The Long Term Health Effects of Military Service: Evidence from the National Health Interview Survey and the Vietnam Era Draft Lottery

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Abstract

This paper uses the 1974 to 2004 National Health Interview Surveys to examine the long term impact of military service during the Vietnam War Era on health. We examine the 67,608 men in the survey born between 1950 and 1952 and find that in this cohort there is a strong cross-sectional association between military service and adverse health. However we also document that veterans differ very significantly in their observable characteristics from non veterans suggesting some of the differences documented in cross-sectional studies may be due to omitted variables bias. To address this problem we use draft eligibility as an instrument for military service. Despite a very strong first stage relationship between draft eligibility and military service the 2SLS estimates of the difference in health between veterans and non veterans are statistically insignificant and fairly imprecise. The instrumental variable estimates are too imprecise to preclude the differences in health found in the cross-sectional regressions.

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I. Introduction

The impact of military service on long-term health is re-emerging as a vital policy question as the United States conducts major military operations in Iraq and Afghanistan. Health professionals have raised concerns that significant numbers of the veterans of these conflicts are experiencing psychological and physical health problems. The Department of Veteran's Affairs estimates that anywhere from 12 to 20 percent of servicemen returning from Iraq suffer from post-traumatic stress disorder which the medical literature suggests can have a long-term adverse effect on an individual's health. In the 2005 fiscal year the Department of Veteran's Affairs spent about 32 billion on medical care for veterans: a substantial liability for the American taxpayer. Thus, understanding the long-term health impacts of military service is important both for allocating treatment resources and for correctly estimating the cost of waging these two wars.

Comparing the health of veterans with the health of non veterans may not give us credible estimates of the effect of military service. People voluntarily enlisting in the military differ in their observable characteristics from those who don't enlist in the military. These observable differences between veterans and non veterans leave us concerned that cross-sectional estimates of the long term health consequences of military service will be biased by systematic differences in the unobservable characteristics of the two groups. For this reason we use the draft lottery implemented during the Vietnam War as an instrument for military service. The draft lottery required randomly selected men born between 1944 and 1952 to report for possible induction into the military.

We use confidential versions of the 1974 – 2004 National Health Interview Surveys[1] to examine the impact of military service on veteran's health. We focus on the 67,608 men that were born between 1950 and 1952 because, as we document, this is the cohort most affected by the Vietnam draft lottery. We begin with a cross-sectional comparison of veterans and non veterans which reveals that veterans are in systematically

[1] U.S. Dept. of Health and Human Services, National Center for Health Statistics. NATIONAL HEALTH INTERVIEW SURVEY, 1971-2004 [Computer file]. ICPSR version. Hyattsville, MD: U.S. Dept. of Health and Human Services, National Center for Health Statistics [producer]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor].

worse health than non veterans and that these health disparities increase with age. These estimates probably overstate the causal effect of military service because veterans differ systematically from non veterans on dimensions such as education that are strongly associated with adverse health. When we correct for this problem by using draft status to instrument for military service we find that despite a very strong first stage relationship between draft eligibility and military service the 2SLS estimates of the impact of military service on health are fairly imprecise. For most of the outcomes we examine the confidence intervals from the 2SLS regressions contain both zero and the point estimate from the cross-sectional regression.

This paper makes two contributions to the literature. First, unlike the cross-sectional literature on the impact of military service on health the instrumental variables approach used in this paper provides unbiased estimates. Second, this paper documents that though the Vietnam lottery very significantly increased military service it led to only a modest increase in combat exposure.[2] In the following section we discuss the existing literature on veteran's health and on the impact of the Vietnam Era draft. In Section III, we describe our primary data source, the National Health Interview Survey. In Section IV, we discuss the research methodology and some of the issues that complicate the use of draft eligibility as an instrument. Section V discusses our results and Section VI concludes.

II. Previous Literature

There is a significant literature documenting the disproportionate prevalence of health problems amongst military veterans. Hoge et al. (2004) find that mental health problems are common in veterans that served in Iraq and Afghanistan. Kang and Bullman (2001) document an increase in mortality caused by motor-vehicle accidents in a 7-year follow-up study of Gulf War veterans. McKinney et al. (1997) show that veterans are more likely to smoke than non veterans. In one of the early papers in this literature, Card (1987) finds that Vietnam veterans are much more likely to report problems associated with post traumatic stress disorder including "nightmares, loss of control of

[2] This is important because if the mechanism via which military service adversely affects an individual is combat exposure, then this widely used instrument has very low power.

behavior, emotional numbing, withdrawal from the external environment, hyperalertness, anxiety, and depression." Jordan et al. (1991) document that exposure to combat in Vietnam is associated with higher prevalence of specific psychiatric disorders, including post traumatic stress disorder. McFall et al. (1988) and Price et al. (2004) present evidence of a strong link between post traumatic stress disorder and substance abuse.

