



COMMANDER, NAVY RECRUITING COMMAND
ARLINGTON, VIRGINIA

RESEARCH REPORT

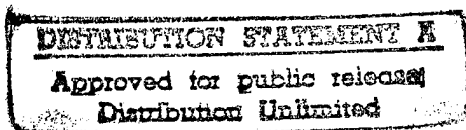
96-01
June 1996

WAIVER POLICY AND ATTRITION

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Approved for distribution:



June 1996

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EXECUTIVE SUMMARY

Increasing first term attrition and recently published findings about moral waiver policy motivate a review of Navy's enlistment and waiver standards.

This paper investigates the recent experience of recruits with moral waivers. Based on regression analysis of a 20% sample of FY92-93 accessions, we find that moral waiver rates appear to be stable over the last five years. The analysis indicates that recruits who were female, still in school, and had low Armed Forces Qualification Test (AFQT) scores were the least likely group to receive waivers. Older recruits with higher AFQT scores were the most likely to receive waivers.

While recruits with moral waivers did have higher first term attrition than those without waivers, the increase was not as great as predicted by previous research. Results indicated that recruits with waivers for criminal behavior attrited at a rate of five percentage points higher than those with no waiver while recruits with drug and alcohol waivers attrited at essentially the same rate as recruits without waivers. The effect of waivers on attrition was not uniform for all gender and education groups. Female non-high school diploma graduates with criminal waivers experienced the highest increase in attrition while their male counterparts did not experience higher attrition.

Restricting or eliminating gender or education groups that require criminal waivers would not be cost effective based on a simple analysis comparing projected attrition savings against estimated recruiting cost to replace applicants that otherwise qualify for service. Some form of screening model, similar to Navy's *Compensatory Screening Model*, may achieve attrition savings with less associated replacement costs. Our analysis suggests that such a model would best be applied to applicants requiring criminal waivers versus those requiring waivers for minor traffic offenses, drug or alcohol abuse.

NAVY'S CURRENT MORAL WAIVER POLICY

Personnel applying to the Navy have their background reviewed. The enlistment record requires all applicants to provide a full disclosure of any involvement they may have had with drugs, alcohol, or the law. An enlistment waiver is required if the applicant was convicted of:

- 6 or more minor traffic offenses in 1 year
- 3-5 minor misdemeanors
- 1-2 non-minor misdemeanors
- 1 adult or juvenile felony
- use of illegal drugs
- alcohol abuse

Waiver standards for each of the services are summarized in Table 1. The Navy has more stringent enlistment standards than the Army and Marine Corps. Only the Air Force has stricter waiver standards, generally for drug use.

Table 1: Service Moral Waiver Policy

Offense	Navy	Army	Air Force	Marine Corps
Juvenile Felony (Adult or Juvenile)	1 or more	1 or more	1 or more	1
Non-minor Misdemeanors	1 to 2	2 to 4	1 or more	1 to 5
Minor misdemeanor or Non-Traffic Offenses	3 to 5	3 or more	2+ in last 3 years or 3+ in lifetime	2 to 9
Traffic Offenses	6+ in a 1 year period in last 3 years or 10+ in last 3 years	6+ where fine was > \$100	6+ in 1 year period in 3 years	5+ in any period

Source: Service Recruit Manuals

Table 2 shows recent trends in Navy waivers. Note that FY96 data is through April. From FY92 through FY95 the percent of recruits with criminal and other waivers declined. Waiver rates were up somewhat for FY96; however this may be due to the fact that recruits entering through April are older than those entering during the summer. It will be shown that age is an important factor for requiring a waiver. Younger recruits who enlist directly from high school are much less likely to have a moral waiver.

Table 2: Moral Qualification Waivers

TYPE	FY92	FY93	FY94	FY95	FY96
Minor Misdemeanors	502 (0.9%)	429 (0.7%)	282 (0.5%)	222 (0.5%)	214 (0.8%)
Non-minor Misdemeanors	5,469 (9.5%)	5,776 (9.2%)	4817 (8.9%)	4,238 (9.0%)	2,599 (10.3%)
Felonies	69 (0.1%)	78 (0.1%)	55 (0.1%)	39 (0.1%)	40 (0.2%)
Total Non-Traffic Criminal Waivers	6,040 (10.5%)	6,283 (10.0%)	5,154 (9.6%)	4,499 (9.5%)	2,853 (11.3%)
Drug-related	1,531 (2.6%)	1,643 (2.6%)	1,476 (2.7%)	1,687 (3.6%)	1,428 (5.7%)
Alcohol-related	561 (1.0%)	607 (1.0%)	429 (0.8%)	343 (0.7%)	214 (0.8%)
Traffic	57 (0.1%)	33 (0.1%)	33 (0.1%)	28 (0.1%)	16 (0.1%)
Other	2,651 (4.6%)	2,500 (4.0%)	1,695 (3.1%)	1,400 (3.0%)	787 (3.1%)
Total Other Moral Waivers	4,800 (8.3%)	4,783 (7.6%)	3,633 (6.7%)	3,458 (7.3%)	2,445 (9.7%)
TOTAL WAIVERS	10,840 (18.8%)	11,066 (17.6%)	8,787 (16.3%)	7,957 (16.8%)	5,298 (21.0%)
Non-Prior Service Accessions	57,793	63,050	53,964	47,343	25,218

