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Race, Poverty, and Enlistment: Some Evidence from the National Longitudinal Survey of Youth

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ABSTRACT. This paper explores the determinants of enlistment for a large sample of male youth drawn from the National Longitudinal Survey of Youth. Logit results indicate that the probability of enlistment is directly related to minority and poverty status while controlling for ability and a number of other socioeconomic background variables. In addition, an analysis of poverty transitions show that a very large percentage of enlistees in the early 1980s who were living in poverty at age 17 were successful in escaping poverty by 1990. An important conclusion is that the military can serve as a mechanism of upward economic mobility for disadvantaged youth. (J15, J24)

I. Introduction

The racial and socioeconomic composition of the military has long been of concern to social scientists and editorialists. During the Gulf Conflict and earlier during the Vietnam War, for example, over representation of blacks and economically disadvantaged youth in the service caused genuine concern that certain segments of the population suffer disproportionately (Farris, 1992; Galbraith, 1990; Janowitz and Moskos, Jr., 1974; Lacayo, 1990). But, during the 1980s, the absence of large-scale military engagement meant that over representation of minorities and poor youth could be a good thing, especially for those facing very depressed private sector job markets (Schexnider and Butler, 1976).

Most empirical work in the economic literature on the enlistment decision is from the perspective of the military. The focus is primarily on how enlistment responds to changes in the macro economy, recruitment practices and compensation schemes (see, for example, Brown, 1985; Dale and Gilroy, 1983; Deboer and Brorsen, 1989; Horne, 1985; and Hosek and Klerman, 1992). Surprisingly little empirical work has been directed toward the economic role of the military as an institution affecting racial and income inequality. A number of important questions concerning the distributional effects of the military, although frequently discussed in editorials, have yet to be systematically addressed in the empirical literature. For example, do black youth enter the military because of short term economic necessity rather than for more long term career considerations? Do race and poverty have powerful independent effects on the probability that a young person will enlist? And, is the military an effective anti-poverty institution for both black and white youth?

The purpose of this paper is to use a large sample of enlistment age males drawn from the National Longitudinal Survey of Youth to begin to address these questions. The analysis proceeds in three stages. First, a simple theoretical model of the enlistment decision is developed and descriptive statistics are presented which indicate that white and black military personnel enlist for similar reasons, although black enlistees show a slightly higher propensity to enlist for short term economic reasons.

Second, logit regressions are run to test hypotheses that the decision to enlist is directly related to minority status and poverty status at age 17. Finally, the effect of enlistment on transitions into and out of poverty is explored. It is shown that a very large percentage of enlistees who were living in poverty at age 17 and who enlisted in the early 1980s were successful in escaping poverty by 1990. This positive finding, however, gives rise to a concern that the decline in military employment opportunities in the 1990s is likely to retard the economic progression of poor youth, especially poor black youth, who in the past would have used the military as an avenue out of poverty.

II. Reasons for Enlistment

Much of the empirical work on enlistment is based on similar theoretical frameworks (Antel, Hosek and Peterson, 1989; Daula and Smith, 1985; DeBoer and Brorsen, 1989; and Hosek and Peterson, 1985). On the supply side, the potential enlistee is seen weighing the expected returns from enlistment against the returns to the best civilian alternative. On the demand side, the military attempts to set standards that will maximize the quality of its enlistees subject to its budget constraints. The most important screening standards are graduation requirements and Armed Forces Qualifying Test Score (AFQT) requirements.

Following Antel, Hosek and Peterson (1989, pp. 210-212), a simple job-matching model is employed. Individual i is willing to enter into an enlistment contract (i.e. supply labor to the military) if

$$V(e)_i - V(c)_i > 0 \quad (1)$$

where, $V(e)_i$ is the expected value of enlisting to individual i and $V(c)_i$ is the expected value of the best civilian sector alternative to individual i.

The military will be willing to enter into the enlistment contract (i.e., demand individual i) if

$$V(e)_s - V(k)_s > 0 \quad (2)$$

where, $V(e)_s$ is the value to the service of enlisting individual i and $V(k)_s$ is the expected value of prospect k who is at the margin.

In an all volunteer force, conditions specified in both equations 1 and 2 must be met before enlistment occurs.