The papers described above share a common limitation: given the very significant differences in the characteristics of veterans and non veterans it is likely that some of the differences they document are due to omitted variables bias rather than the adverse effects of military service.[3] The first paper to deal convincingly with the omitted variables problem was by Hearst, Newman, and Hulley (1986). They used draft eligibility as an exogenous source of variation in the probability of military service. The authors found that men born on days that made them eligible for the draft had a 4 percent higher mortality rate and were 13 percent more likely to commit suicide and 8 percent more likely to die in a motor-vehicle accident. A second paper that tackles the omitted variables problem convincingly is Bedard and Deschenes (2004). The authors use an instrumental variables strategy to credibly document that World War II and Korean War veterans suffer from substantially increased rates of premature mortality. One major contribution of their paper is that it documents that military-induced smoking is a major causal pathway through which military service causes premature mortality.

This paper contributes to this literature by using the Vietnam draft as an instrument to get unbiased estimates of the long-term impact of military service on health behaviors and morbidity. An additional advantage of this paper is that it examines the broad set of outcomes that the literature suggests are likely to be affected by either post-traumatic stress disorder or cigarette smoking rather than focusing on a few outcomes as is common in most of the papers in the cross-sectional literature. Finally the fact that we use 31 years of the NHIS, which is the largest annual survey of US resident's health, makes this the most powerful examination of this question that is possible to conduct with existing data sources.

[3] Even when the comparison is between veterans with and without combat exposure there is the possibility that people who choose military occupations with a high probability of combat exposure are systematically different from other soldiers.

III. Data

Our primary data source is the NHIS from the years 1974 to 2004. The NHIS is a nationally representative survey of the non-institutionalized population of the 50 states and the District of Columbia. It includes comprehensive questions on demographic characteristics, general health status, and the prevalence of a variety of health conditions. For reasons we will discuss in the following section, we restrict our analysis to the 67,608 males born between 1950 and 1952 that are surveyed between 1974 and 2004. Due to the significant changes in the questions included in the survey we separately analyze the following periods: 1974-1981, 1982-1996, and 1997-2004. Separating the analysis in this fashion also makes it possible to see how the health differences between veterans and non veterans evolve over time. We created an indicator for military service based on reported veteran status. It is worth noting that veteran status indicates that an individual served in the military, not that they were deployed to a war zone such as Vietnam. We had a confidential version of the survey made available to us that includes each respondent's date of birth in addition to the variables available on the public use data set.

We use date of birth to determine each survey respondent's eligibility for the Vietnam Era Draft Lottery. There were four rounds of the Vietnam Draft conducted in December 1969, July 1970, August 1971, and February 1972. In each round, balls marked with a specified date between January 1st and December 31st were randomly drawn out of a container. The first date drawn in December 1969 was September 14th. Therefore, September 14th was assigned the lottery number 1. The process continued until every day of the year was assigned a number from 1 to 365 (366 for leap years)[4]. The Selective Service then called people for induction based on the number assigned to their birthday. The final number called for the December 1969 round (affecting those born between 1944 and 1950) was 195. This would require any male registered with the Selective Service whose day of birth had an assigned lottery number less than or equal to 195 to report for induction into the U.S. Military. The cut off numbers assigned by the Selective Service for the July 1970 round (affecting those born in 1951) and the August

[4] The results of the draft lotteries were downloaded from the website of the Selective Service, available at http://www.sss.gov/lotter1.htm

1971 round (affecting those born in 1952) were 125 and 95, respectively. There were no draftees called for service using the February 1972 round.

IV. Research Methods

We are interested in estimating the effect of military service on health. Specifically we want to estimate the parameters from the following equation:

$$(1) \qquad y_i = \beta \, Veteran_i + X_i \alpha + u_i,$$

where y_i is a measure of individual i's health, $Veteran_i$ is a dummy variable equal to one if individual i is a veteran, and X_i is a vector containing a constant and observed characteristics of the individual. The parameter of interest, β, is the estimate of the difference in health between veterans and non veterans. If veteran status is correlated with unobserved determinants of health estimates of β from the equation above will be biased.

Veterans are likely to be systematically different from non veterans for two primary reasons. First, to enlist in the military one must pass a physical exam. Second, individuals from higher socioeconomic backgrounds have more employment and educational opportunities which may make them less likely to enlist in the military. In the first three columns of Table 1 we compare some of the observable characteristics of male veterans and non veterans for the 1950 to 1952 birth cohorts. The table reveals that veterans differ substantially from non veterans on all the dimensions we examine. Many of these variables, including race, ethnicity and educational attainment, are well known to be strongly correlated with health outcomes. This suggests that cross-sectional estimates of the parameter β from equation (1) will suffer from substantial omitted variables bias.

