will decide to enlist in the military if the expected utility of enlisting is greater than the expected utility of other alternatives, such as attending college or entering the civilian labor force. The utility of a particular activity for an individual is expected to be a function of various characteristics of the individual. In this chapter, this framework is applied to both college intentions and enlistment intentions.

Individual propensity, or intention to behave in a certain way, is an important predictive characteristic of individual behavior. Not surprisingly, military enlistment research has shown that an individual's stated intention to enlist in the military tends to be a strong predictor of actual enlistment (see, for example, Orvis et al., 1996; and Bachman et al., 1998). In addition, Bachman and associates (1998) analyzed longitudinal data to show that high school students' stated intentions to graduate from college are strong predictors of actual attendance and subsequent graduation. The research presented here is designed to provide information about changes in the overall

---

<sup>1</sup>In this chapter, the term *propensity* refers to an intention or expectation to engage in a particular activity. Although many previous researchers have spoken in terms of high or low propensity only, I capitalize on the full range of information available about the varying levels of propensity students have toward postsecondary education and military service. When discussing overall or aggregate propensity, I am referring to the proportion of a particular sample or subsample of interest who express a given level of propensity.

educational and enlistment intentions of high school students, as well as information about the individual characteristics associated with those intentions.

Given the well-documented racial and gender differences in the full range of postsecondary choices made by young people, this chapter focuses on identifying differences among race and gender subgroups. Although white males have historically represented the largest pool of enlistees, blacks have been overrepresented in the armed forces relative to their proportion in the overall population since the advent of the all-volunteer force. In addition, the proportion of women in the military has risen steadily over the past 20 years. In difficult recruiting times, the military has historically looked to previously underrepresented groups (most notably blacks and women) to fill shortages created by the declining size of the pool of white males (Segal et al., 1999). If this trend continues into the present recruiting crisis, it would behoove policymakers to develop an understanding of subgroup differences in enlistment intentions and potential among young people.

The following specific research questions are addressed in this chapter:

1. What are the trends in postsecondary educational intentions over time for high school students in general and for race and gender subgroups?
2. What are the trends in enlistment intentions over time for high school students in general and for race and gender subgroups?
3. How do trends in educational intentions compare with trends in enlistment intentions?
4. What individual characteristics are related to educational and enlistment intentions?
5. What is the relationship between enlistment intentions and educational intentions, and how does that relationship vary with time and race/gender category?

Answers to these questions will provide the Department of Defense (DoD) with valuable knowledge regarding the role two- and four-year

colleges play as competitors for high-quality youth and will allow policymakers to design recruiting strategies based on a more complete understanding of the changing intentions of various groups of high school seniors. The next section of this chapter reviews previous research on both college and military intentions and highlights some of the ways in which the research reported in this chapter represents an important addition to existing knowledge.

### **PRIOR RESEARCH ON POSTSECONDARY INTENTIONS**

Since the advent of the AVF in 1973, the military has sponsored an extensive amount of research aimed at understanding individual enlistment decisions. A crucial element of this research has been the analysis of data from large-scale surveys of high school students. Much of this research has focused on the propensity of youth to serve in the armed forces, analyzing variations over time and among subgroups in the youth population (see, for example, Orvis et al., 1996; Hosek and Peterson, 1985 and 1990). In addition, researchers have used longitudinal data to analyze the relationship between intentions to enlist and actual enlistment behaviors (see Orvis et al., 1992 and 1996; and Bachman et al., 1998). Relatively little research, however, has analyzed the propensity of youth to engage in other postsecondary activities. Since the choice to enter the military has been shown to be influenced by the attractiveness of other options, most notably employment in the civilian labor market and postsecondary education (Kilburn and Klerman, 1999; and Hosek and Peterson, 1985 and 1990), it follows that young people's *intentions* to enlist will likewise be related to their intentions to engage in other activities. Two unique features of the research presented in this chapter are its dual focus on postsecondary education intentions and enlistment intentions and its analysis of the relationships between them.

#### **Postsecondary Educational Intentions**

Previous research on postsecondary education has focused primarily on actual enrollment, with relatively less attention being given to analysis of intentions to enroll in postsecondary education. Regarding actual enrollment, the most consistent and relevant finding is that enrollment in postsecondary education has increased dramatically in recent years. According to the National Center for Education

Statistics, enrollment in two- and four-year colleges and universities increased by 9 percent between 1975 and 1985 and by 16 percent between 1985 and 1995 (U.S. Department of Education, 1998). Enrollment increased most rapidly among females, with the number of women enrolled in postsecondary institutions increasing by 23 percent between 1985 and 1995 while male enrollment increased by only 9 percent during the same period. In addition, the proportion of American college students who are members of racial or ethnic minorities has increased from 16 percent in 1976 to 25 percent in 1995 (U.S. Department of Education, 1998). At the same time that college attendance has risen so dramatically, the financial payoff of obtaining a college degree has also increased. In fact, the percentage difference between the real wages of a four-year college graduate and a high school graduate has increased from 40 percent in 1979 to 65 percent in 1995 (U.S. Department of Education, 1998).

Although we would expect that trends in the *intentions* of young people to enroll in postsecondary education would mirror the trends in *actual enrollment*, relatively little research has examined variations in intentions to enroll in postsecondary educational institutions. Asch and colleagues (1999) noted that the percentage of youth who want to attend graduate school has more than doubled in the past 10 years, with fewer youth claiming they want to stop their education with a two- or four-year degree. Segal and colleagues (1999) assessed temporal changes in the military intentions of high school students based on intentions to graduate from a four-year college. Their findings indicate that individuals who say they neither want to, nor intend to, graduate from a four-year college are more likely to state that they want to and/or intend to serve in the military than do those who plan to graduate from a four-year college. In addition, Bachman and associates (1998) analyzed the relationship between college intentions and college enrollment for a combined sample of high school seniors from 1984 to 1991. Their findings reveal that intentions to graduate from college stated in the senior year of high school are, not surprisingly, highly predictive of actual college enrollment. So, although prior research indicates that the total amount of education to which youth aspire has risen and that intentions to graduate from a four-year college are negatively related to military intentions and positively related to college enrollment, we do not yet have research indicating overall trends in the postsecondary educa-

tion *intentions* of high school students. More specifically, very little research analyzes trends for two-year colleges and four-year colleges separately. The research presented in this chapter fills that gap by describing trends in high school students' stated intentions to graduate from two-year and from four-year colleges.

### **Military Intentions**

Research on the enlistment intentions of young people is much more abundant than research on their postsecondary educational intentions. The primary survey used by DoD to assess youth interest in serving in the military is the YATS.<sup>2</sup> Two primary types of propensity measures are assessed in the YATS. The measure with the strongest likelihood of predicting actual enlistment is *unaided mention*. Youth are said to make an unaided mention of propensity when they respond with plans of joining the military to the open-ended question "What do you think you might be doing in the next few years?" The most common other measure of propensity is derived from respondents' answers to the more direct question: "How likely is it that you will be serving on active duty in the Army (or Navy, Air Force, or Marines) in the next few years?" Response choices are "Definitely," "Probably," "Probably not," and "Definitely not." Youth who state they either Definitely or Probably will serve are considered to have positive propensity. The most widely known measure of propensity is the "active composite propensity," which defines respondents as having positive propensity if they express an intention to serve in any of the four services listed.

Analyzing recent trends in propensity based on the YATS' "active composite propensity" measure, Orvis and colleagues (1996) noted that there was a modest increase in positive propensity from 1989 through 1992, followed by a decline from 1992 to 1993 and a second decline from 1995 to 1996. Using a similar measure from the MtF surveys, Segal and colleagues (1999) noted that there has been a proportionally large decrease since 1976 in the percentage of youths who state they Definitely Will serve in the military. They also reported a slight decrease in those who say they Probably Will, a

---

<sup>2</sup>Both the YATS data and the MtF data are discussed in more detail later in the chapter.

marked decrease in those saying they Probably Won't, and a dramatic increase in the proportion who say they Definitely Won't serve in the military. They concluded that there has been a downward shift in the percentage of high school students who are undecided about military service, with the net resolution in the direction of not intending to serve.

Analyses of both the YATS and MtF data regarding trends in military intentions yield quite similar findings: There has been a general decline in the propensity of youth to serve in the military in the past 20 years. However, findings regarding the relationship between intentions stated in YATS surveys and enlistment behavior differ markedly from findings regarding the relationship between MtF intentions and enlistment. Analyses of YATS data from 1984 to 1993, matched with actual enlistment records, reveal that almost 35 percent of male youth who made unaided mention of a propensity to serve in the military had actually enlisted within four years. Of those who did not make an unaided mention but indicated a positive propensity (stating they either Definitely Will or Probably Will serve in one of the armed services), nearly 15 percent actually enlisted. Finally, approximately 5 percent of youth with negative propensity ended up enlisting (Orvis et al., 1996).

Although these figures indicate that YATS propensity data are strongly predictive of actual enlistment behavior, analyses of the longitudinal MtF data indicate that propensity as measured in MtF surveys is even more predictive of actual behavior (Bachman et al., 1998). The MtF surveys do not include an unaided mention measure, so MtF propensity data are primarily based on a measure similar to the YATS "active composite propensity" measure. In an analysis of MtF surveys from 1984 to 1991, Bachman and colleagues (1998) found that 70 percent of male respondents who stated they Definitely Will serve had enlisted within six years of high school graduation. Thirty percent of those who said that they Probably Will enlist had also done so. Only 10 percent of the young men who said they Probably Won't serve had actually enlisted, and less than 6 percent of those who stated they Definitely Won't serve had actually enlisted within six years of graduation.

Analyses of YATS data also provide a different picture regarding which propensity groups account for what proportion of enlistees.

According to YATS analyses, the negative propensity group (those stating they Definitely Won't or Probably Won't serve) is so large that they account for nearly 50 percent of all enlistees, in spite of their lower enlistment rate (Orvis et al., 1996). Analysis of MtF data shows that the majority of enlistees come from the positive propensity group, with the group stating they Definitely Will serve accounting for almost 50 percent of young male enlistees. Those who state they Probably Will account for approximately 25 percent of enlistees, and the remaining 25 percent are drawn from the negative propensity group (Bachman et al., 1998). It is important to note, however, that even in the MtF analysis, almost 50 percent of all enlistees come from groups of students who are not definite about their military plans.

One of the main explanations for the different findings regarding the relationship between military propensity and actual enlistment is that the YATS and MtF data are collected from different samples of young people. YATS samples include youth aged 16 to 24 but exclude those beyond their second year of college and those who have already enlisted in the military. The MtF sample includes only youth in their senior year of high school, who are surveyed approximately two months prior to high school graduation. The YATS sample, therefore, includes many younger respondents whose plans are likely to be far less firm than the plans of the high school seniors who make up the MtF sample. These differences in the sampling frames not only yield different results, but also indicate that data from the two surveys might best be suited for different purposes. The YATS data, however, might be better suited for analyses of attitudes toward military service prior to the point of firm expectations, with the possible aim of identifying potential recruiting targets and designing strategies to influence initial attitudes in the direction of positive propensity to serve. The MtF data are clearly better suited for estimating temporal trends and individual level predictors of relatively firm plans, and for demonstrating how strong the relationship between propensity and enlistment can be (Bachman et al., 1998).

Because one of the main goals of this chapter is to describe recent trends in both postsecondary education intentions and military intentions, the MtF data are most appropriate. These data allow for the estimation and comparison of trends in what can be considered the fairly firm intentions of high school seniors. It is important to note, however, that even at the time of the MtF surveys many students ex-

press less-than-definite plans about pursuing particular activities. For example, the 1995 MtF data indicate that over 20 percent of youth have indefinite intentions regarding military service (stating either that they Probably Will or Probably Won't serve), and over 40 percent of youth are not definite about their plans for attending either a two-year or a four-year college. Since even these uncertain youth must eventually decide to pursue some postsecondary activity, they may represent a potentially fruitful recruiting market for DoD. This chapter assesses trends in each level of college and military intentions and employs multivariate methods that estimate the impact of various predictors separately for each level of intentions. This choice of methods provides results describing trends in the size and composition of this pool of potential recruits. The next section describes the MtF data used in this analysis in more detail.