- Includes Basic Enlistment Eligibility Requirements (BEERS) and program specific waivers.
- FY96 through 30 April.
- Values in parentheses reflect percent of NPS accessions and may not add to totals due to rounding error.
- Minor Misdemeanor examples: disorderly conduct, simple assault/fighting, loitering, minor in possession of alcohol, concealed weapon, vandalism/defacing public property.
- Non-minor Misdemeanor examples: shoplifting, assault and battery, DUI, criminal mischief, theft less than \$500, breaking and entering, possession/use of marijuana, bad checks less than \$500, contributing to the delinquency of a minor.

CONCERN ABOUT WAIVER POLICY

Since there is no trend of recruits requiring increased numbers of waivers, why focus such close scrutiny on this issue?

Two recent events have resulted in Navy's increased focus on moral waiver policy. First, attrition has increased. The FY93 accession cohort experienced nearly 27% attrition over the first two years of service. FY91 recruits experienced less than 21% attrition. The Navy justifiably is working to identify causes of this attrition increase and take appropriate corrective measures.

Also of concern is a relationship between waiver policy and attrition identified in a recent OSD sponsored study. In this study Flyer (1996) had the State of California match recruits who had enlisted during the 1980s with arrest histories. Some of the pertinent results of this analysis were that:

- 40 percent of Navy recruits had an arrest history,
- recruits with any criminal background -- arrest, moral waiver, or unfavorable Entrance National Agency Check (ENTNAC) -- had much higher unsuitability attrition than recruits with no arrest history.

Flyer found that recruits with any arrest history had 41.8% attrition, compared to only 22.9% for those with no arrest history. He found Navy's moral screening procedures to be lacking; those recruited with a moral waiver had a 41.4% attrition rate, nearly identical to those with an undisclosed arrest history (43%).

ANALYSIS APPROACH

We sought to investigate whether attrition was related at all to waiver policy. For the principal models we follow cohorts of recruits from the initial entrance into the Navy through the end of two years on active duty. In this study we examine a 20% random sample of those recruits who initially accessed during FY92-93.

Table 3: Accession Waivers (sample from FY92-93 accession cohort)

		% of accessions	% of waivers granted	2 year attrition rate
Minor traffic offense	17	0.07%	0.5%	11.8%
<3 minor misdemeanors	105	0.44%	3.4%	27.6%
3+ minor misdemeanors	52	0.22%	1.7%	28.8%
Non-minor misdemeanor	2124	8.97%	68.4%	32.7%
Felony (adult)	6	0.03%	0.2%	16.7%
Felony (juvenile)	22	0.09%	0.7%	27.3%
Pre-service drug abuse	548	2.32%	17.6%	25.7%
Pre-service alcohol abuse	196	0.83%	6.3%	22.4%
Other	28	0.12%	0.9%	21.4%
N/A	9	0.04%	0.3%	22.2%
No moral waiver required	20564	86.87%		25.9%

Table 3 provides the background of our sample with respect to moral waivers. Just over 13% of the recruits required a moral waiver. Most of the waivers granted were for non-minor misdemeanors, followed by pre-service drug and alcohol abuse. Very few recruits were admitted with a felony waiver (28 in our sample, and 147 in the complete enlistment cohorts).

Table 3 also provides the two-year attrition rates for the different waiver categories. Overall, about 26% of the sample attrited prior to completing two years of active duty. The highest attrition rate was for non-minor misdemeanors, at about 33%. The lowest attrition rate was for minor traffic cases, which was only 12%.

WAIVER MODEL

One question we sought to address was who actually received waivers. This is not straight-forward in the Navy, since many of the waivers are granted only for specific programs, rather than general enlistments. Accordingly, we propose that waivers are a function of both recruit characteristics and accession policy. Some of the factors hypothesized to affect waiver rates are listed below along with variable names which were used in our model.

- demographics, such as age (AGE measured in months), sex (FEMALE), race (BLACK, HISPANIC, ASIAN), marital status (DEPEND)
- scores on the Armed Forces Qualification Test (AFQT) and education (NONGRAD for those enlisting without a high school diploma, SENIOR categorizing those who contract while in high school)
- enlistment characteristics, such as job field (TWO3 -- two and three year enlistment term recruits, FIVE -- five year obligors, GEND -- four year GENDETs, ADV -- advanced technical or electronics field, NUKE -- nuclear power program)

We first estimated a model for the probability a recruit would receive a waiver based on actual accession policy. Appendix A (Table A-1) lists the results for this model in both the linear and logistic form. The logistic form is the correct formulation, but in many cases the linear form provides a close approximation that is easier to interpret (Maddala, 1983).