One solution to this omitted variables problem is to leverage the variation in the probability that an individual is a veteran caused by the Vietnam Era Draft Lottery. We start by estimating the first stage relationship between veteran status and draft eligibility:

$$(2) \qquad Veteran_i = \delta_1 \, Draft_i + X_i \gamma_1 + v_{1i},$$

where $Draft_i$ is an indicator variable for being born on a day that was called to report for possible induction. We then estimate the reduced form relationship between draft eligibility and the health outcome:

$$(3) \qquad y_i = \delta_2 \, Draft_i + X_i \, \gamma_2 + v_{2i}$$

If draft eligibility is randomly assigned and veteran status is the only causal channel through which draft eligibility affects the health outcome then we can interpret the ratio δ_2/δ_1 as the causal effect of military service on health for the type of person who complies with the draft.[5]

IV.1 Determining the correct cohort to analyze.

The draft lottery applied to those born between 1944 and 1952. However due to the timing of its implementation, it had little or no effect on the older birth cohorts. Picking the correct cohorts to focus on is a necessary step in maximizing the power of this study. In Figure 1 we plot the proportion of men that are veterans by month of birth. The figure reveals that though the draft had an effect on the probability that draft eligible men born in 1948 and 1949 would serve in the military it had its largest effect on men born between 1950 and 1952.[6] Table 2 confirms this impression. Men born between 1950 and 1952 on draft eligible days are 14.8 percentage points more likely to be veterans. This is a considerably larger increase than for men born in 1948 or 1949. For this reason, and another that we will discuss shortly, we will focus on men born between 1950 and 1952.[7]

IV.2 The draft as an instrument for veteran status.

There are several problems with using draft eligibility as an instrument for military service, the first of which is the non random assignment of lottery numbers to individual birthdays. As noted at the time, a mechanical failure in the implementation of the first round of the lottery resulted in a disproportionately high probability of being

[5] This estimate is the local average treatment effect for the approximately 15% of the population that are "Compliers". See Angrist et al 1996 for a detailed discussion of the interpretation of this estimate.
[6] This is due to the fact that men born in 1948 and 1949 were older when the lottery was run and most of them had either already entered the military or obtained a deferment.
[7] We also experimented with restricting the regressions to men born 1948-1952 and also to men born in 1950 and got very similar results to the ones presented in the paper. The results for these other samples are available on request.

drafted for those born in the last few months of the year. [8] This has the potential to bias our instrumental variables estimates if those born in the later months of the year differ in important ways from those born at other times throughout the year.[9] We deal with this problem by including a dummy variable in our regressions for each month of birth.[10] As the last three columns of Table 1 illustrate, differences in the observed characteristics of men who were draft eligible and those who were not are mostly small in magnitude and statistically insignificant.

An additional problem is that the effects of draft eligibility might depend on how low the individual's number is. In Figure 2 we present the proportion of men born between 1950 and 1952 that are veterans by lottery number. This confirms the strong first stage effect of the lottery on military participation that we observed in Figure 1. It is also worth noting that there is a significant negative slope in the probability of veteran status.[11] This may be due to men with low lottery numbers that are fairly certain they will be drafted voluntarily enlisting in branches of the armed services that are unlikely to result in deployment to Vietnam.[12] This gradient suggests that it may be worth interacting the lottery number with the dummy variable for draft eligibility to increase the power of the instrument. We tried this and though this increases the power of the instrument slightly it does not substantively affect the results.[13]

A third problem is that the draft has the potential to affect health through multiple causal channels. Numerous authors have documented that the draft, in addition to increasing probability of military service, also affects educational attainment and adult

[8] The failure of the randomization in the first implementation of the draft lottery was due to the fact that the balls with the days of the year were not mixed sufficiently. Though the months were added in order the balls for each month were added at one time so there is no within month gradient in the probability of being drafted.

[9] That health varies with season of birth is well documented in the public health literature.

[10] For example, in our sample of men born between 1950 and 1952 we include 35 month of birth dummies.

[11] It is also well documented that compliance with the draft and its effects vary by race (see Angrist 1990 and Rohlfs 2006). We tried restricting our sample by race and found that the results are not significantly different when we focus on just whites and that restricting the analysis group to blacks or Hispanics results in very noisy estimates due to the small sample size. These results are available on request.

[12] That this pattern is particularly pronounced in 1952 when there was no longer an educational deferment and that it occurs only for men with lottery numbers well below the induction cut offs suggests that many people avoided deployment to Vietnam by volunteering for branches of the military that were unlikely to deploy there.

[13] Results available from authors.

earnings.[14] Given the relatively weak impact of the draft on these outcomes they are unlikely to affect health in a substantial manner.

The literature suggests two primary mechanisms via which military service might adversely affect health. The first, as documented in Bedard and Deschenes (2004), is that military service can result in an increase in smoking. If this is the primary mechanism then the correct first stage to examine is the increase in military service that resulted from draft eligibility. A second mechanism mentioned in the literature is combat exposure which can result in long-term physical disabilities and psychological problems such as post traumatic stress disorder.