If the racial composition of enlistments was primarily demand driven, equation 2 suggests that blacks would be under represented in the armed forces. The primary reason is that statistical criteria are often used as proxies for $V(e)_s$, such as Armed Forces Qualifying Test (AFQT) scores and high school graduation requirements. Since black male youth are less likely to graduate from high school and, on average, score lower on AFQT tests, the eligible pool of blacks is reduced significantly.

Despite having a smaller percentage of their male population eligible for enlistment, blacks were still much more likely to enlist than whites during the 1970s and 1980s. But, in recent years, sharp decreases in the military's demand for recruits caused the military to become increasingly selective, and black enlistment rates have fallen precipitously, both absolutely and relative to white rates. For example, when the enlistment rate of black males is defined as the number of recruits to the total number of 18 year old black males, we see their enlistment rate declining from one in four in the mid-1970s to one in five in the mid-1980s. By 1991, the black enlistment rate was only one in ten (Hosek and Klerman, 1992). In terms of Equation 2, rapid recent increases in $V(k)_s$ appears to have had a sharp disparate effect on a large number of black youth who would have been able to enter into enlistment contracts only a few years earlier.

Given the restrictions in demand (equation 2) for enlistees in recent years, we can best study the determinants of enlistment supply (equation 1) by examining enlistment behavior in the late 1970s through the mid-1980s; a period where many young persons who wanted to enter into enlistment contracts were successful and a period where black youth were more likely to enlist than white youth. Qualified blacks are probably more likely to enlist than their white counterparts because of a relatively low valuation for the best civilian sector alternative to military service ($V(c)_i$ in equation 1.) The well-documented employment problems facing black male youth in the civilian sector imply that they may be more willing than their white-male counterparts to enlist in the military because of immediate economic concerns. White male youth, on the other hand, who face more favorable civilian sector alternatives would be more likely to enlist for non-economic reasons or for long-term training and education benefits.

The National Longitudinal Survey of Youth (NLSY), which is the sole data base used in this paper, provides some support for this argument. In the NLSY, data was gathered through annual in-person interviews with 12,686 youth which began in 1979 and continued through 1990.[2] The survey traces labor market and educational outcomes in great detail, including military service. In the NLSY, members of the Active Armed Forces were asked a number of questions regarding their reasons for enlistment, including a question on which reason they felt was most important in influencing their enlistment decision. Table 1 presents the percentage distribution of responses for males aged 18-21 who were in the Active Armed Forces in 1979, the first year the survey was administered. Each reason was grouped into one of three categories, the first category groups civilian unemployment and pay related reasons for enlisting, the second combines two human capital related reasons and the third includes a number of other reasons. Although the pattern is not extremely strong, black enlistees are more likely than whites to indicate civilian unemployment as the main reason for enlistment. For example, 10 percent of all blacks in the military sample indicated civilian unemployment as the main reason for enlisting compared to only 5.2 percent of white respondents. Also, a larger percentage of black respondents indicated that their main reason for enlistment was to gain a "chance to better self," which for many could be an economically based response. These results provide week support for the implication of the job contracting model that blacks are more likely to enlist than whites because of less favorable

TABLE 1. Main Reason for Enlisting in the Military by Race: Percent of Sample Indicating Each Reason

	Black Sample		White Sample	
I. Pay and Employment				
Unemployed*	10.0		5.2	
Earn More in Military	1.3		0.5	
Retirement/Fringe Benefits	2.0		2.3	
(Subtotal)		13.3		8.0
II. Training and Education				
Job Skills / Training	20.7		24.5	
Get Money for College	16.7		20.0	
(Subtotal)		37.4		44.5
III. Other Reasons				
Chance to Better Self*	16.7		10.9	
Travel	10.7		9.3	
Escape Personal Problems	2.7		3.4	
Wanted to Serve Country*	2.0		6.1	
Family Tradition	0.0		1.1	
Prove Can Make It	4.7		3.4	
Chance To Be on My Own	12.7		13.2	
(Subtotal)		49.5		47.4
Total	100.0		100.0	
Sample Size	150		440	

Source: National Longitudinal Survey of Youth
* Indicates significant difference between the black sample and white sample proportions at the .10 level.

economic opportunities in the civilian sector. White enlistees were more strongly influenced by longer term training and education opportunities provided by the military and by a patriotic desire to serve.