Virtually all of the variables tested were significant, although not necessarily with the expected effect. As seen in Figure 1, high AFQT recruits had a much higher probability of having a waiver, while non-high school graduates were much less likely to. Nuclear field and advanced technical field recruits however, were less likely to have waivers, while GENDETs were more likely.

While race/ethnicity affected waiver probabilities, the most powerful factors were associated with age and gender. Women had about 8.5 percentage point lower waiver rates than similar men. High school students had a waiver rate 6.6 points lower than work force recruits,

and older recruits were also more likely to require waivers. A 23 year old graduate would have an 8.4 percentage point higher probability of having a waiver than an 18 year old high school student.

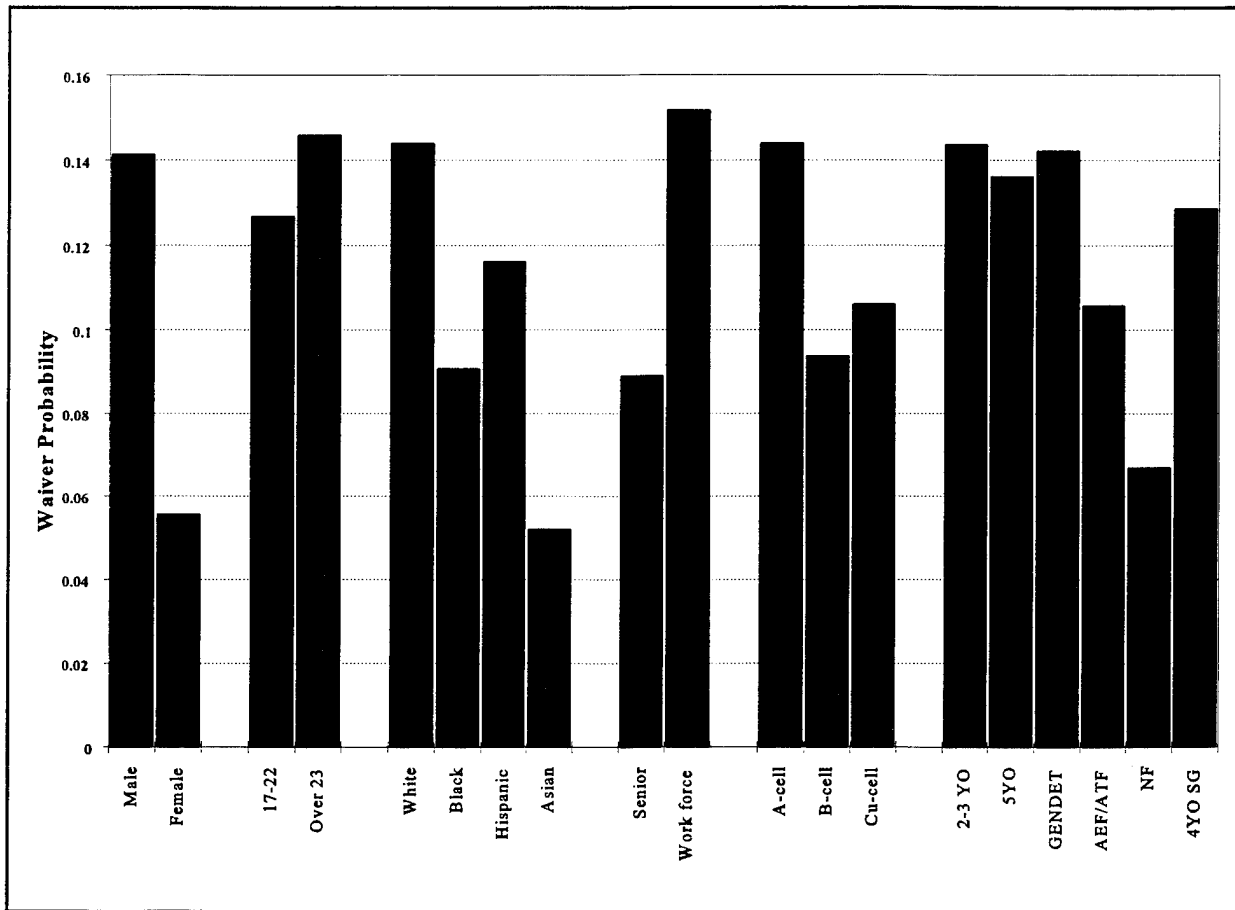


Figure 1: Waiver Probability for FY92-93 Accession Cohort

ATTRITION MODEL

Appendix A (Table A-2) provides the results of a behavioral model of attrition based on actual 2-year attrition in the FY92-93 sample cohort. In addition to the program and demographic variables in the waiver equation, we have included terms for time in DEP (SCHDDEP, SCHDEPSQ represent linear and quadratic terms for days in the DEP), boot camp attended (ORLANDO, SANDIEGO), and year group (FY93). These variables have been identified in previous analysis as significant explanatory factors of Navy's first term attrition.