We do not have a direct measure of combat exposure so we use casualties in Vietnam as a proxy.[15] In Figure 3 we present the number of deaths per birthday by draft eligibility status. This figure stands in stark contrast to Figure 2; it appears that draft eligibility only very modestly increased an individual's chance of being killed in Vietnam. This suggests that draft eligibility only modestly increased combat exposure.[16] This may be because men compelled to enter the military by the draft were able to secure non combat roles either by voluntarily enlisting in a branch of the military unlikely to deploy to Vietnam or by securing a military occupation in which they were unlikely to see combat.[17] In Table 3 we present the regression estimates corresponding to Figure 3. The final column of the table reveals that for a typical non draft eligible birthday an average of 3.5 men died in the Vietnam theatre of operations. Draft eligibility increased the number of deaths by .751. This is an approximately 21% increase in combat deaths compared to the 60% increase in the probability of military service. It was volunteers and those drafted before the lottery was implemented that account for most of the American casualties in Vietnam and therefore it is probably this group that accounts for the majority of the combat exposure. Additionally, Table 3 substantiates our earlier decision to focus

[14] See Angrist 1990, Angrist and Kreuger 1992, and Card and Lemieux 2001.
[15] The casualty data is from the national archives and was downloaded from http://www.no-quarter.org/.
[16] Rohlf's estimates that for each American combat death in Vietnam about 30 American soldiers came under enemy fire and survived.
[17] There is significant anecdotal evidence that this was common.

on men born between 1950 and 1952 as this cohort demonstrates a significant increase in combat exposure as a result of draft eligibility.[18]

V. Results

In this section we present our estimates of the impact of military service on long-term health. We focus on the outcomes that the literature suggests military service is most likely to affect.[19] We then estimate the relationship between veteran status and adverse health using the draft as an instrument and compare these estimates with the cross-sectional estimates.

The literature suggests two primary ways in which military service is likely to affect health. The first is that military service can result in an increase in smoking. This suggests that we examine smoking rates and the cardiovascular problems that are most commonly caused by smoking. The second way in which military service affects health is it can lead to combat exposure which can result in physical disabilities and post traumatic stress disorder. Since there are only limited questions on physical disabilities in the NHIS we will focus on self reported health and on limitations in people's ability to engage in day to day activities and to work. We will also look for evidence of the long-term effects of post traumatic stress disorder by focusing on psychological problems and substance abuse.[20]

In Table 4 we examine self reported health and various measures of people's activity limitations. The table presents results for men born between 1950 and 1952. The regressions include dummies for month of birth, survey year, and race and are weighted to adjust for the complex sampling structure of the NHIS.[21] To save space only the estimate of the difference between veterans and non veterans followed by the standard error and the mean of the outcome are included in the table.[22] In each pair of columns the first column presents the OLS results and the second column presents the estimates from

[18] The 1950 cohort has the strongest first stage increase in combat exposure. We found that restricting the analysis to this cohort did not change our estimates significantly.
[19] We also estimate the effect of veteran status on numerous outcomes that the literature does not characterize as likely to be affected by military service. These results are available from the authors.
[20] The medical literature suggests that psychological stress can result in substance abuse.
[21] In addition the regressions are clustered on primary sampling unit to adjust for correlation in the error term that results from the sampling structure.
[22] The point estimates and SE for the other variables in the regression are available on request.

regressions using draft eligibility as an instrument. To facilitate the comparison of the differences between veterans and non veterans each row tracks how the disparity in a single outcome evolves as the cohort ages. The first two columns present the results for men surveyed between 1974 and 1981, the next pair of columns presents results for men surveyed between 1982 and 1996 and the final pair of columns presents the results for men surveyed between 1997 and 2004. In the first row of the table we present the results for self reported health where a 1 represents excellent health. The OLS results in the first column of each pair of columns reveal that though the differences in self reported health are small and statistically insignificant when men are interviewed between 1974 and 1981 (when they are between age 22 and 31) as they age veterans' health deteriorates far faster than the health of non veterans. We see a similar pattern when we examine limitations to an individual's ability to engage in activities or to work. Though the initial differences between the two groups are small they increase rapidly with age.[23] By the time the cohort is in its late 40s and early 50s the veterans have much higher rates of activity and work limitations. In the second column of each pair we present the instrumental variables estimates. Unfortunately for most of the outcomes the confidence intervals on the IV estimates include both zero and the point estimate from the cross-sectional regression.

In Table 5 we examine the differences between veterans and non veterans for various health conditions that are likely to be affected by post traumatic stress disorder such as depression and substance abuse. We also compare the rates of hypertension and other heart conditions because these are likely to be affected by differences in smoking rates. This table has the same layout as Table 4. The OLS estimates reveal that veterans are suffering from substantially higher rates of anxiety and depression than non veterans and that these disparities increase as they age. The IV estimates of the difference in the rates of depression or anxiety are smaller than the OLS estimates but imprecisely estimated. We find no evidence of differences in the rates of substance abuse, hypertension or heart conditions in either the OLS or IV regressions. This may be partially due to the fact that the reported rates of these conditions are very low.[24]

[23] That the disparities are initially very small suggests that they are not due to combat injuries.