## **DATA FROM MONITORING THE FUTURE**

Monitoring the Future (MtF) is an ongoing study of high school students conducted by the Institute for Social Research at the University of Michigan. The primary purpose of MtF is to study changes in the beliefs, attitudes, and behaviors of young people in the United States. Although results of MtF research are primarily used to monitor trends in substance use and abuse among young people, the surveys contain many questions about other types of beliefs, attitudes, and behaviors. Of particular interest for the purposes of this chapter are the questions regarding the postsecondary intentions of the survey respondents.

For this research, data from the yearly surveys administered to nationally representative samples of high school seniors from 1976 to 1995 are analyzed. Each year, the samples are selected using a multistage random sampling procedure. In Stage 1, particular geographic areas are selected. In Stage 2, one or more schools in each area is selected, with a probability of selection proportionate to student-body size. In Stage 3, classes within each school are selected. Sample weights are provided for use in analysis in order to correct for unequal probabilities of selection at any stage of sampling.

The data from students are collected during the spring of each year, approximately two months prior to graduation. In most cases, the survey questionnaires are group-administered in classrooms during

a normal class period. Because the survey contains the same questions each year, the MtF data are ideally suited to analyzing changes over time in the attitudes and behaviors of high school seniors.

Each year, the Monitoring the Future survey asks high school seniors about their postsecondary intentions. Specifically, respondents are asked: “How likely is it that you will do each of the following things after high school?” The following five activities are listed:

- Attend a technical or vocation school
- Serve in the armed forces
- Graduate from a two-year college
- Graduate from a four-year college
- Attend graduate or professional school after college.

Respondents select Definitely Won't, Probably Won't, Probably Will, or Definitely Will for each activity. The proportion of students in each response category for each activity is used to assess trends in the aggregate intentions of high school seniors over time. In order to focus on high-quality youth, the analysis in this chapter is restricted to those students who state they will graduate from high school. Ideally, the analysis would also be restricted to individuals who score, or have a high probability of scoring, in the top half of the AFQT distribution. Unfortunately, however, the MtF data contain neither AFQT scores nor appropriate predictors of AFQT scores.

The findings regarding the trends in two-year and four-year college intentions of high school students are presented and discussed in the following section. In general, the findings suggest a modest increase in positive propensity to graduate from a two-year college and a dramatic increase in positive propensity to graduate from a four-year college. Differences among race and gender groups are also discussed. Given the results in Bachman et al. (1998) regarding the strong correspondence between graduation intentions and actual enrollment, we assume that individuals in the MtF who stated they intend to *graduate* from a two-year or four-year college also intend to attend two-year or four-year colleges.

## TRENDS IN POSTSECONDARY COLLEGE INTENTIONS

### Background

From the perspective of a general random utility model of individual behavior, previously cited research on college intentions indicates that the utility of choosing college has increased dramatically over time, which should lead to increased propensity to attend college as well as increased attendance.

Based on the trends and perspectives outlined in previous sections of this chapter, we would expect the intentions of high school seniors to attend either a two-year or a four-year college will have risen over time. The attendance trends further suggest that the postsecondary intentions of females and minorities will have increased more than will have the intentions of males and white students. We would expect that the proportion of students who say they Definitely Will or Probably Will graduate from a two-year or four-year college to have increased over time, and the proportion who say they Definitely Won't or Probably Won't to have decreased. We would further expect that the largest increases in positive intentions (Definitely or Probably Will) and that the largest decreases in negative intentions (Definitely Won't or Probably Won't) will be among women and non-whites.

### Results: Two-Year College Intentions

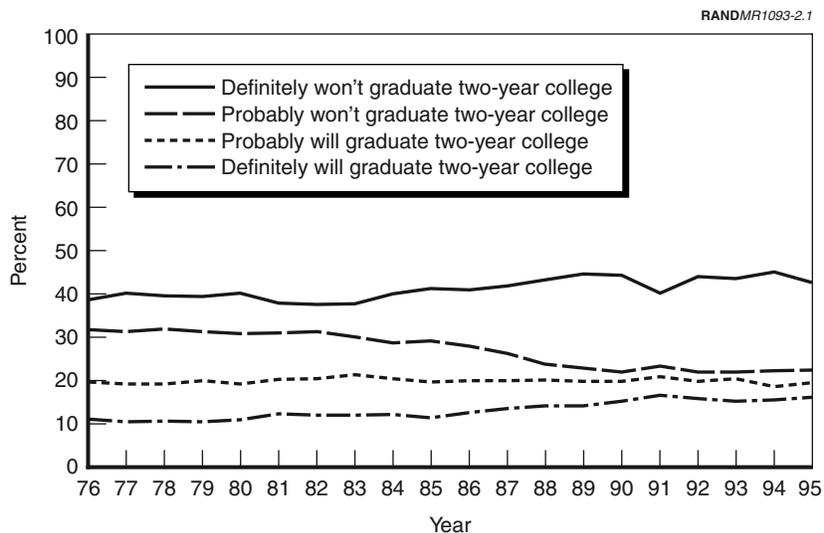
Results of the analysis of trends in two-year college intentions are presented first, followed by results of the analysis of trends in four-year college intentions. In order to assess differences in intention trends by race and gender, results are presented for the total sample, as well as separately by race and gender. White males account for approximately 43 percent of the sample, black males make up approximately 5 percent of the sample, white females account for 46 percent of the sample, and black females represent approximately 6 percent of the sample.<sup>3</sup>

---

<sup>3</sup>These figures differ from the proportions of each group in the national population because of the underrepresentation of African Americans among high school seniors.

**Overall Trends.** We look first at two-year college intentions. Figure 2.1 shows the proportion of high school students who say they Definitely Will, Probably Will, Probably Won't, and Definitely Won't graduate from a two-year college, by year.

As expected, Figure 2.1 reveals a significant increase over time in the proportion of high school seniors who say they Definitely Will graduate from a two-year college. In fact, the increase from 11 percent in 1976 to 16 percent in 1995 represents a nearly 50 percent rise in the proportion of high school students who say they Definitely Will graduate from a two-year college. Interestingly, the proportion who say they Definitely Won't graduate from a two-year college also increased, although by only about 10 percent—from 38 percent in 1976 to 42 percent in 1995. As we will see in the figures for four-year college intentions, this may reflect in part an increase in the certainty of attending four-year institutions rather than two-year institutions. The proportion of students who say they Probably Won't graduate from a two-year college decreased nearly 30 percent, from 31 percent

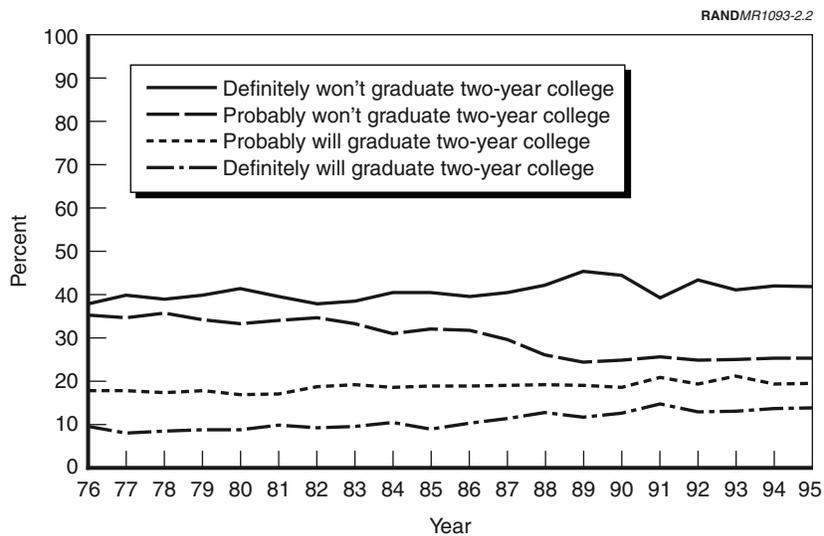


**Figure 2.1—Two-Year College Intentions by Year, Total Sample (N = 260,249)**

to 22 percent. At the same time, the proportion who state they Probably Will did not change significantly between 1976 and 1995.

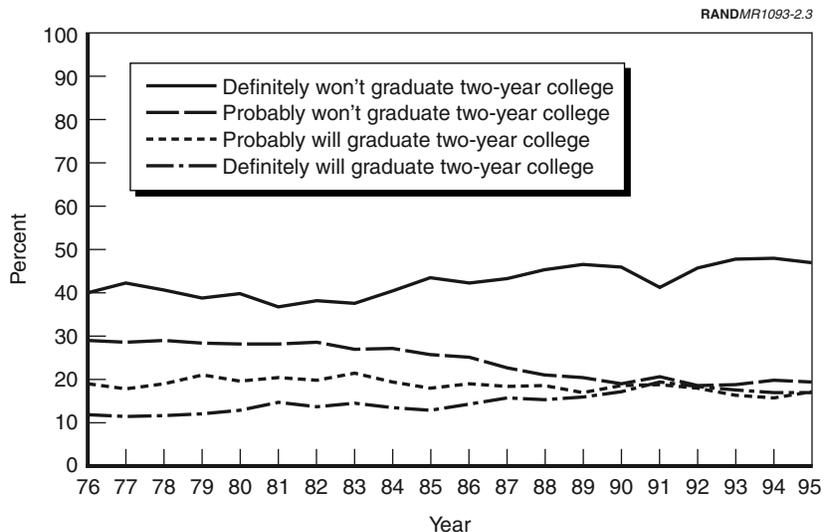
Overall, these results indicate that the main trend in two-year college intentions over time has been an increase in the certainty of high school seniors' intentions to graduate from a two-year college.

**Trends by Race and Gender.** Figures 2.2 through 2.5 show trends in two-year college intentions for specific race<sup>4</sup> and gender categories. Figures 2.2 and 2.3 reveal that the changes in the two-year college intentions of white males and white females resemble the changes in high school seniors as a whole (see Figure 2.1).

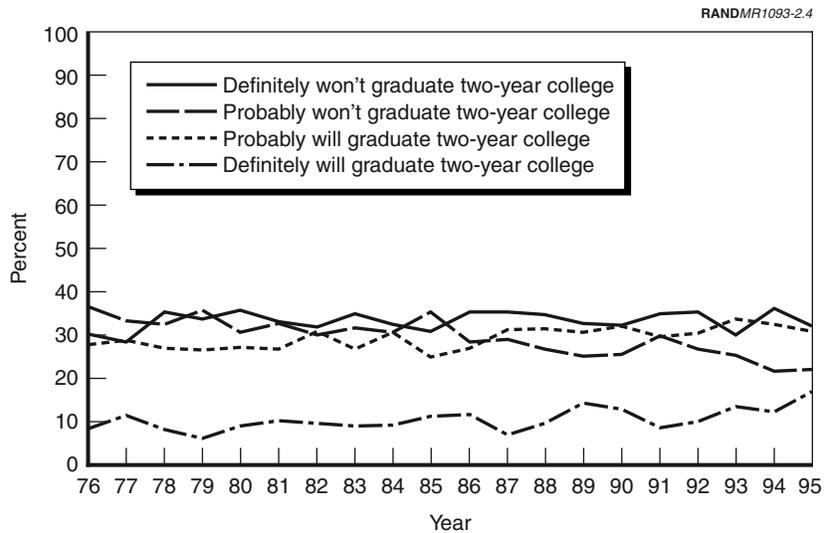


**Figure 2.2—Two-Year College Intentions by Year, White Males**  
(N = 110,116)

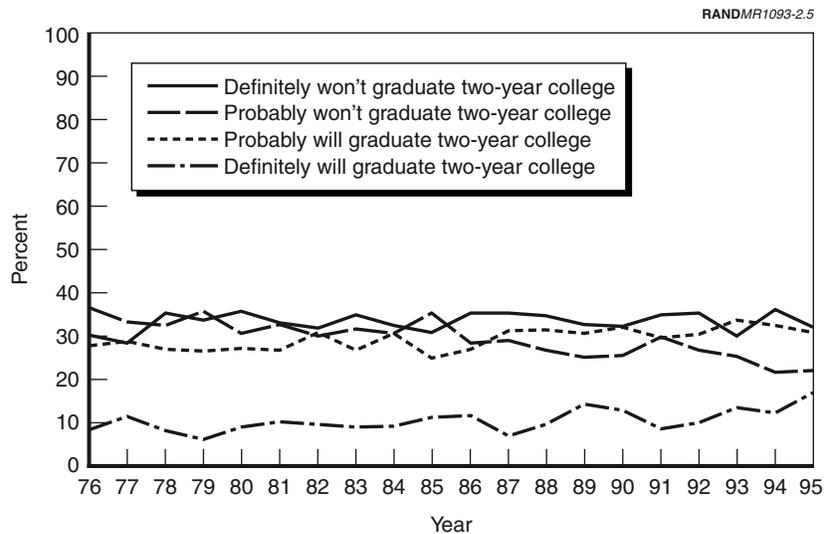
<sup>4</sup>The measure of race available in the MtF data is limited to the two largest racial categories: white and black. Although more accurate and exhaustive measures of racial and ethnic identity would be extremely useful to this analysis, the limitations of the data restrict us to the dichotomous measure of race available in the MtF.