The explanatory factors all have coefficients in agreement with previous attrition research. Recruits who have high AFQT and are members of minority groups have lower attrition, while dropouts have much higher attrition. Time in DEP was associated with lower

attrition, as was attending boot camp at Orlando. GENDETs had higher attrition than those attending "A" schools, except for two- and three- year recruits. It may be that those with short enlistments are more motivated to complete their term rather than attrite (MWAVNOXY).

The initial model shows that recruits with moral waivers have significantly higher attrition than those without any waiver, holding all other characteristics constant. This finding is consistent with Flyer's results from California. However, the magnitude of our results is qualitatively different. Flyer found recruits with waivers to have an attrition rate of 41.4%, compared to an attrition rate of 27.5% for

those with no waivers. This amounts to a differential of nearly 14 percentage points, or a 50 percent higher attrition rate for those with a waiver. By considering more factors, our analysis of a nationwide sample found a differential of only 4.2 percentage points, or 16 percent higher than the base rate. Thus, while recruits with waivers had higher attrition rates than those without, the differential was only one-third of that found by Flyer. As shown in Table 4, the importance of a waiver is not as great as that associated with race, education, AFQT, or even time in DEP.

Table 4: Order of Importance of Variables

1. AFQT	11. GEND_ACC
2. SCHEDDEP	12. DEPEND
3. NONGRAD	13. SANDIEGO
4. ASIAN	14. FEMALE
5. BLACK	15. AGE_ACC
6. SCHDEPSQ	16. SENIOR
7. HISPANIC	17. FY93_ACC
8. MWAVNOXY	18. NUKE_ACC
9. ORLANDO	19. ADV_ACC
10. TWO3_ACC	20. FIVE_ACC

We investigated waiver policy further by breaking waivers into two categories: those with criminal waivers (WAVCRIME) and those with other moral waivers (WAVDRUGS). Criminal waivers included those with misdemeanor or felony waivers; others included drug, alcohol, and minor traffic offenders. The results of this analysis are provided in Appendix A (Table A-3). As shown in Table 5, those in the sample cohort with criminal waivers were associated with higher first term attrition while those with other waivers were not.

Table 5: Attrition Rates for Criminal versus Non-criminal Waivers

	Number	% of Accessions	% of Waivers	2-year Attrition
Criminal Waivers	2,152	9.09%	69.3%	32.6%
Non-criminal Waivers	955	4.04%	30.7%	26.8%
No Waivers	20,564	86.87%	N/A	25.9%

POLICY ANALYSIS

We have analyzed FY92-93 enlistment cohorts with respect to moral waiver policy, and found recruits with waivers for felonies and misdemeanors to have significantly higher attrition rates than those without. Should the Navy modify its enlistment standards based on this information?

Enlistment standards are presently based on two primary considerations: AFQT score and education. To these we have added gender, since the Navy had restrictions on women during FY92-93, and still may administratively restrict their recruiting. Accordingly, we estimated a simplified enlistment policy model that investigated attrition for all categories of recruits currently eligible based on AFQT, education, gender, and criminal waiver. Appendix A (Table A-4) provides the results of this analysis.

Data from the FY92-93 sample cohort suggest that attrition differences by enlistment cell are not at all uniform. While those with waivers have higher attrition for the A and Cu cell male recruits, the exact opposite is true for B cells. Figure 2 shows the attrition rates for the six male enlistment categories. The highest expected attrition comes from B cells with no criminal waiver.

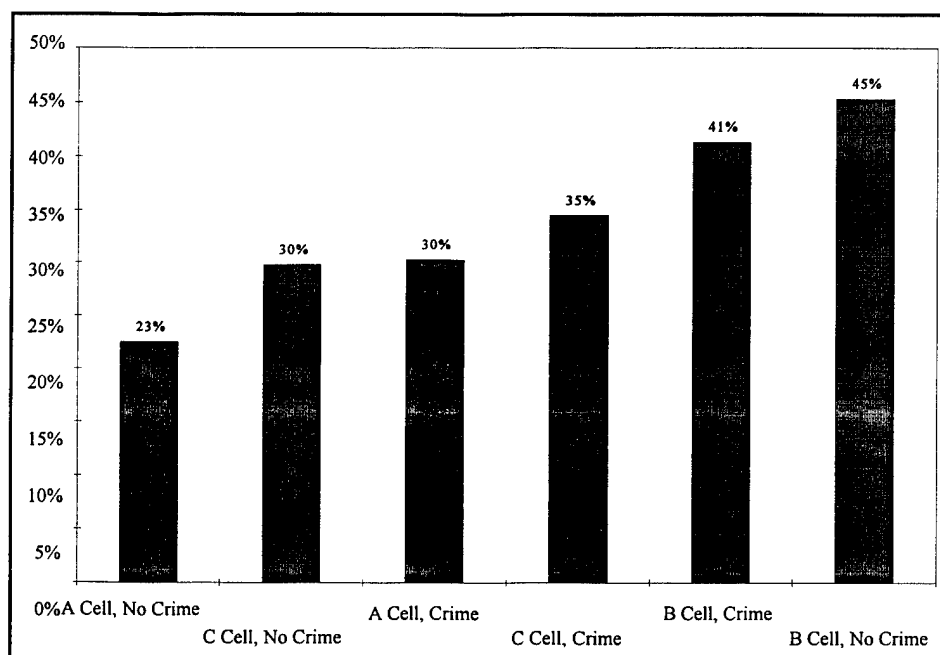


Figure 2: Male Enlistment Category Attrition

Is this result contrary to expectations? Not at all. Most of the B cells in our sample were recruited under Navy's Compensatory Screening Model. Those requiring a waiver had to compensate for this with higher AFQT scores, additional years of education, or some other characteristic designed to make them a good attrition risk. Thus it is not surprising that these other compensating factors would lower their attrition rate, compared to B cells who did not require waivers.