[24] The reported rates for these conditions are often significantly lower than estimates of prevalence amongst the population. This is because some respondents are asked whether or not they suffer from the specific

In Table 6 we focus on a subsample of men surveyed between 1997 and 2004 that were asked additional detailed questions about smoking, alcohol consumption, and their health problems. Unlike the general survey in the sample adult survey there are questions about specific medical conditions, which is why the rate of heart conditions reported in this table is more than twice the rate reported in Table 5. The interviews were conducted when these men were between the ages of 45 and 54 which is the age range for which we observed the largest disparities in physical limitations in Table 4. We focus on a subset of behaviors and outcomes that are likely to be influenced by military service. The two behaviors we examine are smoking and alcohol consumption. We find that veterans are more likely to have tried cigarettes and alcohol than non veterans and are more likely to currently smoke and drink. The IV estimates are too imprecise to be informative. We find that veterans are more likely to report having their feelings interfere with their life though only the difference in one measure of this outcome is statistically significant. The instrumental variables estimates of the effect of military service on this measure of psychological health are smaller than the OLS estimates but imprecisely estimated. Finally we find no differences in the rates at which the two groups report cardiovascular problems. Even the OLS estimates for these outcomes are fairly imprecise due to the modest sample size of the sample adult survey.

VI. Conclusions

In this paper we document that Vietnam era veterans are in significantly worse health than non veterans and that these health disparities are increasing as these populations age. However, given the significant differences between the two groups in their observable characteristics, it is not clear that these health disparities are entirely due to military service. Unfortunately the 2SLS estimates that use the Vietnam draft lottery as an instrument for military give us estimates too imprecise to be informative.

One possibility is that the differences observed in the cross-section are due primarily to exposure to the stress of combat. If this is the case then the first stage

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conditions while others are prompted to describe any physical or psychological limitations and the conditions responsible for these limitations.

estimates in Table 2 greatly overstate the strength of the draft as an instrument. As shown in Table 3 the draft lottery resulted in only a modest increase in combat exposure for draft eligible men. This suggests that the Vietnam draft lottery is a poor instrument if the outcome being examined is one that military service affects through the causal channel of combat exposure. Given that the NHIS is the largest survey of the health of the US population and examines a broader set of health outcomes than most other surveys, it is unlikely that this instrument can be applied to another dataset to get estimates of the impact of combat exposure on health sufficiently precise to be useful.