Although black youth appear to be more likely to enter the military for immediate economic reasons, there is little evidence that they have significantly different attitudes regarding the value of military service ($V(e)_i$) than white youth. In 1981, when the NLSY asked, "Do you think for a young person to serve in the military is definitely a good thing, probably a good thing, probably not a good thing, or definitely not a good thing?" the pattern of response was very similar between black and white youth.[3]

III. Predicting Enlistment

A single equation logit model is employed to test two implications of the job-matching model: 1) young men who are living in poverty at the age of 17 will, ceteris paribus, be more likely to enlist than their nonpoor counterparts; and 2) young black men will be more likely to enlist than young white men, even after controlling for human capital and family background differences.

There are several reasons to expect the poor to have a greater proclivity to enlist. First, young men who are living in poverty when they reach enlistment age are going to be at a disadvantage in securing employment in the civilian sector because they have

fewer financial resources to conduct effective job search. Second, impoverished parents are less likely than non-poor parents to be able to provide a great deal of useful job search information, including contacts. Third, poor youth may lack resources to pursue post-secondary education in lieu of military service. Finally, job-matching information concerning employment opportunities in the military is more readily available to youth, regardless of socioeconomic status. Indeed, advertising by the Armed Forces in the mass media seems to be pitched toward the wants of the economically disadvantaged and has long been the subject of critical social commentary (Siegel, 1991).

The second implication of the job matching model is that black youth should be more likely to enlist than white youth, even after controlling for human capital differentials and socioeconomic background. One reason for this expectation is that housing segregation and the deindustrialization of central city job markets result in a spatial mismatch between many young black males and the location of entry level jobs (Ihlanfeldt and Sjoquist, 1990; and Kain 1968). This makes job matching in the civilian sector increasingly difficult for black males, leading to a decrease in black youth civilian employment rates, thereby increasing the incentives to enlist. The idea that employment conditions affect enlistment receives support from a body of empirical work which finds enlistment to be responsive to changes in unemployment rates over time (Dale and Gilroy, 1983) and to differences in unemployment rates across geographic areas (Brown, 1985).

To determine the effects of race and poverty on enlistment, the enlistment behavior of a large sample of youth is analyzed using logistic regression. The sample, which is drawn from the National Longitudinal Survey of Youth, consists of male youth in the civilian population who were 14-18 years old in 1979. Since minorities and economically disadvantaged youth are over represented in the sample, it is well suited to the study of race and poverty effects on enlistment . For example, 27 percent of the sample were poor at age 17 and 28 percent black. This over representation is intended to provide large enough samples of minority and economically disadvantaged groups to facilitate statistical analysis of their behavior. Members of the sample were interviewed every year from 1979 through 1990. A wealth of information relevant to the enlistment decision were collected, including poverty status, measures of family background, educational attainment, and scores on aptitude tests (Center for Human Resource Research, 1993).

From Equations 1 and 2, we know that an enlistment contract will be entered when the net benefits to the potential enlistee and the military are positive. Logistic regression is an appropriate empirical model since it assumes a dichotomous dependent variable, allows for multiple explanatory variables and does not suffer from some of the shortcomings of using OLS in the estimation of dichotomous outcomes (Gujarati, 1988, Chapter 15). The dependent variable (MILITARY) and independent variables are defined in Table 2. MILITARY is a dummy variable, where 1 represents a successful job match between the military and the respondent. To be classified as a successful job match, the individual had to be in the active armed forces for at least one year from 1979 through 1990.

A key explanatory variable is poverty status at age 17 (POOR). In the NLSY, poverty status is determined by applying the official government definition of poverty to family income data gathered during the surveys. The rationale for choosing poverty status at age 17 is that most young people begin seriously assessing the benefits and costs of enlistment at that age. Since respondents ranged in age from 14 to 18 in 1979, poverty status (POOR) is determined in the year when the respondent reached 17.

There are three variables which reflect the respondent's family background (FEM-HEAD, MOM-HS and MOM-COL). Youth who are raised in female-headed families are less likely to have frequent contact with a family member with prior military experience. For these youth, the absence of a father with prior military experience may mean that information regarding the value of service may be less accurate and the parental pressure to serve for "patriotic" reasons may be less intense.

The mother's educational attainment is a common proxy for the socioeconomic status. It is expected that youth raised in families where the mother has at least some college education (MOM-COL) will be less likely to enlist. Highly educated parents are able to raise the value of civilian sector activity for their offspring by being more efficient producers of human capital in the home and having better connections and information concerning education and employment opportunities in the civilian sector.

The final four variables defined in Table 2 are measures of the human capital level of the respondent. Educational attainment is important for two reasons.