**Figure 2.3—Two-Year College Intentions by Year, White Females (N = 115,813)**



**Figure 2.4—Two-Year College Intentions by Year, Black Males (N = 14,767)**



**Figure 2.5—Two-Year College Intentions by Year, Black Females**  
(N = 19,957)

Figures 2.4 and 2.5 reveal racial differences in the aggregate two-year college intentions of high school seniors. Most notably, we see that black males (Figure 2.4) and black females (Figure 2.5) are more evenly distributed across response categories than are their white counterparts. This is primarily due to higher proportions of blacks than whites in the Probably Will category and lower proportions in the Definitely Won't categories.

The propensity to graduate from a two-year college has risen the most and is currently highest among black males. Looking at Figure 2.4, we see that the proportion of black males who say they Definitely Will graduate from a two-year college has doubled, rising from 8 percent in 1976 to 17 percent in 1995. This is the largest absolute and relative increase of the four race-gender groups. It is also interesting to note that in 1995, the proportion of black men who said they Probably Will graduate from a two-year college (approximately 30 percent) is essentially the same as the proportion who said they Definitely Won't. For all other race-gender groups, the proportion of

students who said they Definitely Won't is clearly larger than all other categories.

**Summary of Two-Year College Trends.** The data presented here on the trends in intentions to graduate from a two-year college indicate that high school seniors have become more definite about their plans in regard to two-year colleges, as indicated by increases over time in the proportion of students stating they either Definitely Will or Definitely Won't graduate from a two-year college. Although there has been an increase over time in positive propensity to graduate from a two-year college for all groups, the increase has been especially steep among black males. The overall increase in positive propensity to graduate from a two-year college, while modest, is consistent with the idea that the individual utility of higher education has increased as the financial returns to education have increased. This trend is reflected even more clearly in the findings regarding the trends in intentions to graduate from a four-year college, which are presented in the next subsection.

### **Results: Four-Year College Intentions**

**Overall Trends.** Turning to trends in intentions to graduate from a four-year college, Figure 2.6 shows aggregate changes over time for high school seniors as a whole. As expected, it shows that there has been a large increase (from 29 percent in 1976 to 57 percent in 1995) in the proportion of high school seniors who say they Definitely Will graduate from a four-year college. The data also reveal a correspondingly large decrease (from 28 percent to 10 percent) in the proportion of students who say they Definitely Won't graduate from a four-year college, and in the proportion who indicate they Probably Won't (from 19 percent to 11 percent). Focusing on relative changes, we see that the proportion of students who say they Definitely Will graduate from a four-year college has doubled, whereas the proportion who say they Definitely Won't has fallen by nearly two-thirds, and the proportion who say they Probably Won't has decreased by nearly half. The proportion of high school seniors who say they Probably Will graduate from a four-year college has remained relatively stable over the past 20 years, with approximately 20 percent of students falling into this category each year.

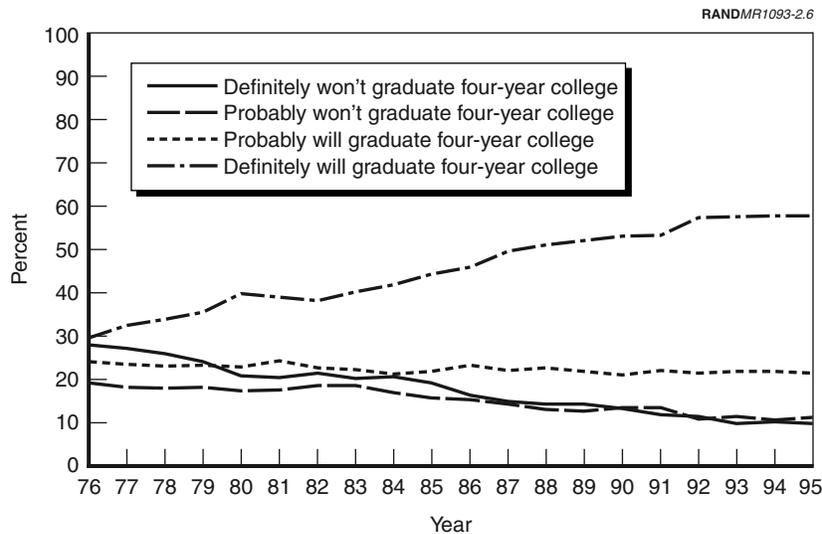
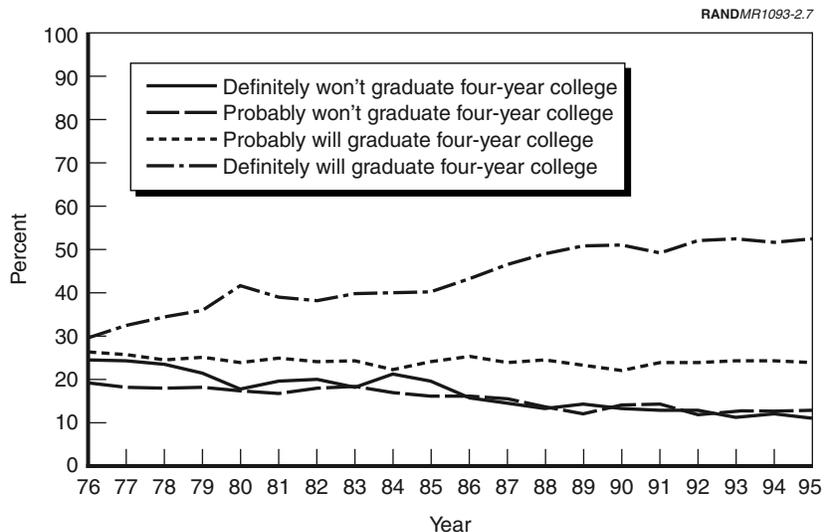


Figure 2.6—Four-Year College Intentions by Year, Total Sample  
(N = 265,096)

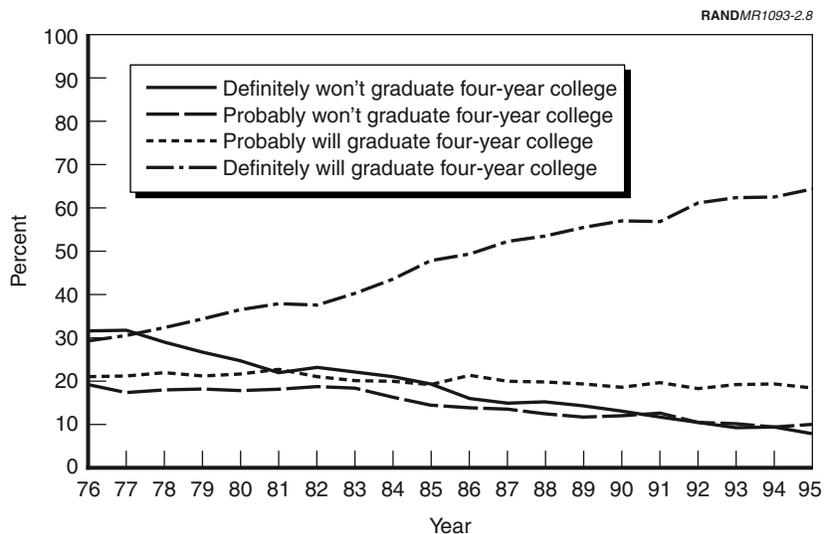
Overall, the main trend in four-year college intentions is an increase in positive intentions to graduate from a four-year college. The large steady increase in the proportion of students who Definitely Will graduate from a four-year college, combined with the large decrease in those who Definitely Won't, provides support for our expectation of an overall increase over time in positive propensity to graduate from a four-year college.

**Trends by Race and Gender.** Figures 2.7 and 2.8 reveal that the trends among white males and white females resemble the overall group trends, which is not surprising since white students make up almost 90 percent of the sample.

In addition, while the other groups have experienced a nearly two-thirds decrease in the proportion who say they Definitely Won't graduate from a four-year college, the proportion of black males who say they Definitely Won't graduate from a four-year college has decreased by only one-half (from 20 percent to 11 percent). Although this is a large absolute decrease, it is the smallest relative decrease



**Figure 2.7—Four-Year College Intentions by Year, White Males**  
(N = 112,727)

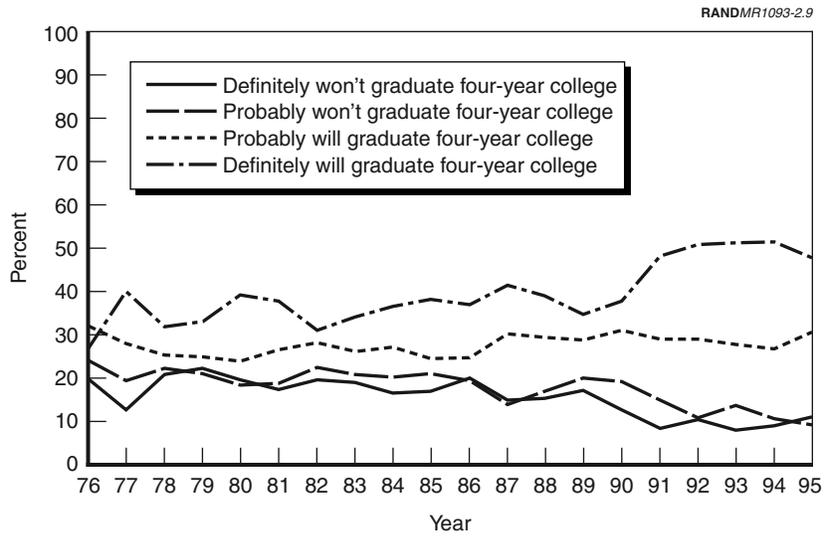


**Figure 2.8—Four-Year College Intentions by Year, White Females**  
(N = 116,983)

among the race-gender groups. In contrast, we saw in Figures 2.1 through 2.5 that the proportion of students who say they Definitely Won't graduate from a two-year college has increased slightly for all groups except black males, among whom the proportion has remained relatively stable.

Turning to trends among black students, Figures 2.9 and 2.10 show that the relative increases in the proportions of black students who say they Definitely Will graduate from a four-year college have been somewhat lower than for white students. Among black men, there has been a 74 percent increase (from 27 percent in 1976 to 47 percent in 1995), and among black women there has been a 50 percent increase (from 40 percent to 60 percent) in the proportion of students who say they Definitely Will graduate from a four-year college.