Based on regression results, the attrition impact of potential changes in accession policy can be compared. Table 6 displays regression based estimates of the attrition impact of restricting recruits with criminal waivers. At a 55,000 accession level, estimates are shown of the number of accessions and two-year attrites that can be expected from each of the enlistment categories. If a policy was implemented to restrict, for example, male B cells requiring a criminal waiver, this would eliminate 174 accessions, and would actually increase B cell attrition by 0.4%. If a total restriction on criminal waivers was enacted, attrition would be reduced by 0.6% (330 fewer accessions required) at a cost of 5,400 additional applicants to replace those otherwise qualified but requiring a criminal waiver (net cost of over \$31M assuming a unit recruiting cost of \$6,200).

Table 6: Impact of Waiver Restrictions on First Term Attrition

		Accessions	2-year attrites	Attrition Rate	Change in attrition
Male A cell	Crime waiver	3518	1064	30.3%	
	No crime waiver	27313	6134	22.5%	
	Total	30831	7198	23.3%	-0.9%
Male B cell	Crime waiver	174	72	41.3%	
	No crime waiver	1473	667	45.3%	
	Total	1647	739	44.9%	+0.4%
Male C cell	Crime waiver	1408	486	34.5%	
	No crime waiver	13681	4071	29.8%	
	Total	15089	4556	30.2%	-0.4%
Female A cell	Crime waiver	221	72	32.6%	
	No crime waiver	5065	1310	25.9%	
	Total	5286	1383	26.2%	-0.3%
Female B cell	Crime waiver	9	7	75.0%	
	No crime waiver	158	56	35.3%	
	Total	167	63	37.5%	-2.2%
Female C cell	Crime waiver	74	37	50.0%	
	No crime waiver	1905	576	30.2%	
	Total	1980	613	31.0%	-0.7%
Total	Crime waiver	5405	1738	32.2%	
	No crime waiver	49595	12814	25.8%	
	Total	55000	14552	26.5%	-0.6%

Note: Deltas may not sum to totals due to rounding

SUMMARY

Our investigation of waiver policy has produced the following results:

- Moral waiver rates appear to be stable over the last five years (varies between 16.3% and 21.0% of non-prior service accessions).
- Recruits who were female, still in school, and had low AFQT scores were the least likely group to receive waivers. Older recruits with higher AFQT scores were the most likely to receive waivers.
- Recruits with waivers for criminal behavior attrited at a rate of five percentage points higher than those with no waiver. Recruits with drug and alcohol waivers however attrited at essentially the same rate as recruits without waivers.
- The increased attrition associated with a criminal waiver was smaller than that reported by Flyer (16% versus 50%).
- The effect of waivers on attrition is not uniform on all groups: nongraduates with criminal waivers did not experience higher attrition.
- Excluding applicants requiring waivers will reduce attrition but the savings will be far outweighed by the cost to recruit additional qualified applicants.

Based on this analysis, Navy's current waiver approval guidelines and processes appear to be adequate. Some form of screening model, similar to Navy's *Compensatory Screening Model*, may achieve attrition savings with less associated replacement costs. Our analysis suggests that such a model would best be applied to applicants requiring criminal waivers versus those requiring waivers for minor traffic offenses, drug or alcohol abuse.

REFERENCES

Flyer, E. (1996). California Recruits with a Preservice Arrest History: Identification, Characteristics, and Behavior on Active Duty. (Draft) Washington, DC: OSD Accession Policy.

Maddala, G.S. (1983). Limited-Dependent and Qualitative Variables in Econometrics. New York: Cambridge University Press.

APPENDIX A

Regression Results

Table A-1. Waiver Probability

There are 2 outcomes for LH variable MWAVNOXY
 These are the *OLS start values* based on the
 binary variables for each outcome $Y(i) = j$.
 Coefficients for LHS=0 outcome are set to 0.0