TABLE 2. Variable Definitions and Descriptive Statistics

Variable	Definition	Mean
MILITARY	Member of Active Armed Forces for at Least One Year (1 = Member, 0 = Nonmember)	0.11
POOR	Poor at age 17 (1 = Poor; 0 = Not Poor)	0.27
BLACK	Race Identified as Black (1 = Black; 0 = Not Black)	0.28
HISPANIC	Ethnicity Identified as Hispanic (1 = Hispanic; 0 = Not Hispanic)	0.17
FEM-HEAD	Lived in a Female-Headed Household at Age Fourteen (1 = Fem Head; 0 = Not Fem. Head)	0.2
MOM-HS	Mother Completed Exactly twelve Years of Education (1 = 12 Years; 0 = otherwise)	0.37
MOM-COL	Mother Completed More Than Twelve Years of Education (1 = more than 12 yrs.; 0 = otherwise)	0.15
RURAL	Respondent Lived in a Rural Area at Age Fourteen (1 = Rural; 0 = Not Rural)	0.21
SOUTH	Respondent Lived in the South at Age Fourteen (1 = South; 0 = Non-South)	0.36
HS-GRAD	Respondent Completed Exactly Twelve Years of Education (1990 Interview) (1 = 12 Years; 0 = otherwise)	0.41
AFQT2	Respondent Scored in the Second Quartile of AFQT for his Age Group: 1981 Survey (1 = 2nd; 0 = Otherwise)	0.25
AFQT3	Respondent Scored in the Third Quartile of AFQT for His Age Group: 1981 Survey (1 = 3rd; 0 = Otherwise)	0.24
AFQT4	Respondent Scored in the Fourth Quartile of AFQT for His Age Group: 1981 Survey (1 = 4th; 0 = Otherwise)	0.25

First, it is used as a screen by the military. High-school dropouts are recruited only when the enlistment quota cannot be reached without lowering standards. Young men who have achieved education beyond the high school diploma may also be less likely to enlist than those with exactly 12 years of education because they face better civilian sector opportunities. It is, therefore, expected that those who have attained exactly 12 years of formal education will be more likely to enlist than those with other levels.

A direct measure of ability is included as a set of dummy variables measuring quartile rankings on the Armed Forces Qualifying Test (AFQT). Since the AFQT was administered to nearly all members of the NLSY sample during 1980, it is a common measure of ability for both enlistees and nonenlistees. Individuals were assigned to quartile rankings according to their AFQT score within their own age group. This was necessary since individuals in the younger age groups scored somewhat lower, on average than those who were over 18 years old.

For example, median AFQT percentile scores for the age groups included in our analysis is 22 for those who were 15 when they took the test in 1980 compared to 32 for those who were 17 when they took the test in 1980. All age groups in our sample had median scores which were far less than a representative sample would have because of an over representation in the NLSY of economically disadvantaged and minority youth.

Since the military uses AFQT scores as criteria in determining whether to offer enlistment contracts, we would expect those in the bottom quartile to have lower probabilities of enlisting than those in other quartiles. Since the first quartile is omitted from the logit model, we expect positive coefficients for the dummy variables indicating the second, third and fourth quartiles.

Logit regression results are presented in Table 3. The first column of results is for the complete sample and the last two columns are for the black sample and white sample respectively. Since the dependent variable is the natural log of the odds of reaching a successful enlistment, the coefficients can not be interpreted in probability terms. But the signs and significance levels of the coefficients can be interpreted in a manner similar to OLS regression (Gujarati, 1988).

The implications of the job-matching model regarding the effects of poverty and race are supported by the results. The measure of poverty (POOR) is a significant and positive predictor of enlistment (MILITARY) in all three models, even after controlling for human capital endowments and background. This indicates that the effect of poverty on enlistment is similar for both blacks and whites.

To determine the effect of poverty on the probability of enlistment, it is necessary to make assumptions regarding the values of the independent variables and to solve for the probability of enlistment using the cumulative logistic distribution function (Gujurati, p. 481). For the purpose of estimation, it is assumed that the respondent is white (BLACK=0 and HISPANIC=0), lived in a female headed household at age 14 (FEM-HEAD=1), has a mother with 12 years of education (MOM-HS=1), lived in a northern city at the age of 14 (RURAL=0 and SOUTH=0), completed exactly 12 years of school (HS-GRAD=1), and scored in the third quartile of the AFQT exam for his age group (AFQT3=1). Using the estimated logit coefficients and the cumulative logistic distribution function, it is estimated that a poor respondent with these characteristics will have a 5.7 percent greater probability of enlisting than a nonpoor respondent with these characteristics.[4] Poverty at age 17 appears to have been an important determinant of enlistment during the 1980s for those who met education and AFQT standards.