Figure 2.10, which looks at race and gender patterns in the absolute proportions of students having different four-year college intentions, reveals that in 1976, 40 percent of black females said they Definitely



**Figure 2.9—Four-Year College Intentions by Year, Black Males**  
(N = 15,130)

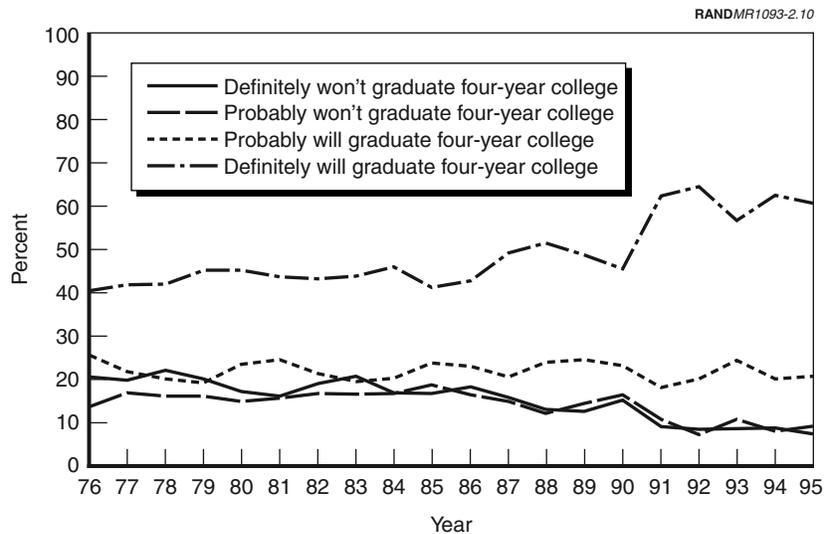


Figure 2.10—Four-Year College Intentions by Year, Black Females  
(N = 20,256)

Will graduate from a four-year college. This was the highest proportion among all the race/gender groups. In other words, black females began the 20-year period with a higher proportion in the Definitely Will group than did their male counterparts or white students of both genders. By 1995, over 60 percent of both black and white women said they Definitely Will graduate from a four-year college, with 52 percent of white men and 47 percent of black men saying the same.

**Summary.** Overall, these results indicate that there has been a dramatic increase over time in the aggregate intentions of high school students to graduate from a four-year college. The large increase in the proportion of students who say they Definitely Will graduate from a four-year college, along with the decrease in the proportion who state they Definitely Won't, is the strongest indicator of this trend. In contrast, the analysis of two-year college intention trends reveals that the proportion of students who state they Definitely Will *and* the proportion of students who state they Definitely Won't graduate from a two-year college have both increased in the past 20 years.

To understand how the trends in both two-year and four-year college intentions might affect and interact with the military recruiting market, an analysis of overall trends in intentions to serve in the armed forces is needed. The next section presents an analysis of military enlistment intentions and compares the results with the educational intentions results just discussed.

## TRENDS IN MILITARY ENLISTMENT INTENTIONS

### Background

Previous analysis of these data (see Segal et al., 1999), as well as analyses of data from the YATS (for a recent review, see Orvis et al., 1996), indicates that there has been an overall decline in positive propensity to serve in the military over the past twenty years. A number of explanations have been offered for this decline, including the possibility that the individual utility of serving in the military has declined relative to the rising utility of pursuing a college education (Asch et al., 1999; Kilburn and Klerman, 1999). In order to compare trends in college intentions with trends in military intentions, I analyze trends in intention to serve in the military for high school seniors as a whole, as well as for subgroups by race and gender. Results of that analysis, which replicate the results presented by Segal and colleagues (1999), are presented below.

### Results: Military Enlistment Intentions

**Overall Trends.** Figure 2.11 displays the trends in military intentions over time for high school seniors as a whole. The most notable trend is the large increase in the proportion of students who say they Definitely Won't serve in the military. The percentage of high school students who indicated they Definitely Won't serve in the military rose from 57 percent in 1976 to 74 percent in 1995, a relative increase of nearly 30 percent. During the same time period, the proportion of students who said they either Probably Will or Probably Won't serve in the military decreased. The decrease in the Probably Won't category, from 29 percent in 1976 to 17 percent in 1995, was especially large (almost a 40 percent relative decline). It appears that much of the growth in the Definitely Won't category may be due to a

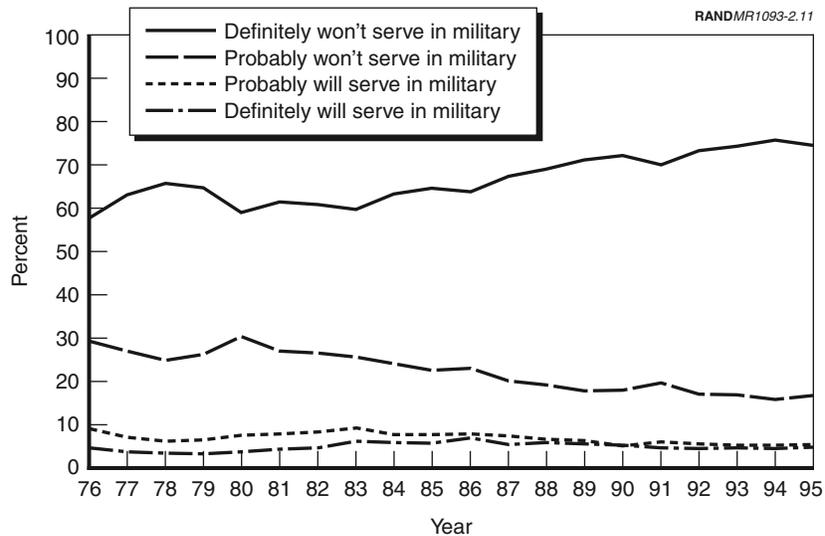


Figure 2.11—Military Intentions by Year, Total Sample  
(N = 255,338)

corresponding decline in the Probably Won't group. In other words, although the proportion of students with negative propensity (the sum of those who say they either Definitely Won't or Probably Won't serve) has risen only slightly since 1976 (from 86 percent to 91 percent), this group is increasingly dominated by students who say they Definitely Won't enter the military, while fewer students are stating they Probably Won't. It appears that students with negative propensity are increasingly more likely to be definite about it.

The proportion of students who state they Definitely Will serve in the military remained relatively small over time, reaching a high of 7 percent in 1986. The increase from 4.5 percent in 1976 to 7 percent in 1986, along with a decrease to 5 percent by 1995, represents large relative changes and indicates declining propensity since the mid-1980s. In addition, the proportion of students who say they Probably Will join the military fell from 9.1 percent in 1976 to 5.3 percent in 1995, a relative drop of over 40 percent.

In sum, the main trends in military intentions indicate an overall decrease in positive intentions toward military service with a corresponding increase in firm negative intentions to join the military.

**Trends by Race and Gender.** Figure 2.12 reveals that the military intention trends among white males mirror the trends among high school students as a whole. The proportion of white men who stated they Definitely Will serve in the military rose from 6 percent in 1976 to a high of 11 percent in 1986, then dropped again to approximately 7 percent in 1995. At the same time, the proportion of white men who say they Probably Will join the military dropped by 41 percent, from 12 percent in 1976 to 7 percent in 1995. The proportion of white men who state they Probably Won't join the military dropped even more precipitously, from 40 percent to 25 percent—a relative decline of nearly 40 percent. The proportion who state they Definitely Won't join the military rose by one-third, from 41 percent to 62 percent.

Figure 2.13 shows the enlistment intention trends for white females. White female students have the highest percentage stating they

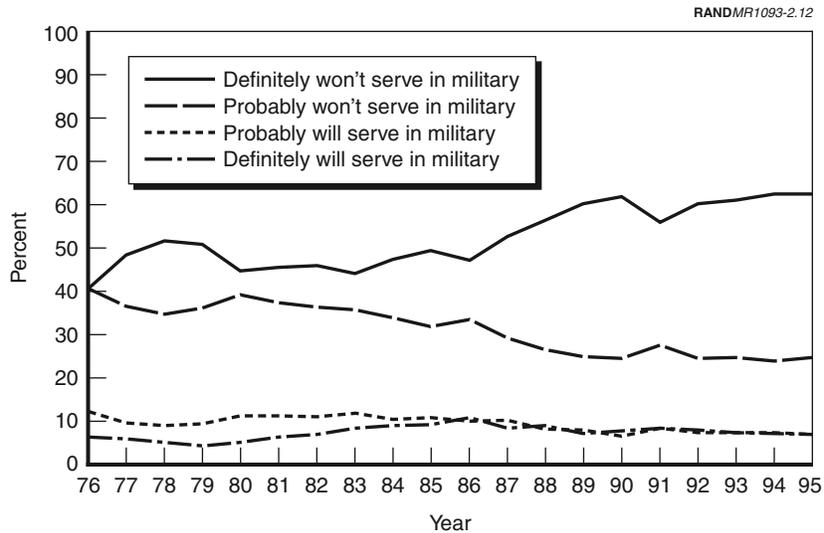
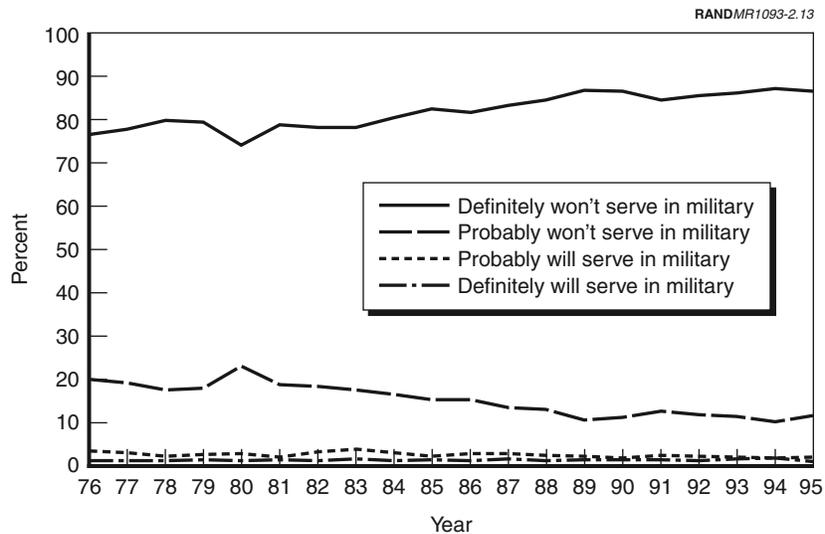


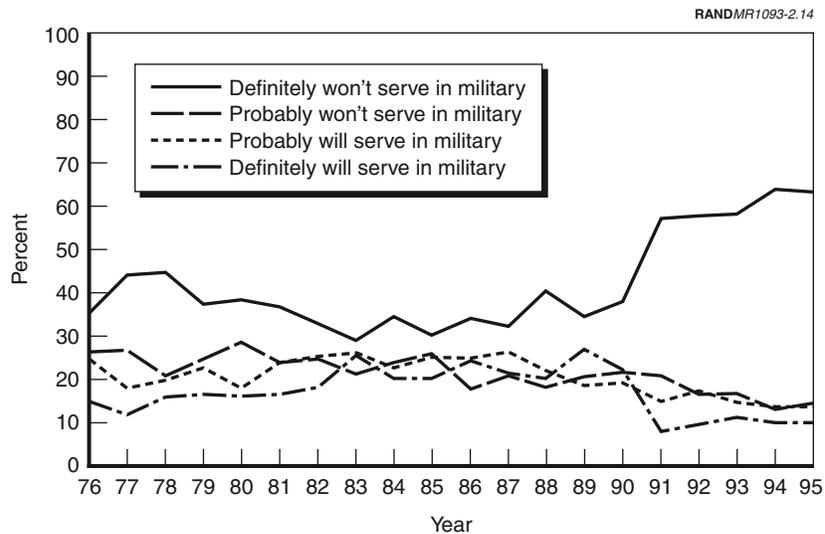
Figure 2.12—Military Intentions by Year, White Males  
(N = 108,207)



**Figure 2.13—Military Intentions by Year, White Females**  
(N = 113,952)

Definitely Won't join the military (over 85 percent in 1995), and the lowest percentage saying they Definitely Will (less than 1 percent in 1995). Furthermore, although the direction of change in each intention category is the same for white women as for the whole group, the magnitude of the changes is relatively small among white females.