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >=z]	Mean of X
Constant	0.96967E-01	0.10336E-01	9.382	0.00000	
AFQT	0.11923E-02	0.14016E-03	8.507	0.00000	60.93
BLACK	-0.53222E-01	0.60184E-02	-8.843	0.00000	0.1766
HISPANIC	-0.27715E-01	0.74004E-02	-3.745	0.00018	0.9776E-01
ASIAN	-0.91902E-01	0.14339E-01	-6.409	0.00000	0.2357E-01
FEMALE	-0.85733E-01	0.64386E-02	-13.315	0.00000	0.1351
NONGRAD	-0.68183E-01	0.12338E-01	-5.526	0.00000	0.3308E-01
SENIOR	-0.66175E-01	0.49639E-02	-13.331	0.00000	0.3504
TWO3_ACC	0.14944E-01	0.59526E-02	2.511	0.01206	0.2142
FIVE_ACC	0.74767E-02	0.12353E-01	0.605	0.54500	0.3304E-01
GEND_ACC	0.13498E-01	0.58121E-02	2.322	0.02021	0.2308
ADV_ACC	-0.22922E-01	0.90494E-02	-2.533	0.01131	0.7156E-01
NUKE_ACC	-0.61828E-01	0.10113E-01	-6.114	0.00000	0.6295E-01
AGE_ACC	0.27463E-03	0.67587E-04	4.063	0.00005	38.26
DEPEND	-0.39463E-02	0.11584E-01	-0.341	0.73336	0.3751E-01

Maximum Likelihood Estimates

Dependent variable	MWAVNOXY
Number of observations	23671
Iterations completed	6
Log likelihood function	-8783.644
Restricted log likelihood	-9132.406
Chi-squared	697.5236
Degrees of freedom	14
Significance level	0.0000000

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >=z]	Mean of X
Constant	-2.1665	0.91482E-01	-23.682	0.00000	
AFQT	0.97718E-02	0.12298E-02	7.946	0.00000	60.93
BLACK	-0.56451	0.63330E-01	-8.914	0.00000	0.1766
HISPANIC	-0.24833	0.69844E-01	-3.556	0.00038	0.9776E-01
ASIAN	-1.0328	0.17772	-5.812	0.00000	0.2357E-01
FEMALE	-0.94589	0.75469E-01	-12.534	0.00000	0.1351
NONGRAD	-0.58289	0.11677	-4.992	0.00000	0.3308E-01
SENIOR	-0.65707	0.48254E-01	-13.617	0.00000	0.3504
TWO3_ACC	0.13247	0.53263E-01	2.487	0.01288	0.2142
FIVE_ACC	0.76444E-01	0.11116	0.688	0.49165	0.3304E-01
GEND_ACC	0.11595	0.53229E-01	2.178	0.02938	0.2308
ADV_ACC	-0.17400	0.81295E-01	-2.140	0.03233	0.7156E-01
NUKE_ACC	-0.51715	0.93120E-01	-5.554	0.00000	0.6295E-01
AGE_ACC	0.19204E-02	0.50715E-03	3.787	0.00015	38.26
DEPEND	-0.81553E-02	0.10220	-0.080	0.93640	0.3751E-01

Table A-2: Attrition Probability (Basic Moral Waiver Policy)

There are 2 outcomes for LH variable TWO_YEAR
 These are the *OLS start values* based on the
 binary variables for each outcome $Y(i) = j$.
 Coefficients for LHS=0 outcome are set to 0.0

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >z]	Mean of X
Constant	0.48639	0.15707E-01	30.966	0.00000	
AFQT	-0.21316E-02	0.18459E-03	-11.548	0.00000	60.93
BLACK	-0.49196E-01	0.79279E-02	-6.205	0.00000	0.1766
HISPANIC	-0.55177E-01	0.97570E-02	-5.655	0.00000	0.9776E-01
ASIAN	-0.15703	0.18858E-01	-8.327	0.00000	0.2357E-01
FEMALE	0.11806E-01	0.10554E-01	1.119	0.26327	0.1351
SCHEDDEP	-0.65211E-03	0.68749E-04	-9.485	0.00000	184.3
SCHDEPSQ	0.93995E-06	0.15391E-06	6.107	0.00000	0.4809E+05
NONGRAD	0.15197	0.16434E-01	9.248	0.00000	0.3308E-01
SENIOR	-0.69490E-02	0.76307E-02	-0.911	0.36247	0.3504
ORLANDO	-0.29832E-01	0.81882E-02	-3.643	0.00027	0.3784
SANDIEGO	0.96610E-02	0.74725E-02	1.293	0.19606	0.2362
FY93_ACC	0.35341E-02	0.58838E-02	0.601	0.54807	0.5254
TWO3_ACC	-0.26720E-01	0.78989E-02	-3.383	0.00072	0.2142
FIVE_ACC	0.16143E-02	0.16399E-01	0.098	0.92159	0.3304E-01
GEND_ACC	0.25344E-01	0.78701E-02	3.220	0.00128	0.2308
ADV_ACC	0.25487E-04	0.11899E-01	0.002	0.99829	0.7156E-01
NUKE_ACC	0.12959E-01	0.14467E-01	0.896	0.37037	0.6295E-01
AGE_ACC	-0.97620E-04	0.88760E-04	-1.100	0.27141	38.26
DEPEND	0.29192E-01	0.15219E-01	1.918	0.05509	0.3751E-01
MWAVNOXY	0.41824E-01	0.85318E-02	4.902	0.00000	0.1297