The logit regression results in Table 3 also show blacks to be more likely to enlist than whites, even after controlling for poverty status, human capital endowments and background variables. Making the same assumptions as above, it is estimated that a black male will have a 20.2 percent higher probability of enlisting than a similarly situated white male. This result is consistent with the implications drawn earlier from job-matching and spatial mismatch theory regarding barriers that blacks face in the civilian sector.

With the exception of poverty status at the age of 17 (POOR), other measures of socioeconomic background (FEM-HEAD, MOM-HS, MOM-COL, RURAL and SOUTH) are generally insignificant predictors of enlistment. Only the dummy variable indicating that the mother had achieved formal post-secondary education (MOM-COL) has a significant coefficient.

As expected, measures of human capital endowments (HS-GRAD, AFQT2, AFQT3 and AFQT4) have positive and very significant coefficients. The military relies heavily on educational attainment and AFQT scores in screening applicants. The fact that the coefficients to these variables are of similar magnitude in the logit equations for both black and the

TABLE 3. Logit Results: Predicting Participation in the Active Armed Forces (Standard Errors in Parentheses)

Variable	Complete Sample	Black Sample	White Sample
POOR	0.47**	0.31*	0.41*
	(0.13)	(0.20)	(0.21)
BLACK	0.93**		
	(0.14)		
HISPANIC	0.05		
	(0.18)		
FEM-HEAD	0.02	0.19	-0.13
	(0.14)	(0.20)	(0.26)
MOM-HS	-0.16	-0.01	-0.22
	(0.13)	(0.21)	(0.18)
MOM-COL	-0.43*	-0.15	-0.59*
	(0.19)	(0.30)	(0.26)
RURAL	0.01	0.13	0.02
	(0.14)	(0.27)	(0.18)
SOUTH	0.14	0.25	0.09
	(0.12)	(0.20)	(0.18)
HS-GRAD	0.59**	0.59**	0.51**
	(0.12)	(0.20)	(0.17)
AFQT2	1.55**	1.75**	1.07*
	(0.20)	(0.26)	(0.44)
AFQT3	2.12**	2.09**	2.00**
	(0.21)	(0.30)	(0.42)
AFQT4	2.14**	2.26**	1.99**
	(0.23)	(0.39)	(0.42)
CONSTANT	-4.30**	-3.98**	-3.61**
	(0.24)	(0.42)	(0.33)
-2 log likelihood	2231.4	741.7	1156.9
Chi-Square	196.6	86.9	63.1
N	3423	950	1890

* Statistically significant at the .05 level
** Statistically significant at the .01 level

white samples, as shown in the last two columns of Table 3, provides some evidence that AFQT standards are being applied in a similar way to blacks and whites.

IV. Enlistment and Poverty Transitions

The preceding section showed that impoverished youth in the NLSY sample were more likely to enlist than similarly endowed nonpoor youth. How effective has the military been as an "anti-poverty program" during the 1980s? The NLSY sample is especially well suited to address this question since most enlistees in the sample enlisted early in the decade and completed their military service well before the 1990 survey.

Table 4 presents poverty rates and poverty transitions for three groups of males: the military sample, a control group and high school dropouts. The military sample consists of all 14-18 year old males in 1979 who were in the active armed forces for at least one year between 1979 and 1990 and responded to the 1990 interview.

The control group includes individuals who have not served in the military but have similar human capital endowments as the military sample, namely, male respondents with 12 through 14 years of education and AFQT scores between the 10th and 90th percentile scores of the military sample (i.e., AFQT scores from 13 through 72).

Initial poverty rates for all three groups are measured for the year when the individual was 17. Table 4 shows that poverty rates at the age of 17 are 43.8 percent for the black military sample and 17.8 percent for the white military sample. By 1989, the poverty rates of the military sample had fallen sharply to 9.5 percent for blacks and 4.8 percent for whites. The control group also realized significant declines in poverty rates, but not nearly as pronounced as for the military sample. On the other hand, the decline in poverty rates for the high school dropouts is moderate, especially for blacks.