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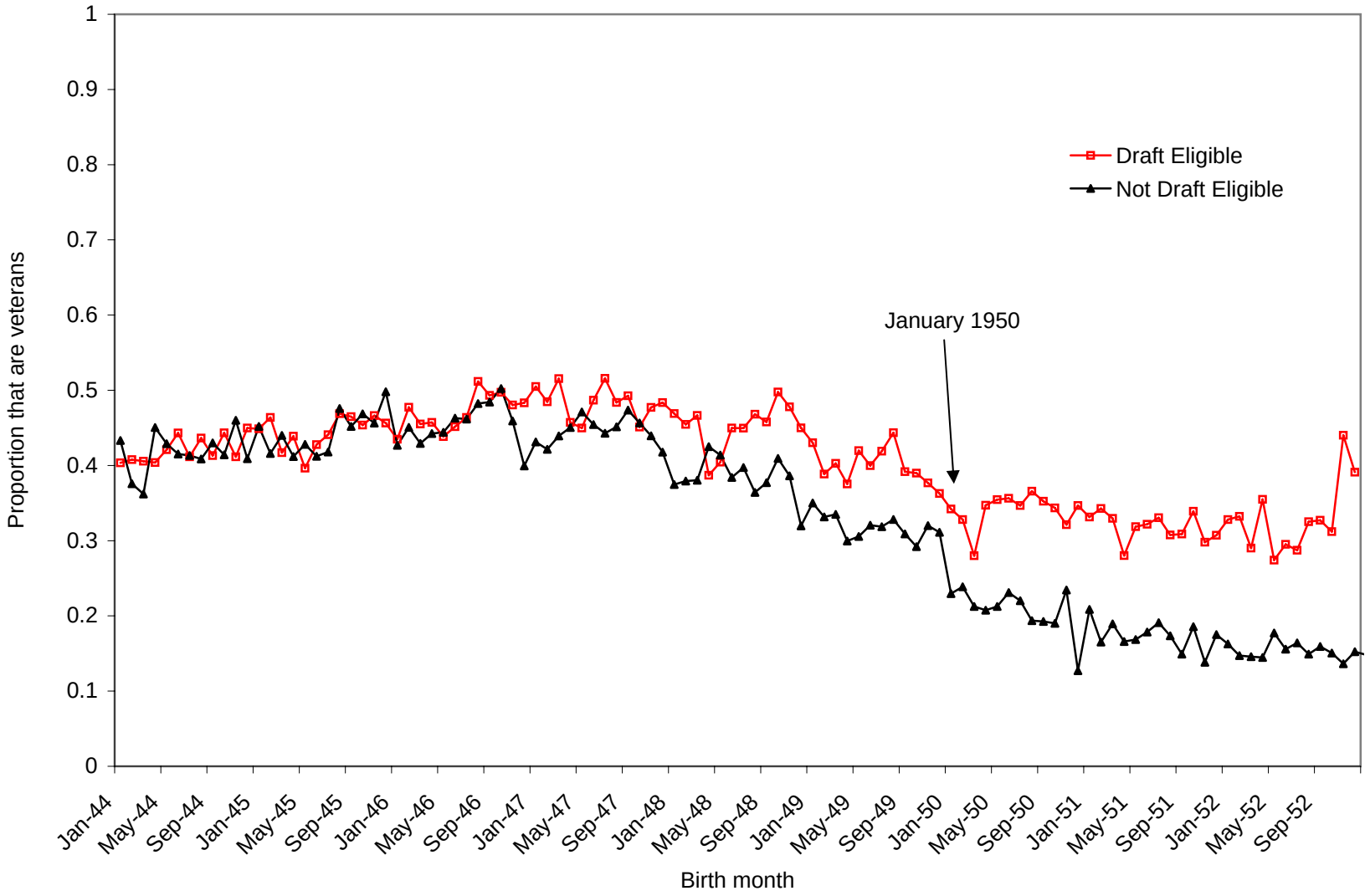
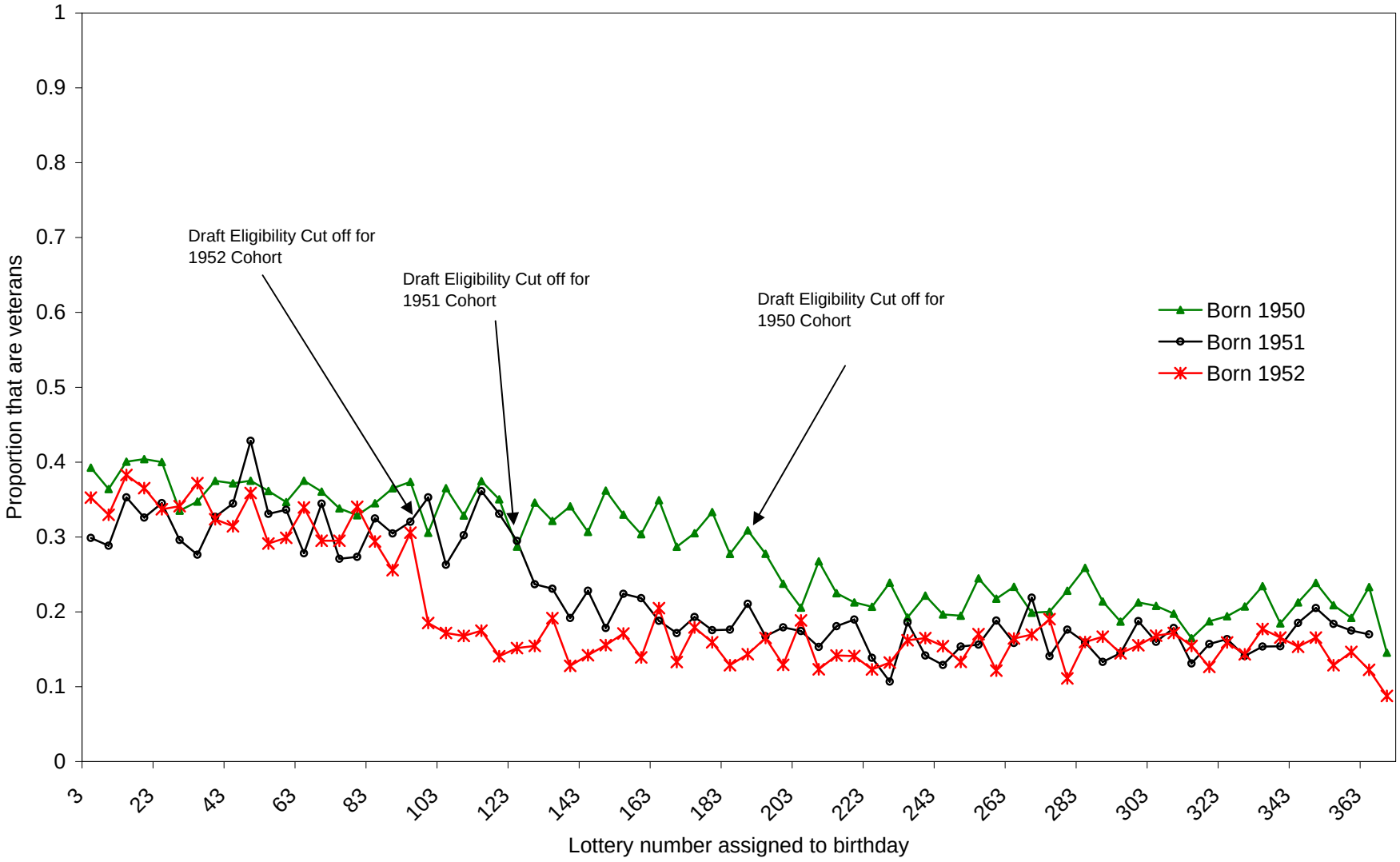
Figure 1: Proportion of Males that are Veterans by Birth Month and Draft Eligibility