Maximum Likelihood Estimates

Dependent variable	TWO_YEAR
Number of observations	23671
Iterations completed	5
Log likelihood function	-13329.99
Restricted log likelihood	-13677.07
Chi-squared	694.1677
Degrees of freedom	20
Significance level	0.0000000

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >z]	Mean of X
Constant	0.10751	0.81749E-01	1.315	0.18846	
AFQT	-0.11166E-01	0.98249E-03	-11.365	0.00000	60.93
BLACK	-0.25458	0.41893E-01	-6.077	0.00000	0.1766
HISPANIC	-0.29629	0.53507E-01	-5.537	0.00000	0.9776E-01
ASIAN	-0.98757	0.12623	-7.824	0.00000	0.2357E-01
FEMALE	0.68447E-01	0.56298E-01	1.216	0.22406	0.1351
SCHEDDEP	-0.32480E-02	0.34851E-03	-9.320	0.00000	184.3
SCHDEPSQ	0.45665E-05	0.77448E-06	5.896	0.00000	0.4809E+05
NONGRAD	0.68129	0.77912E-01	8.744	0.00000	0.3308E-01
SENIOR	-0.36596E-01	0.41287E-01	-0.886	0.37541	0.3504
ORLANDO	-0.16165	0.44261E-01	-3.652	0.00026	0.3784
SANDIEGO	0.50120E-01	0.38761E-01	1.293	0.19599	0.2362
FY93_ACC	0.15649E-01	0.31283E-01	0.500	0.61690	0.5254
TWO3_ACC	-0.13687	0.41908E-01	-3.266	0.00109	0.2142
FIVE_ACC	0.68483E-02	0.88861E-01	0.077	0.93857	0.3304E-01
GEND_ACC	0.12194	0.40322E-01	3.024	0.00249	0.2308
ADV_ACC	-0.96639E-02	0.66106E-01	-0.146	0.88377	0.7156E-01
NUKE_ACC	0.31035E-01	0.83781E-01	0.370	0.71107	0.6295E-01
AGE_ACC	-0.50815E-03	0.48208E-03	-1.054	0.29185	38.26
DEPEND	0.14564	0.77374E-01	1.882	0.05979	0.3751E-01
MWAVNOXY	0.21336	0.43593E-01	4.894	0.00000	0.1297

Table A-3: Attrition Probability (Separate Crime and Drug Waiver Policy)

There are 2 outcomes for LH variable TWO_YEAR
 These are the **OLS start values** based on the
 binary variables for each outcome $Y(i) = j$.
 Coefficients for LHS=0 outcome are set to 0.0

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >=z]	Mean of X
Constant	0.48672	0.15705E-01	30.991	0.00000	
AFQT	-0.21308E-02	0.18456E-03	-11.545	0.00000	60.93
BLACK	-0.49603E-01	0.79280E-02	-6.257	0.00000	0.1766
HISPANIC	-0.54981E-01	0.97558E-02	-5.636	0.00000	0.9776E-01
ASIAN	-0.15678	0.18856E-01	-8.315	0.00000	0.2357E-01
FEMALE	0.12506E-01	0.10555E-01	1.185	0.23606	0.1351
SCHEDDEP	-0.64925E-03	0.68746E-04	-9.444	0.00000	184.3
SCHDEPSQ	0.93151E-06	0.15392E-06	6.052	0.00000	0.4809E+05
NONGRAD	0.15158	0.16432E-01	9.224	0.00000	0.3308E-01
SENIOR	-0.68554E-02	0.76296E-02	-0.899	0.36890	0.3504
ORLANDO	-0.29806E-01	0.81870E-02	-3.641	0.00027	0.3784
SANDIEGO	0.95254E-02	0.74715E-02	1.275	0.20235	0.2362
FY93_ACC	0.37610E-02	0.58834E-02	0.639	0.52266	0.5254
TWO3_ACC	-0.28131E-01	0.79129E-02	-3.555	0.00038	0.2142
FIVE_ACC	0.20439E-02	0.16398E-01	0.125	0.90080	0.3304E-01
GEND_ACC	0.23873E-01	0.78854E-02	3.028	0.00247	0.2308
ADV_ACC	-0.63888E-03	0.11899E-01	-0.054	0.95718	0.7156E-01
NUKE_ACC	0.13967E-01	0.14469E-01	0.965	0.33439	0.6295E-01
AGE_ACC	-0.98839E-04	0.88747E-04	-1.114	0.26540	38.26
DEPEND	0.28940E-01	0.15217E-01	1.902	0.05719	0.3751E-01
WAVCRIME	0.54752E-01	0.96396E-02	5.680	0.00000	0.9826E-01
WAVDRUGS	0.16989E-02	0.16336E-01	0.104	0.91717	0.3143E-01

Maximum Likelihood Estimates

Dependent variable	TWO_YEAR
Number of observations	23671
Iterations completed	5
Log likelihood function	-13326.20
Restricted log likelihood	-13677.07
Chi-squared	701.7487
Degrees of freedom	21
Significance level	0.0000000