Figure 2.14 reveals that trends in the military intentions of black males have been somewhat different from the trends among white males. The first difference is that, through much of the 1980s, the proportion of black males in each response category was approximately equal, while for all other groups a clear majority of students stated they Definitely Won't join the military in every year of the survey. Additionally, with the exception of the mid- to late 1980s, the proportion of black male respondents who stated they Definitely Will serve in the military has been less stable than for the other groups. From 1983 to 1989, the proportion of black men who stated they Definitely Will serve in the armed forces hovered around 25 percent. That percentage dropped to 10 percent in 1995 (a relative decline of



**Figure 2.14—Military Intentions by Year, Black Males**  
(N = 14,247)

60 percent), still the highest percentage of the race/gender groups analyzed. Finally, there has been an especially steep increase since 1990 in the proportion of black males who state that they Definitely Won't serve.

Between 1990 and 1995, the proportion of black males who stated they Definitely Won't serve in the military rose from less than 40 percent to nearly 60 percent. This finding is consistent with other reports of declining black male propensity in the 1990s (see Orvis et al., 1996; and Segal et al., 1999), as increasing proportions of black males are rejecting the idea of military service.

Figure 2.15 reveals that there is less difference in the proportion of students in the Probably Will, Probably Won't, and Definitely Will category for black women than for white women or white men. Note that the proportion of black females who state they Definitely Won't join the military decreased from 82 percent in 1994 to 74 percent in 1995. Black females are the only group to show a decrease in this category in this latest year of the survey.

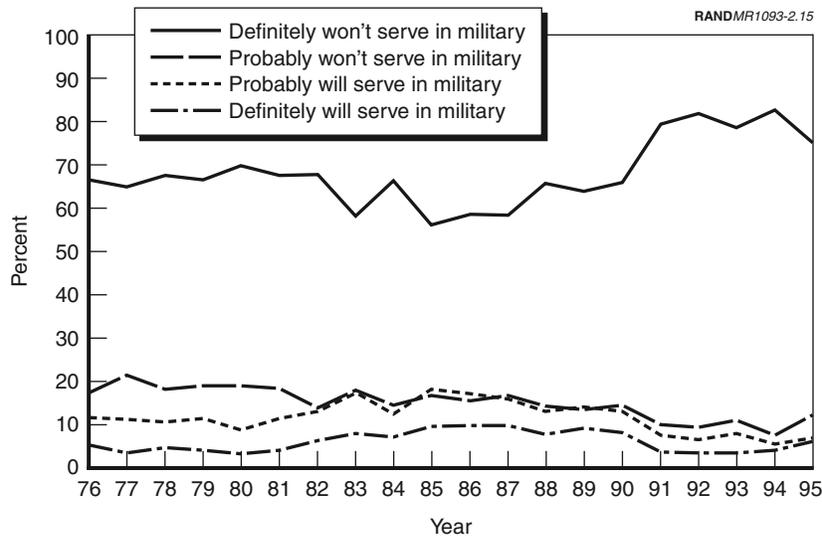


Figure 2.15—Military Intentions by Year, Black Females  
(N = 18,932)

**Summary.** Overall, the data indicate that high school seniors' intentions to serve in the military have fallen over the past 20 years. The proportion of students who state they Definitely Won't serve in the military has risen steadily during that time, while decreasing percentages of students say they either Probably Will or Probably Won't serve. In addition, since the mid-1980s for white men and since the late 1980s for black males, the proportion of students who state they Definitely Will join the military has declined sharply.

### Comparison of Trends in College and Military Intentions

Comparing trends in military intentions to the trends in two-year and four-year college intentions, we see some similarities in the military and two-year college trends, whereas trends in intentions to graduate from a four-year college differ sharply from both. Both for serving in the military and for graduating from a two-year college, the majority of high school seniors from 1976 to 1995 say they Definitely Won't pursue that activity. In addition, the proportion of those

students who state they Definitely Won't participate in both activities has grown since 1990. During the same time period, however, the proportion of students who say they Definitely Will graduate from a two-year college has grown substantially, while the proportion who say they Definitely Will serve in the military grew up to the 1980s and has declined since then. In contrast, the proportion of students who say they Definitely Will graduate from a four-year college grew dramatically and steadily, while the proportion who state they Definitely Won't or Probably Won't fell.

The analysis presented above provides a sense of aggregate changes in an important supply-side factor of the military enlistment process. The combination of declining proportions of students expressing positive intentions toward military service and rising proportions expressing positive intentions toward college provides some preliminary support for the idea that colleges, particularly four-year colleges, may be becoming an increasingly important competitor in the market for high-quality youth. To more fully understand the nature and extent of this competition, we need information about the characteristics associated with intentions to graduate from a two-year college, to graduate from a four-year college, or to join the military. The next section presents a description of the multivariate method of analysis used. In addition, it provides details of the specified model of postsecondary intentions.

## **MULTIVARIATE METHOD AND MODELS**

### **Method of Analysis**

Although the aggregate trends reported in the previous section are useful in providing an overall picture of the changing recruiting market, an understanding of the individual-level characteristics associated with different levels and types of intentions is needed to design effective recruiting strategies and incentives targeted at different groups of youth. A multivariate analysis is required to assess the effects of various individual-level factors on students' postsecondary intentions. The specific multivariate method employed in this chapter is multinomial logistic regression modeling. The choice of this method is justified for both substantive and methodological reasons. Substantively, the multinomial logistic method provides information

about the characteristics that differentiate those who are uncertain about their postsecondary intentions—and thus represent a potentially receptive market for military recruiting—from those whose plans are more definite. Methodologically, multinomial logistic models are the most technically appropriate models based on the way postsecondary intentions are measured in the MtF data. The next subsection provides a more detailed methodological and substantive rationale for the multivariate analysis that follows.

As stated earlier, the MtF surveys ask high school students to indicate their postsecondary intentions to engage in various activities by stating that they either Definitely Will, Probably Will, Probably Won't or Definitely Won't pursue a given activity. Many analyses of military propensity (see, for example, Orvis et al., 1996) collapse categories such as these into high propensity (Definitely Will and Probably Will) and low propensity (Definitely Won't and Probably Won't). Although such treatment of the data makes both the choice of method of analysis (usually logistic regression or probit models) and the interpretation of results rather straightforward, much information is lost by combining several distinct categories into one. In addition, some analyses of the MtF data treat the intention variables as continuous and employ methods of analysis—such as Multiple Classification Analysis—that estimate effects of independent variables on the mean of the dependent variable (see Bachman et al., 2000).

One critical property of continuous variables is that there is an equal and meaningful distance between response categories. In order to treat the intention variables as continuous, we would have to assume, for example, that the difference between the statements Definitely Won't and Probably Won't is substantively equal to the difference between the statements Probably Won't and Probably Will. Since there is no reason to assume such constant distances between response categories, treating the variables as categorical is more technically appropriate.

There are several other reasons why a method of analysis that allows us to retain all the information provided by the original coding of the intention variables is particularly useful for the purposes of this analysis. First, because the intention trends reported in previous sections of this chapter indicate that there have been very different patterns of change over time and across race and gender groups for each of

the response categories, it seems reasonable to expect that there might be important differences in the predictors of individual responses across categories. For instance, it is possible that the characteristics that are predictive of an individual stating that he/she Definitely Will engage in a particular postsecondary activity may differ from the characteristics that are predictive of an individual stating that he/she Probably Will engage in the same activity. Maintaining the ability to test for such differences is one advantage to not collapsing the response categories to create a dichotomous variable.

Second, maintaining the categorical nature of the dependent variable is justified because different levels of intentions have different predictive powers for future behavior. For example, using the longitudinal portion of the MtF data, Bachman et al. (1998) found that while 70 percent of males who stated they Definitely Will join the military actually had done so within 6 years of graduation, only 30 percent of those who said they Probably Will had followed through. Accession rates for females also differed by level of intention. Bachman et al. (1998) also found differences in college enrollment percentages between high school students—both male and female—who said they Definitely Will graduate from a four-year college and those who said they Probably Will. If one goal of gaining a fuller understanding of high school students' postsecondary intentions is to better predict their future behavior, then analyses that include the full range of intentions will yield the most accurate information.

Third, analyzing predictors for the full range of individual intentions may also help policymakers target recruiting resources more efficiently by distinguishing between individuals who are already definite about their plans and those who are uncertain and therefore still open to influence. As noted earlier, the proportion of youth who state they Definitely Will join the military has remained relatively small over time. This small group of youth tends to behave in consistently predictable ways, with a 70 percent enlistment rate for males in this category. This group would seem to be little affected by changes in recruiting strategies or resources, indicating that a more efficient use of resources might be to target the larger group of high school seniors who are undecided about their military intentions—those who say they either Probably Will or Probably Won't join. Recruiting strategies aimed at increasing the proportion of these youth who actually enlist would be more cost-effective because of the potentially larger

payoff in terms of increased enlistments. The multinomial logit approach allows me to assess the impact of individual factors on each level of military intention. In this way, the model can provide information about the characteristics of students who fall into each category.

Similar reasons would support an analysis of college intentions that maintains the categorical nature of those measures as well. It might be particularly important to policymakers to understand the individual characteristics of high school students who are less than certain about their college plans (those who say they either Probably Will or Probably Won't graduate from a two-year or four-year college). These individuals might be particularly receptive to recruiting strategies aimed at attracting potentially college-bound youth into the military through some form of education benefits combined with military service. This might be especially true if their indecision is based primarily on financial considerations.

Fourth, multinomial logit models neither assume nor force an order on the values of the dependent variable. Ordinary linear regression models, and binary models that split intentions into high and low categories only, can tell us only whether the independent variables are associated with increased or decreased intentions. Because many analyses of postsecondary intentions are aimed solely at understanding this dynamic, they employ models that assume the appropriate ordering of intention measures is from low to high.

In a multinomial logit model, the researcher can assess the effects of the independent variables on each of the categories of the dependent variable, regardless of any implied ordering. As reported earlier, one of the important trends in postsecondary intentions over time is that students have become more definite about their intentions to pursue certain activities. Exploring covariates of this dynamic implies a different ordering of the intention variables than the standard lowest-to-highest intent. By not forcing any order on the dependent variable, multinomial logit models allow the researcher to assess both kinds of trends.

Given both the methodological and substantive justifications for treating the three measures of intentions as categorical, the three models of intentions estimated are multinomial logistic regression

models.<sup>5</sup> In a multinomial logit model, the effects of the independent variables are allowed to differ for each outcome of the dependent variable (Long, 1997). In the multinomial logit models of post-secondary intentions, the outcomes of the dependent variables are Definitely Will, Probably Will, Probably Won't, and Definitely Won't. This advantage of a multinomial logit model means that the results will indicate whether a variable raises the likelihood of one outcome relative to the reference category while lowering the likelihood of another outcome relative to the reference category. Since the reference outcome for each of the three models is the lowest level of intention (Definitely Won't), we might expect that the direction of the effect of most variables will be the same for all the other outcomes—indicating that the variable either increases intentions or decreases them. However, as we saw in the data on trends in two-year college intentions, for example, the main trend is toward increasing certainty of intentions. In this case, we would expect that time (measured by year of the survey) will have a positive effect on the probability of youth stating they Definitely Will graduate from a two-year college and a negative effect on the probability of stating they either Probably Will or Probably Won't. None of the other commonly used regression models (e.g., ordinary least squares estimates of linear regression models, binary logistic regression or probit models, or ordered logistic or probit models) would capture this dynamic. The following three multinomial logit models are estimated in this analysis:

- A model of the predictors of two-year college intentions
- A model of the predictors of four-year college intentions
- A model of the predictors of military enlistment intentions.