The poverty rates presented in Table 4 indicate that the military may have exerted a significant positive influence on the poverty status of young males, especially young black males. For black males, the military seems to have been especially effective in preventing youth who were not living with poor families when they were 17 from slipping into poverty in 1989. Human capital endowments, however, are also important. The military sample and the control group both compared favorably in terms of transitions out of poverty compared to high school dropouts, a group which is almost always ineligible for military service.

The mechanisms that lead to successful transitions from poverty for members of the military is not well understood and would be a fruitful area of future research. One study suggests that military skills may be more transferrable to the civilian sector than is commonly believed (Mangum and Ball, 1989). Other possibilities are that behavioral traits required and developed in the military (e.g., discipline and loyalty) are also traits which are rewarded in the civilian sector. To the extent that certain unmeasured attitudes are important, it could be that those who choose to enlist are fundamentally different than those in the control group and would have been more likely to succeed even without having had the opportunity to serve. It seems most probable that a combination of these factors are at work.

V. Conclusions

The enlistment regressions show the military to be attractive compared to civilian alternatives for minorities and economically disadvantaged youth during the early 1980s. But, the situation began to change during the mid-1980s. Steadily increasing qualification standards since about 1982 and sharply declining enlistment quotas during the 1990s have had a disparate effect on the enlistment of minorities and the poor (Berryman, 1990; Farris, 1992; Fernandez, 1989; Hosek and Klerman, 1992). While enlistment rates of black-males was about twice that of white males during the early 1980s, today enlistment rates of blacks and whites are about the same.

While this will certainly yield a more representative military force in the 1990s, it will also reduce the military's role as an "antipoverty program."

Despite the success of the military in reducing poverty among high school graduates, it was not of much help to high school dropouts. So, as an antipoverty tool, the military can only be effective in improving the economic condition of the most favorably endowed youth in terms of education and abilities. The "truly disadvantaged" members of what is often referred to as the "underclass" (Wilson, 1987) are largely beyond its reach.

One thing is certain. Because of reduction in enlistment opportunities, young black males are going to face even more competitive markets in the civilian sector. During the 1980s the military absorbed a very

TABLE 4. Poverty Rates and Transitions for Three Groups

	Military Sample		Control Group		HS Dropouts	
	Black	White	Black	White	Black	White
Sample Size	105	146	151	591	105	256
Percent Poor at Age 17	43.8	17.8	35.8	14.9	57.1	38.3
Percent Poor in 1989	9.5	4.8	13.2	6.6	44.8	22.3
% of Poor Who Moved Out of Pov. by 1989	84.4	100.0	92.6	80.7	50.0	74.5
% of Nonpoor Who Moved Into Pov. by 1989	5.0	5.8	16.5	4.4	37.8	20.3

large percentage of black youth. This is no longer happening. If the demand for minority youth does not increase in the civilian sector, we should expect continued high minority unemployment rates, further decreases in minority youth employment to population ratios, increased pressures on public social services and growth in the prison population.

In designing new programs for economically disadvantaged youth, there may be some lessons to be learned from the military. Programs which combine work experience, discipline and training may be the most effective way of remedying the very difficult situation faced by our economically disadvantaged youth.

Footnotes

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2. The National Longitudinal Surveys of Labor Market Experience are sponsored by the Bureau of Labor Statistics, U.S. Department of Labor, and are conducted by the U.S. Bureau of the Census and NORC. The survey was done for the Center of Human Resource Research at Ohio State University. NLSY data bases and documentation are available from the Center for Human Resource Research on tape or CD ROM (Center for Human Resource Research, 1992).
3. The distribution of responses for black and white males in the 1981 survey to the question "do you think for a young person to serve in the military is definitely a good thing, probably a good thing, probably not a good thing, or definitely not a good thing?" are as follows: definitely a good thing (17.3 percent of blacks v. 13.7 percent of whites); probably a good thing (62.0 percent of blacks v. 65.8 percent of whites); probably not a good thing (13.0 percent of blacks v. 15.1 percent of whites); definitely not a good thing (7.7 percent of blacks v. 5.4 percent of whites). The sample includes 845 black males and 1733 white males who were 16 through 20 years old in 1981.
4. For a description of the logit model, see Gujarati, pp. 481-491. The cumulative logistic distribution function used to calculate probabilities is:

$$P_i = \frac{1}{1 + e^{-Zi}},$$

Where $Z_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \ldots + \beta_N X_{Ni}$

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