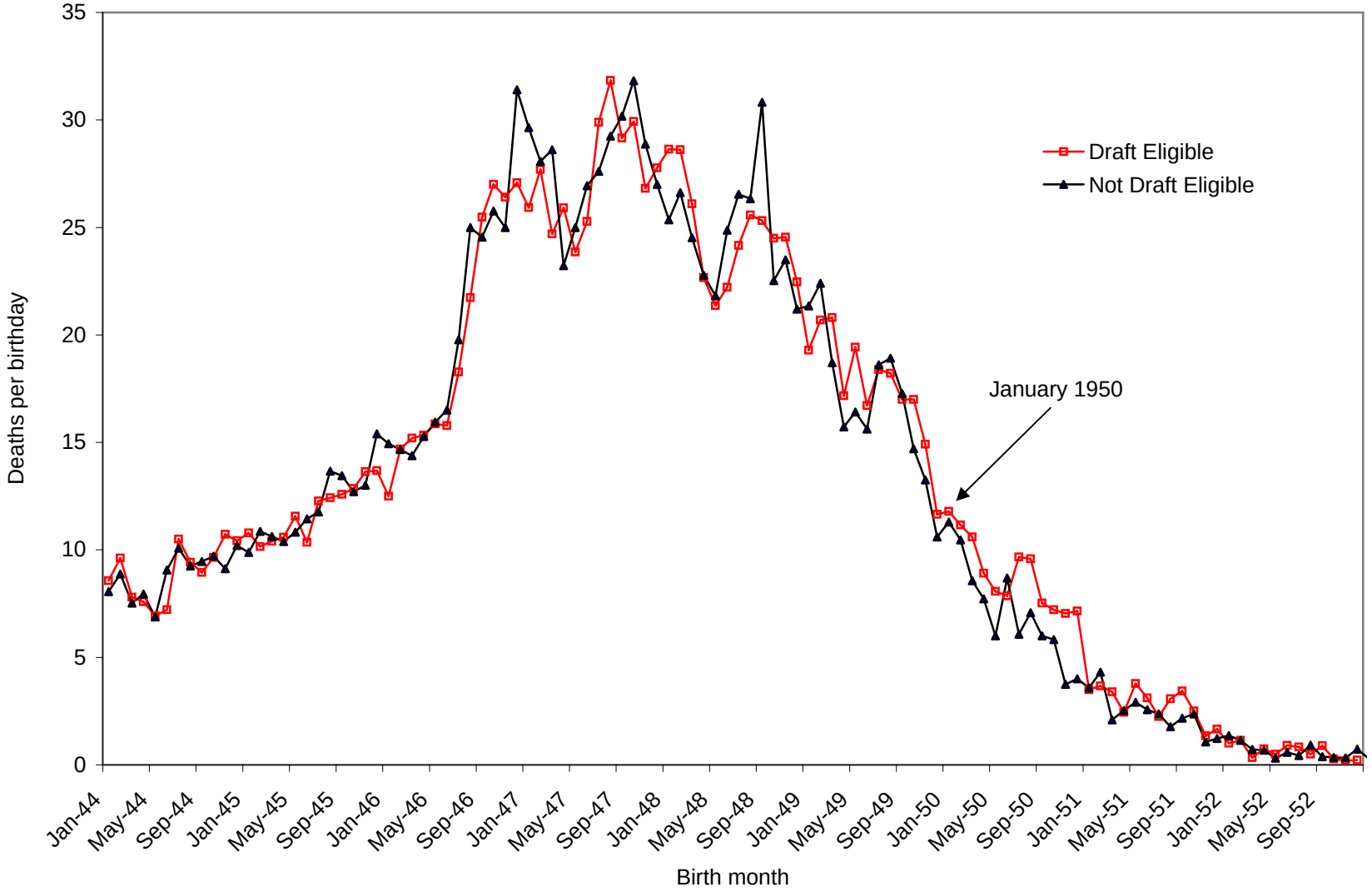
Note: Estimated from the NHIS 1974-2004.

Figure 2: Proportion of Males that are Veterans by Lottery Number



Notes: Data from the NHIS 1974-2004. Proportion of men that are veterans by lottery number. The proportions are computed for 5 day cells. The final cut offs for the 1950, 1951 and 1952 lotteries were 195, 125 and 95 respectively.

Figure 3: Casualties in Vietnam per Birthday by Draft Eligibility Status



Notes: The casualty data is from the national archives and was downloaded April 4th, 2006 from http://www.no-quarter.org/.