For each model, a set of independent variables expected to be related to various postsecondary activities is included. For each independent variable, the multinomial logit model provides estimates of the amount by which the predicted odds of a given outcome (compared

---

<sup>5</sup>Although the variables could also be considered ordinal, indicating that ordered logit models would be appropriate, ordered logit models assume that the effect of a change in an independent variable is the same for all values of the dependent variable. Results of a Lagrange multiplier test indicate that these data violate this *proportion odds assumption*, rendering ordered logit models inappropriate.

with a designated reference outcome) are multiplied for each one-unit change in the value of the independent variable, all other things being equal (Hamilton, 1992). For each of the three models, the reference category is Definitely Won't. The next subsection describes each of the independent variables included in the models and presents a brief explanation of how they relate to the underlying model of intentions (the random utility model) and to previous research.

### Specification of Models

According to the random utility model, individuals will base their choices of activities on the relative utility of each activity, choosing the activity that has the maximum expected utility. In this chapter, individuals' propensities to engage in various activities are likewise assumed to be based on their perception of the relative utility of the activity. Applying this framework to the postsecondary intentions of high school seniors, we expect that students' intentions to engage in each of the three activities analyzed (graduate from a two-year college, graduate from a four-year college, and enlist in the military) will be based on the relative costs and benefits of that activity for the individual. With that in mind, the estimated models include variables related to time and demographic factors as well as variables related to the expected returns to education and/or military service.

**Time and Demographic Factors.** Consistent with the overall focus of this research, year of the survey is included to allow for an estimation of how the odds of having various intention levels for each of the three activities have changed from year to year, all other things being equal. Since the analysis of temporal trends in postsecondary intentions presented earlier clearly indicates that the effect of time on intentions is not linear, time is measured by a series of dummy variables represented each year of the survey (the reference category is the first year of the survey, 1976).

As noted in the analysis of trends in postsecondary intentions reported above, the determinants of particular postsecondary intentions are likely to vary by both race and gender. Prior research also indicates that postsecondary intentions vary by race-gender groups (Bachman et al., 1998). Dummy variables for white females, black females, and black males (with white males as the reference

category) are included in each model. Table 2.1 provides sample means of each independent variable by race and gender.

Since the availability of various types of educational opportunities varies by region, the models also include dummy variables indicating whether the student resides in the South, Northeast, or West; with the Midwest serving as the reference category. These variables are in effect coded,<sup>6</sup> so that the coefficient for each variable is an estimate

**Table 2.1**  
**Means of Independent Variables by Race and Gender**

Variable	White Males	Black Males	White Females	Black Females
Living with both parents	.82	.52	.81	.52
Has siblings	.74	.67	.74	.71
Mother works	.69	.88	.70	.89
Lives in South	.27	.56	.27	.56
Lives in West	.17	.09	.16	.08
Lives in Northeast	.23	.17	.23	.17
H.S. GPA C+	.13	.22	.09	.17
H.S. GPA B-	.16	.19	.13	.17
H.S. GPA B	.21	.18	.22	.21
H.S. GPA B+	.16	.12	.21	.18
H.S. GPA A-	.10	.05	.15	.09
H.S. GPA A	.09	.03	.13	.05
Took college prep. course	.55	.44	.58	.48
Took vocational/technical course	.13	.15	.10	.15
Used marijuana	.54	.47	.48	.37
Used marijuana missing	.02	.05	.01	.04
Engaged	.03	.03	.08	.08
Married	.02	.04	.02	.03
Lives in city	.24	.51	.27	.54
Lives in suburbs	.27	.14	.26	.13
Father's education	14.09	12.70	13.90	12.48
Mother's education	13.58	13.15	13.48	12.95
Hours worked per week	14.87	11.56	13.51	10.56
Weekly wages	3.08	2.62	2.85	2.36

SOURCE: Monitoring the Future (1976–1995).

<sup>6</sup>The purpose of effect coding (or deviation coding) is to express the deviation of each category's effect from the central tendency of all the other categories. In effect coding, a series of dummy variables equal to the number of categories of X-1 are created. The omitted category is coded -1 for all other categories of X. So each variable is coded 1 for its own category, -1 for the omitted category, and 0 for all other categories.

of the effect of living in that region as opposed to living in any of the other regions. Since a disproportionate number of military posts are located in the South, we would expect that living in the South might have a positive effect on military intentions. Likewise, since a disproportionate number of two-year colleges are located in the West (U.S. Department of Education, 1998), we would expect that living in the West would have a positive effect on two-year college intentions. Since both the availability and the costs of two- and four-year colleges differ by region (National Council of Educational Statistics, 1998), where an individual lives will affect both the expected costs and the expected returns of postsecondary education. In addition, local labor market conditions, such as unemployment rates, affect individual enlistment propensity (see, for example, Kilburn and Klerman, 1999). According to the random utility framework, these factors indicate that the relative attractiveness of various postsecondary activities will be affected by geographic location.

The final demographic factor included in the model is a measure of whether the respondent lives in a city, suburb, or rural environment. The amount and quality of the resources available to high school students to assist them in making career choices is likely to vary by type of community. We would expect that students in suburban communities will have higher college expectations because of the better resources generally available in suburban schools and communities. Therefore, students in suburban areas may be more likely to have access to information on the relative benefits of a college education and may have greater access to information and assistance in financing a college education. For these reasons, suburban students' perceptions of the utility of a college education might be higher than those of other students. Their intentions to graduate from a two- or four-year college might be higher while their military intentions might be lower.

**Expected Returns to Education and/or Military Service.** A number of factors might affect an individual's expected returns to college graduation and/or military service. A random utility model of postsecondary intentions implies that the higher an individual's expected returns for a particular activity, the more positive will be that individual's intention to pursue that activity.

The cost of obtaining information about college applications and college choices is likely to be lower for students whose parents attended college. In addition, parents with more education may be likely to pass on their taste for education to their children. Previous research on postsecondary decisions indicates that mother's education has a negative effect on the probability of enlisting and a generally positive effect on the probability of attending college (Kilburn and Klerman, 1999). For these reasons, father's and mother's education are both included in the models, with the expectation that higher levels of parental education will predict higher levels of college intentions and lower levels of military intentions.

The type of high school program a student is enrolled in is likely to be both an early indicator of intentions and a source of relevant resources, skills, and information. High school program type is included in the model, with the expectation that enrollment in a college preparatory program will be predictive of higher college intentions. Participation in a college preparatory program in high school may be an indicator of an expectation for more education. This expectation not only predicts higher college intentions but also has been shown to be negatively related to military intentions (Segal et al., 1999). Participation in a vocational/technical program not only provides less information and preparation for college attendance, but is also likely to be an early indication of an intention to pursue something other than college after graduation. Because many military jobs require technical skills and interests, we expect that enrollment in a vocational/technical program will be associated with higher military intentions. Enrollment in a particular kind of high school program can be seen as both an indicator of the individual's perception of the expected utility of various activities and as a possible influence on the size of the costs and benefits expected from choosing alternative activities.

A number of measures of human and social capital are included in the model, based on their expected effects on perceptions of the relative costs and/or returns to various postsecondary activities. Students who live with both parents are likely to have greater resources to afford college, making them more likely to have positive college intentions and negative military intentions. Having a mother who works is likely to increase family income and make the costs of college more affordable, so having a mother who works is expected to

increase students' college intentions. Students with siblings will have fewer resources available to meet college costs; they therefore are likely to have lower levels of college intentions and potentially higher military intentions. All of these family level variables represent various measures of the social capital available to students. Based on the general random utility framework, we would expect that students with higher social capital will be better able to forgo full-time employment after high school (either in the labor market or in the military) in favor of the greater long-term expected returns/utility of obtaining a college degree. Kilburn and Klerman (1999) found that mother's education, family income, and number of siblings all affected enlistment behavior, primarily through their relationship to college choices. The same dynamic is likely to be at work in the effects of these factors on enlistment and college intentions.

The costs of college might be substantial for students who are married or engaged, making the immediate income of military service more attractive. The opportunity costs of attending college and forgoing needed income may be especially high for individuals with family responsibilities. Therefore, being married or engaged is expected to increase military intentions while lowering intentions to graduate from college. This expectation is consistent with findings presented in Kilburn and Klerman (1999).

Students with higher grades in high school can expect to have a greater availability of college choices. We might also expect that students with higher grades would expect greater returns to college based on their demonstrated academic abilities. Higher grades in high school should also predict higher college intentions and lower military intentions. Previous research has shown that measures of cognitive ability (primarily as measured by the AFQT) are not linearly related to enlistment. In fact, individuals with very low abilities and individuals with very high abilities are both unlikely to enlist (Hosek and Peterson, 1985 and 1990; and Kilburn and Klerman, 1999). The choice to attend a two- or four-year college is not likely to bear a linear relationship to ability. Students with particularly low ability (grades) might realistically see little opportunity and/or utility to attending college at all, while students in the middle range may aim for a two-year college degree if they believe standards of admission and performance to be less stringent at a two-year versus a four-year college. At the highest end of ability, we would expect grades to have

a positive influence on intentions to attend a four-year college, with a corresponding negative effect on military and two-year college intentions. To capture the dynamics of these relationships, dummy variables for each grade point average (GPA) category are included.

Another factor that might influence an individual's college and military intentions is civilian labor market opportunities. The general relationship between measures of civilian labor market opportunities and enlistment has been demonstrated in much prior research (see, for example, Hosek and Peterson, 1985 and 1990; and Orvis et al., 1996). In addition, Kilburn and Klerman (1999) demonstrate that both the choice to attend college and the choice to enlist are affected by factors associated with the choice to work in the civilian labor market. Higher wages and greater number of hours worked during high school suggest that the value of working in the civilian labor market will be greater. Because of this, higher levels of both of these factors are expected to predict lower levels of intentions to graduate from college and to join the military. The student wage variable is based on students' reported average weekly income, and the variable measuring hours worked is based on the average time spent per week in paid employment.

Because of the moral standards imposed by the military on potential recruits, a variable indicating whether students report having used marijuana is included in the model. Because using marijuana might indicate that an individual is either unlikely to meet military entrance standards or unlikely to want to join an organization with strict moral standards, it is expected that having used marijuana will be associated with lower levels of military intentions. Based on Kilburn and Klerman's (1999) findings that using marijuana increases the probability that a youth will choose work or other activities over both college and the military, it is likely that having used marijuana will have a negative effect on college intentions. A variable indicating that a value is missing for the self-reported marijuana use question is included to test whether those students who do not answer are also less likely to intend to join the military.

**Intentions to Engage in Other Activities.** Finally, to better understand the relationship among military intentions, two-year college intentions and four-year college intentions, measures of each type of intention are included in the models of the other intentions.

In other words, measures of two-year college intentions and four-year college intentions are included in the model of military intentions. Military intentions and two-year college intentions are included in the model of four-year college intentions, and military and four-year intentions are included in the model of two-year college intentions. If high school students see college and the military as mutually exclusive or competing choices, then higher military intentions will predict lower levels of intentions for both two-year and four-year college graduation. Similarly, intentions to attend a two-year college will be negatively related to military intentions and four-year college intentions. Intentions to graduate from a four-year college will be negatively related to both two-year intentions and military intentions. Alternatively, we might find this to be mainly true for students with firm intentions—those who say they Definitely Will engage in one of the activities. Individuals who indicate uncertainty (stating they either Probably Will or Probably Won't pursue that activity) about any one particular activity may actually be more likely to be uncertain about all of the options before them. If this is the case, stating one Probably Will or Probably Won't engage in any one of the three activities of interest will be positively related to stating one Probably Will or Probably Won't engage in the other activities. Maintaining the full categorical range of the intention variables and estimating multinomial logit models allows me to test these ideas and will provide some evidence of the extent to which high school seniors view two- and four-year colleges and the military as competing alternatives.