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >=z]	Mean of X
Constant	0.11027	0.81782E-01	1.348	0.17756	
AFQT	-0.11163E-01	0.98258E-03	-11.361	0.00000	60.93
BLACK	-0.25703	0.41908E-01	-6.133	0.00000	0.1766
HISPANIC	-0.29548	0.53515E-01	-5.521	0.00000	0.9776E-01
ASIAN	-0.98640	0.12624	-7.814	0.00000	0.2357E-01
FEMALE	0.72194E-01	0.56321E-01	1.282	0.19991	0.1351
SCHEDDEP	-0.32364E-02	0.34860E-03	-9.284	0.00000	184.3
SCHDEPSQ	0.45280E-05	0.77479E-06	5.844	0.00000	0.4809E+05
NONGRAD	0.67939	0.77925E-01	8.719	0.00000	0.3308E-01
SENIOR	-0.36141E-01	0.41308E-01	-0.875	0.38162	0.3504
ORLANDO	-0.16174	0.44270E-01	-3.653	0.00026	0.3784
SANDIEGO	0.49407E-01	0.38770E-01	1.274	0.20254	0.2362
FY93_ACC	0.16857E-01	0.31292E-01	0.539	0.59010	0.5254
TWO3_ACC	-0.14426	0.42001E-01	-3.435	0.00059	0.2142
FIVE_ACC	0.95488E-02	0.88860E-01	0.107	0.91442	0.3304E-01
GEND_ACC	0.11436	0.40417E-01	2.830	0.00466	0.2308
ADV_ACC	-0.13109E-01	0.66130E-01	-0.198	0.84287	0.7156E-01
NUKE_ACC	0.36540E-01	0.83818E-01	0.436	0.66287	0.6295E-01
AGE_ACC	-0.52236E-03	0.48367E-03	-1.080	0.28014	38.26
DEPEND	0.14505	0.77391E-01	1.874	0.06090	0.3751E-01
WAVCRIME	0.27353	0.48527E-01	5.637	0.00000	0.9826E-01
WAVDRUGS	0.80386E-02	0.87973E-01	0.091	0.92719	0.3143E-01

Table A-4: Attrition Probability Related to Criminal Waiver, Gender, Education & AFQT

There are 2 outcomes for LH variable TWO_YEAR
 These are the *OLS start values* based on the
 binary variables for each outcome $Y(i) = j$.
 Coefficients for LHS=0 outcome are set to 0.0

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >z]	Mean of X
Constant	0.22459	0.40429E-02	55.551	0.00000	
MACRIME	0.77925E-01	0.11969E-01	6.511	0.00000	0.6396E-01
MBCRIME	0.18875	0.50775E-01	3.717	0.00020	0.3168E-02
MCCRIME	0.12030	0.18259E-01	6.588	0.00000	0.2560E-01
MBNOCRIM	0.22810	0.17872E-01	12.763	0.00000	0.2678E-01
MCNOCRIM	0.72969E-01	0.69983E-02	10.427	0.00000	0.2487
FACRIME	0.10173	0.45153E-01	2.253	0.02426	0.4013E-02
FBCRIME	0.52541	0.21920	2.397	0.01653	0.1690E-03
FCCRIME	0.27541	0.77592E-01	3.550	0.00039	0.1352E-02
FANOCRIM	0.34130E-01	0.10221E-01	3.339	0.00084	0.9210E-01
FBNOCRIM	0.12836	0.53309E-01	2.408	0.01605	0.2873E-02
FCNOCRIM	0.77854E-01	0.15832E-01	4.917	0.00000	0.3464E-01

Maximum Likelihood Estimates

Dependent variable	TWO_YEAR
Number of observations	23671
Iterations completed	4
Log likelihood function	-13529.19
Restricted log likelihood	-13677.07
Chi-squared	295.7571
Degrees of freedom	11
Significance level	0.000000

Variable	Coefficient	Standard Error	z=b/s.e.	P[Z >z]	Mean of X
Constant	-1.2391	0.22102E-01	-56.065	0.00000	
MACRIME	0.40376	0.60157E-01	6.712	0.00000	0.6396E-01
MBCRIME	0.88894	0.23553	3.774	0.00016	0.3168E-02
MCCRIME	0.59754	0.88273E-01	6.769	0.00000	0.2560E-01
MBNOCRIM	1.0493	0.82793E-01	12.674	0.00000	0.2678E-01
MCNOCRIM	0.38017	0.36070E-01	10.540	0.00000	0.2487
FACRIME	0.51424	0.21994	2.338	0.01938	0.4013E-02
FBCRIME	2.3378	1.1549	2.024	0.04295	0.1690E-03
FCCRIME	1.2391	0.35424	3.498	0.00047	0.1352E-02
FANOCRIM	0.18648	0.53669E-01	3.475	0.00051	0.9210E-01
FBNOCRIM	0.63300	0.25472	2.485	0.01295	0.2873E-02
FCNOCRIM	0.40343	0.79177E-01	5.095	0.00000	0.3464E-01