The next section of the chapter presents the results of the multinomial logit regressions. Results for two-year college intentions are presented first, followed by four-year college intention results and military intention results.

## **MULTINOMIAL LOGIT RESULTS**

For each of the models, the results indicate the effects of each independent variable on each level of intention to engage in the specified activity (graduate from a two-year college, graduate from a four-year college, or join the military). Full results of all three multinomial models of intentions are shown in Tables A.1, A.2, and A.3 in Appendix A. In these tables, the Relative Risk Ratio (RRR) reported for

each independent variable for each level of intention indicates the amount by which the odds of an individual stating that level of intention compared with stating they Definitely Won't engage in that activity are multiplied for each unit change in the independent variable. For example, the odds of stating one Probably Won't graduate from a two-year college over stating one Definitely Won't are multiplied by a factor of .97 (decreased by 3 percent) for each additional year of mother's education (see Table A.1). Because of the extremely large sample size ( $N = 206,411$ ), the majority of the coefficients are statistically significant, even when the effects are not substantively very large. For this reason, as well as for ease of presentation and accessibility, the discussion of results is restricted to findings of particular interest and relevance to the research questions. For each model, the effects of race and gender and the effects of other postsecondary intentions are discussed. Other factors shown to have particularly large impacts on each type of intention are also discussed. In addition, the tables included in this discussion section indicate only the direction of the effect of each variable and its significance level.

### Two-Year College Intentions

Table 2.2 displays the direction and significance level of the effects of selected variables on two-year college intentions. For each variable discussed, + indicates that the variable has a positive effect on the given level of intentions and – indicates a negative effect. All results should be understood in reference to the Definitely Won't category. So, for example, Table 2.2 shows that holding everything else constant, being from the West has a positive and statistically significant effect ( $p < .01$ ) on all levels of two-year college intentions relative to stating that one Definitely Won't graduate from a two-year college. This can be seen by the + sign with three asterisks in each intention column for the West variable. (The number of asterisks indicates the level of statistical significance.) For information about the magnitude of the effects, see the Relative Risk Ratios reported in Appendix A, Table A.1.

**Effects of Race and Gender.** Looking first at race and gender effects, we see that the odds for all levels of two-year college intentions

**Table 2.2**  
**Multinomial Logit Estimates of Effects of Selected Variables**  
**on Two-Year College Intentions**

Variable	Probably Won't	Probably Will	Definitely Will
Black female	+	+***	+***
White female	+***	+***	+***
Black male	+***	+***	+***
Lives in South	+***	-***	-***
Lives in West	+***	+***	+***
Lives in Northeast	-***	-***	-***
H.S. GPA C+	+***	+***	+***
H.S. GPA B-	+***	+**	+***
H.S. GPA B	+	-***	+
H.S. GPA B+	-***	-***	-***
H.S. GPA A-	-***	-***	-***
H.S. GPA A	-***	-***	-***
Took college prep course	-***	-***	-***
Probably Won't join military	+***	+***	+***
Probably Will join military	+***	+***	-***
Definitely Will join military	+***	-***	-***
Probably Won't graduate from four-year college	+***	+***	+***
Probably Will graduate from four-year college	+***	+***	+***
Definitely Will graduate from four-year college	+***	-***	-

SOURCE: Monitoring the Future (1976–1995).

NOTE: Reference category of the dependent variable is Definitely Won't. \* =  $p < .10$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$ .

relative to Definitely Won't are greater for almost all females. Compared with white males, black females are over 100 percent more likely to state they Probably Will graduate from a two-year college, and 70 percent more likely to state they Definitely Will. White females are 45 percent more likely than white males to state they Probably Will and 65 percent more likely to state they Definitely Will.

Among males, the major race effect seems to indicate that blacks are less definite about their plans to graduate from a two-year college than whites. Black males are 11 percent more likely than white males to state they Probably Won't graduate from a two-year college and 70 percent more likely to state they Probably Will. Black males are also 11 percent more likely than white males to state they Definitely Will

graduate from a two-year college, but this effect is only marginally significant ( $p < .05$ ). This may indicate that the previously reported racial differences in two-year college propensity may be at least partially attributable to differences in other factors, such as grades or parental education, which are controlled for in the multivariate analysis.

**Effects of Other Postsecondary Intentions.** Looking at the effects of other postsecondary intentions on intentions to graduate from a two-year college, our first finding of note is that indefinite four-year college intentions have significant positive effects on all levels of two-year intentions (relative to Definitely Won't). This can be seen by the positive and significant effects of stating one Probably Won't graduate from a four-year college and the positive and significant effects of stating one Probably Will graduate from a four-year college. The effects of stating one Probably Won't graduate from a four-year college on all levels of two-year college intentions are particularly large (see Table A.1). It appears that one reason students may be stating that they Probably Won't graduate from a four-year college is that they intend to graduate from a two-year college instead.

In comparison, stating one Definitely Will graduate from a four-year college decreases the odds of stating one Probably Will graduate from a two-year college by over 40 percent and has a positive but not significant effect on the odds of stating one Definitely Will do so. Those with definite intentions to graduate from a four-year college are apparently not inclined to graduate from a two-year college.

For military intentions, stating that one Probably Won't join the military increases the odds of all levels of two-year college intentions relative to Definitely Won't. Those who state they Probably Will serve in the military are also more likely to state they Probably Won't and are more likely to state that they Probably Will graduate from a two-year college. However, stating one Probably Will serve in the military significantly decreases the odds of stating one Definitely Will graduate from a two-year college by 14 percent. In contrast, stating one Probably Will graduate from a four-year college increases the probability of stating one Definitely Will graduate from a two-year college by over 400 percent.

Stating one Definitely Will serve in the military also decreases the odds of stating one either Probably or Definitely Will graduate from a two-year college by 30 percent and 35 percent respectively. This is consistent with the idea that individuals who state they Definitely Will join the military are highly likely to do so (see Bachman et al., 1998), making them unlikely to state they will pursue other activities. In sum, these findings suggest that those individuals with positive military intentions see pursuing a two-year degree as more incompatible with their intentions than do those with positive four-year college intentions. In other words, the competition between the military and two-year colleges may be more pronounced than the competition between two- and four-year colleges.

**Effects of Other Factors.** With the exception of military and four-year college intentions variables, residing in the West is the factor with the largest effect on intentions to graduate from a two-year college. The odds that students in the western part of the country will state they Probably Will or Definitely Will graduate from a two-year college are more than 100 percent greater than those for other students. This finding may be due to the prevalence of two-year colleges in the West, making this option more readily available to students living there (U.S. Department of Education, 1998). Having high grades (B+ averages and above), and being in a college preparatory program both have large, significant negative effects on the propensity to graduate from a two-year college. As we will see in the next subsection, this is likely due to the positive effects of these variables on intentions to graduate from a four-year college.

**Effects of Time.** Regarding the effects of time on two-year college intentions, Table B.1 in Appendix B displays the year coefficients for two-year college intentions. In general, the results show that from 1981 on, the odds of students stating that they either Probably Will or Definitely Will graduate from a two-year college increased relative to 1976. The coefficients are generally larger for the Definitely Will category, indicating that time has larger effects on the probability of having definite rather than probably positive intentions. For most years, there is no significant difference in the odds of stating one Probably Won't graduate from a two-year college. These findings are all consistent with findings reported in earlier parts of the chapter concerning the modest increase in positive propensity combined with increased certainty regarding two-year colleges.

### Four-Year College Intentions

Selected results from the model of four-year college intentions are shown in Table 2.3. (Full results, including the magnitude of all effects, are displayed in Table A.2 in Appendix A.) As in the model for two-year college intentions, the reference category for the model is Definitely Won't, and all findings should be interpreted accordingly. The effects of a variable on the odds of stating any particular level of four-year college intentions is always in reference to the odds of stating one Definitely Won't graduate from a four-year college. As before, + indicates the variable listed in the left-hand column has a positive effect on the intention level indicated, and – indicates a negative effect. Asterisks are again included to indicate significance level.

**Effects of Race and Gender.** One of the first findings of note is that when controlling for factors such as parental education and high school grades, being a white female has a generally negative effect on intentions to graduate from a four-year college, while being a black female or a black male has a generally positive effect. All other things being equal, being a white female decreases students' odds of stating they either Probably Will or Definitely Will graduate from a four-year college by factors of approximately 30 percent in each case. In contrast, being a black female increases the odds that students will say they Probably Will graduate from a four-year college by almost 40 percent and increases the odds of stating they Definitely Will by 164 percent. This is consistent with the finding reported earlier that four-year college intentions have been consistently highest among black females.

**Effects of Other Postsecondary Intentions.** Turning to the intentions variables, we see that all levels of military and two-year college intentions are associated with increased odds of stating one Probably Won't graduate from a four-year college. The effects of two-year college intentions are strikingly large, implying that students who are positively inclined to graduate from a two-year college are extremely likely to also have at least probable positive intentions to graduate from a four-year college, while they are less likely to have definite intentions to do so. The advantages of the multinomial logit model are evident in the contrast of the negative effect of stating one Probably Will or Definitely Will graduate from a two-year college on stating one Definitely Will graduate from a four-year college with the

large positive effects of two-year intentions on less firm levels of four-year intentions. It appears that for students who are uncertain about their college intentions, the possibility of attending a two-year college is not seen as a competing option with attending a four-year college.

The effects of military intentions on four-year college intentions are even more complex. Those who state that they Probably Won't serve in the military are more likely to have some positive inclination to graduate from a four-year college intentions than to state that they Definitely Won't graduate from a four-year college. In contrast, students with positive military intentions (i.e., those who state they ei-

**Table 2.3**  
**Multinomial Logit Estimates of Effects of Selected Variables on Four-Year College Intentions**

Variable	Probably Won't	Probably Will	Definitely Will
Black female	—	+***	+***
White female	—***	—***	—***
Black male	+***	+***	+***
H.S. GPA C+	+***	+***	+***
H.S. GPA B-	+***	+**	+***
H.S. GPA B	+***	+***	+***
H.S. GPA B+	+***	+***	+***
H.S. GPA A-	+***	+***	+***
H.S. GPA A	+***	+***	+***
Took college prep course	+***	+***	+***
Engaged	—***	—***	—***
Married	—***	—***	—***
Probably Won't join military	+***	+***	+***
Probably Will join military	+***	—**	—***
Definitely Will join military	+***	—***	—***
Probably Won't graduate from two-year college	+***	+***	+***
Probably Will graduate from two-year college	+***	+***	—***
Definitely Will graduate from two-year college	+***	+***	—***

SOURCE: Monitoring the Future (1976–1995).

NOTE: Reference category of the dependent variable is Definitely Won't. \* =  $p < .10$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$ .

ther Probably or Definitely Will join the military) are significantly less likely to have positive intentions to graduate from a four-year college. This can be seen by the negative and significant effects of both stating one Probably Will and of stating one Definitely Will join the military on the likelihood of stating one Probably Will or Definitely Will graduate from a four-year college. The negative effects of stating one Definitely Will join the military are especially large (see Table A.2), which is consistent with the idea that individuals who say they Definitely Will serve are very likely to do so, making it unlikely that they intend to pursue other activities. Again, the multinomial logit model allows us to see the complexities of the relationships between military intentions and college intentions that would not be detected by linear models and/or models based on binary intention variables.

**Effects of Other Factors.** Not surprisingly, other than two-year college and military intentions, the variables with some of the largest effects on the odds of increasing levels of four-year college intentions are being in a college preparatory program and high school grades. For example, being in a college preparatory program increases the odds of stating one Probably Will versus Definitely Won't graduate from a four-year college by nearly 400 percent, and increases the odds of stating one Definitely Will by over 700 percent. Students with average high school grades of A, have odds of stating they Definitely Will graduate from a four-year college versus stating they Definitely Won't that are over 10 times higher than the odds of students with average grades below the C+ range (the reference category for grades). In addition, as expected, being engaged or ever married has relative large negative effects on the odds of all levels of four-year college intentions relative to Definitely Won't.

**Effects of Time.** The year coefficients for four-year college intentions are displayed in Table B.2 in Appendix B. Like the effects of time on two-year college intentions, these results are consistent with the trends reported earlier. From the early 1980s on, students were more likely each year to state they Probably Will or Definitely Will graduate from a four-year college. As with the two-year results, the effects of time are particularly strong for the likelihood of being definitely positive about graduating from a four-year college. From the mid-1980s on, the odds that a student will state they Probably Won't (rather than Definitely Won't) graduate from a four-year college also increased.

## Military Enlistment Intentions

**Effects of Race and Gender.** Table 2.4 displays the direction and significance level of selected variables on military intentions. (Full results including the magnitude of all effects, are reported in Appendix A, Table A.3.) Looking at the results of the model of military intentions, we see that the findings regarding the effects of the race-gender dummy variables are consistent with prior research. Specifically, being a black male increases the odds of stating one Probably Will join the military and of stating one Definitely Will join the military by over 100 percent in both cases. Both black and white females have lower odds of stating any kind of military intention

**Table 2.4**  
**Multinomial Logit Estimates of Effects of Selected Variables**  
**on Military Intentions**

Variable	Probably Won't	Probably Will	Definitely Will
Black female	—***	—***	—***
White female	—***	—***	—***
Black male	—***	+***	+***
H.S. GPA C+	—***	—***	—
H.S. GPA B–	—***	—**	—
H.S. GPA B	—***	—***	—
H.S. GPA B+	—***	—***	—***
H.S. GPA A–	—	—***	—**
H.S. GPA A	+	—***	—**
Took college prep course	+***	—***	—***
Probably Won't graduate from four-year college	+***	+***	+***
Probably Will graduate from four-year college	+***	—**	—***
Definitely Will graduate from four-year college	+***	—***	—***
Probably Won't graduate from two-year college	+***	+***	+***
Probably Will graduate from two-year college	+***	+***	—***
Definitely Will graduate from two-year college	+***	—*	—

SOURCE: Monitoring the Future (1976–1995).

NOTE: Reference category of the dependent variable is Definitely Won't. \* =  $p < .10$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$ .

other than Definitely Won't, with being a white female having a larger negative effect than being a black female. This is consistent with findings that black males have over time had the highest overall levels of military propensity, whereas females—especially white females—have significantly lower military propensities than males.

**Effects of Other Postsecondary Intentions.** The effects of college intentions on military intentions are different for two- and four-year colleges. Students who state they Probably Won't graduate from a four-year college and those who state they Probably Won't graduate from a two-year college are generally more likely to indicate all levels of military intentions relative to Definitely Won't. Students with positive four-year college intentions (stating they either Probably Will or Definitely Will graduate) are more likely to state they Probably Won't serve in the military and less likely to state that they either Probably Will or Definitely Will do so. Specifically, those who say they Probably Will graduate from a four-year college are 10 percent less likely to say they Probably Will serve in the military and 30 percent less likely to say they Definitely Will. Those who claim they Definitely Will graduate from a four-year college are nearly 40 percent less likely to state that they Probably Will serve in the military and over 50 percent less likely to state that they Definitely Will. These findings suggest that students may view graduating from a four-year college as incompatible with intending to serve in the military.

While those who say they either Probably Will or Definitely Will graduate from a two-year college are less likely to state they Definitely Will join the military, they are not less likely to say they Probably Will serve. Stating one Definitely Will graduate from a two-year college has only a small and marginally significant ( $p < .10$ ) effect on the odds of stating one Probably Will join the military. Stating one Probably Will graduate from a two-year college does, however, significantly *increase* the odds of stating one Probably Will serve in the military by 60 percent. From this perspective, positive intentions to graduate from a two-year college do not appear to be viewed as entirely incompatible with military service. Students with positive intentions to graduate from a two-year college appear to be at least open to the idea of enlisting. In contrast, positive intentions to graduate from a four-year college have consistently negative effects on the odds of having positive military intentions, indicating that ob-

taining a four-year college degree is viewed as less compatible with military service.

**Effects of Other Factors.** Like their effects on two-year college intentions, high school grades and being in a college preparatory program have negative effects on military intentions. Since these variables measure academic abilities, this finding indicates that the armed forces are likely to experience difficulty recruiting among high-quality youth, as measured by academic ability. The more academically oriented and successful students are in high school, the more likely they are to intend to pursue a four-year college degree and the less likely they are to intend to either pursue a two-year degree or join the military.

**Effects of Time.** Table B.3 in Appendix B contains the coefficients for the effect of year of survey on military intentions. These figures show that there has been a fairly steady decrease each year (relative to 1976) in the odds that students will say they either Probably Won't or Probably Will join the military. The results also show that between 1983 and 1989, the odds that students would state that they Definitely Will join the military were significantly greater than they were in 1976. From 1990 on, however, the odds that a student would indicate such definite plans for military service returned to their 1976 level. As with the coefficients for college intentions, the results for military intentions are generally consistent with the results reported earlier regarding the trends in postsecondary intentions of high school students.

## SUMMARY AND RECOMMENDATIONS

In examining changes in the postsecondary intentions of high school seniors, this chapter has presented trends in the proportion of students who report various levels of intentions to graduate from a two-year college, graduate from a four-year college, and serve in the military. Multinomial logit models of intentions to engage in each activity were also estimated, and the effects of a number of predictors of individual intentions were assessed and presented. By describing overall changes in the educational and enlistment intentions of high school students, as well as estimating the effects of various individual characteristics on postsecondary intentions, these

results should provide policymakers with information regarding important changes in the supply side of the enlistment process.

In terms of changes in postsecondary educational intentions over the past twenty years, the most notable trend is the dramatic increase in intentions to graduate from a four-year college. Across all race and gender groups, the proportion of high school students who definitely intend to graduate from a four-year college has risen sharply since 1976, whereas the proportion who reject the idea of pursuing a four-year college degree has dropped considerably.

In contrast, the main trend in intentions to graduate from a two-year college has been in the direction of students becoming more definite about their two-year college plans. The proportions of students in both the Definitely Will and the Definitely Won't categories have grown. As the returns to a college education have grown, more students are expressing firm intentions to graduate from both two- and four-year colleges.

The picture regarding trends in military intentions contrasts sharply with the college intention trends. Consistent with much previous research in this area, my results indicate an overall downward trend in military intentions over the past twenty years, with a particularly sharp decline in positive propensity for black males. In addition, although the proportion of students with negative propensity toward the military (either Probably Won't or Definitely Won't) has risen only slightly overall, the group is increasingly made up of individuals with the lowest propensity and the lowest enlistment rates: those who say they Definitely Won't join.

The multivariate analysis, presented and discussed the individual factors that affect high school students' postsecondary intentions. The results of the multinomial logit analyses indicate that certain factors affect two-year college intentions differently from the way they affect four-year college intentions. For example, being in a college preparatory program and having higher grades in high school generally decrease the odds of having positive intentions to graduate from a two-year college but increase the odds of having positive intentions to graduate from a four-year college. Both of these factors also exert a negative effect on the odds of having positive military intentions, a finding that may not bode well for future recruiting efforts

aimed at attracting high-quality youth. The more academically oriented and successful students are, the more likely they are to eschew both two-year college and the military in favor of pursuing a four-year degree.

These results do indicate, however, that students in general do not seem to see two- and four-year colleges as completely incompatible. This is particularly true for students with positive inclinations about graduating from a two-year college because they are more likely to also have some positive intentions of attaining a four-year degree as well. Students who are definite about graduating from a four-year college, however, are unlikely to have positive propensity for either two-year college or the military. The dramatic growth of this group over the past 20 years most likely accounts for a substantial portion of the declining propensity of youth to join the military.

The estimates of the effect of military intentions on odds of having varying levels of college intentions generally support the idea that individuals who state they Definitely Will join the military are unlikely to have positive intentions toward either two-year or four-year college. In other words, the students who are definite about their plans to join the military are not likely to be planning to pursue either a two- or a four-year degree. This finding, combined with the fact that these youths are highly likely to actually enlist, may indicate that educational incentives aimed at this group may not be a very efficient use of resources.

On the other hand, students who state they Probably Will serve in the military are more likely to also say they Probably Will graduate from a two-year college. Those who Probably Won't join the military are likely to have positive intentions to graduate from a two- or four-year college. The proportion of students who state these uncertain intentions regarding military service is over four times larger than the proportion who state that they Definitely Will serve. Offering educational incentives designed to attract this larger group of students might be a more efficient recruiting strategy. Since two-year colleges may represent slightly less competition, given the finding that students who Probably Will attend two-year colleges are also more likely to say they Probably Will join the military, recruiting strategies designed to allow students to combine two-year college attendance with military service might be particularly effective. Other educa-

tional incentives might be effective in convincing those students with positive educational incentives that military service need not be incompatible with such goals.

In addition to revised recruiting strategies, further research should be directed at gaining a more complete understanding of the dynamics of high school students' postsecondary intentions and the effects of those intentions on the recruiting market. If the proportion of young people with definite intentions to serve in the military continues to decline, continued analyses of the characteristics and other intentions of those with less definite military intentions is warranted.

Even those students who are not definite about their future plans as they near graduation must eventually make some choice. In fact, at least 50 percent of eventual enlistees traditionally come from groups of individuals whose intentions to serve in the military were not definite as late as two months prior to high school graduation. Understanding the factors that influence the eventual choices made by youth with relatively uncertain intentions might provide the armed services with valuable information that could be used to design recruiting strategies and incentives aimed at influencing the resolution of that indecision in the direction of military service.

## REFERENCES

- Asch, Beth J., M. Rebecca Kilburn, and Jacob A. Klerman, *Attracting College-Bound Youth Into the Military: Toward the Development of New Recruiting Policy Options*, RAND, MR-984-OSD, 1999.
- Bachman, Jerald, David Segal, Peter Freedman-Doan, and Patrick O'Malley, "Does Enlistment Propensity Predict Accession? High School Seniors' Plans and Subsequent Behavior," *Armed Forces and Society*, Vol. 25, No. 1, Fall 1998, pp. 59-80.
- Bachman, Jerald G., David R. Segal, Peter Freedman-Doan, and Patrick M. O'Malley, "Who Chooses Military Service? Correlates of Propensity and Enlistment in the United States Armed Forces," *Military Psychology*, (12)1, January 2000, pp. 1-30.
- Hamilton, Lawrence C, *Regression with Graphics: A Second Course in Applied Statistics*, Belmont, CA: Duxbury Press, 1992.

- Hosek, James R. and Christine E. Peterson, *Enlistment Decisions of Young Men*, RAND, R-3238-MIL, 1985.
- Hosek, James R. and Christine E. Peterson, *Serving Her Country: An Analysis of Women's Enlistment*, RAND, R-3853-FMP, 1990.
- Kilburn, M. Rebecca, and Jacob A. Klerman, *Enlistment Decisions in the 1990s: Evidence from Individual-Level Data*, RAND, MR-944-OSD/A, 1999.
- Long, J. Scott, *Regression Models for Categorical and Limited Dependent Variables*, Thousand Oaks, CA: Sage Publications, 1997.
- Orvis, Bruce R., Martin T. Gahart, and Alvin K. Ludwig, with Karl F. Schutz, *Validity and Usefulness of Enlistment Intention Information*, RAND, R-3775-FMP, 1992.
- Orvis, Bruce R., Narayan Sastry, and Laurie L. McDonald, *Military Recruiting Outlook: Recent Trends in Enlistment Propensity and Conversion of Potential Enlisted Supply*, RAND, MR-677-A/OSD, 1996.
- Segal, David R., Jerald D. Bachman, Peter Freedman-Doan, and Patrick M. O'Malley, "Propensity to Serve in the U.S. Military: Temporal Trends and Subgroup Differences," *Armed Forces and Society*, 25(3), 1999, pp. 407-427.
- U.S. Department of Education, Office of Educational Research and Improvement, *Digest of Education Statistics 1997*, National Council of Education Statistics, 1998.