Table 1: Characteristics of Survey Respondents in the NHIS

	Veteran	Non Veteran	t-stat	Draft Eligible	Not Draft Eligible	t-stat
White	0.821	0.776	[11.68]**	0.786	0.787	[0.20]
Hispanic	0.051	0.083	[14.28]**	0.076	0.075	[0.30]
Black	0.107	0.101	[2.01]*	0.103	0.102	[0.41]
Height	68.57	67.97	[4.58]**	68.12	68.11	[0.05]
Married	0.749	0.729	[4.75]**	0.734	0.733	[0.27]
Divorced	0.108	0.071	[12.17]**	0.080	0.079	[0.58]
Never Married	0.109	0.168	[19.22]**	0.155	0.154	[0.35]
Education						
Less than HS	0.086	0.138	[18.26]**	0.127	0.126	[0.34]
HS Diploma	0.445	0.309	[28.53]**	0.335	0.344	[2.16]*
Some College or More	0.464	0.543	[16.11]**	0.531	0.522	[1.90]

Notes: The sample is all men born between 1950 and 1952 that were surveyed in the NHIS between 1974 and 2004. There are 67,608 observations for all the variables other than White, Hispanic and Height. It is not possible to distinguish whites and Hispanics in survey years 1974 and 1975.

Table 2: Relationship Between Draft Eligibility and Veteran Status

	Born 1946	Born 1947	Born 1948	Born 1949	Born 1950	Born 1951	Born 1952	Born 1950-1952
Draft Eligibility	0.015	0.037	0.067	0.084	0.13	0.143	0.173	0.148
	[0.0079]	[.0074]**	[0.0075]**	[0.0073]**	[0.0065]**	[0.0066]**	[0.0074]**	[0.0039]**
Constant	0.423	0.451	0.335	0.288	0.204	0.178	0.152	0.168
	[0.0275]**	[0.0235]**	[0.0238]**	[0.0227]**	[0.0223]**	[0.0207]**	[0.0148]**	[0.0113]**
Observations	20,228	22,500	21,467	21,532	22,057	22,411	23,140	67,608
R-squared	0.01	0	0.01	0.01	0.02	0.03	0.04	0.04

Notes: Estimated from NHIS 1974 - 2004 surveys. All the regressions include dummies for month of birth and survey year. Standard Errors in brackets, * indicates significant at 5% level, ** indicates significant at 1% level.

Table 3: Relationship Between Draft Eligibility and Combat Mortality

	Born 1946	Born 1947	Born 1948	Born 1949	Born 1950	Born 1951	Born 1952	Born 1950-1952
Draft Eligibility	-0.573	-0.644	-0.111	0.612	1.678	0.426	-0.005	0.751
	[0.507]	[0.560]	[0.578]	[0.459]	[0.326]**	[0.186]*	[0.093]	[0.134]**
Constant	20.147	28.141	24.685	16.933	7.254	2.399	0.662	3.499
	[0.363]**	[0.402]**	[0.414]**	[0.329]**	[0.234]**	[0.108]**	[0.047]**	[0.080]**
Mean	19.841	27.797	24.626	17.26	8.151	2.545	0.661	3.783
R-squared	0.00	0.00	0.00	0.01	0.07	0.01	0.00	0.00

Notes: The regressions include dummies for month of birth. The dependant variable in the regressions is the number of deaths occuring among people born on a given day.

Table 4: OLS and 2SLS Estimates of Impact of Veteran Status on Physical Limitations

	1974-1981		1982-1996		1997-2004	
Dependant Variable	OLS	2SLS	OLS	2SLS	OLS	2SLS
Health 5-Point Scale	0.00631	0.03567	0.04216	0.03183	0.11448	-0.23967
SE	[0.01140]	[0.06126]	[0.01394]**	[0.08160]	[0.02503]**	[0.16524]
Mean	1.49093	1.49093	1.92516	1.92516	2.19675	2.19675
Activity Limited	-0.00248	0.05337	0.01446	0.06231	0.044	-0.03349
SE	[0.00498]	[0.02645]*	[0.00467]**	[0.02681]*	[0.00859]**	[0.05494]
Mean	0.08314	0.08314	0.1187	0.1187	0.14165	0.14165
Activity Unable	-0.00073	-0.0044	0.00513	0.01449	N/A	N/A
SE	[0.00218]	[0.01209]	[0.00278]	[0.01699]	N/A	N/A
Mean	0.01433	0.01433	0.0406	0.0406	N/A	N/A
Work Limited	N/A	N/A	0.01223	0.03817	0.03648	-0.07251
SE	N/A	N/A	[0.00401]**	[0.02373]	[0.00801]**	[0.05027]
Mean	N/A	N/A	0.08653	0.08653	0.11475	0.11475
Work Unable	N/A	N/A	0.00489	0.00931	0.02024	-0.10289
SE	N/A	N/A	[0.00279]	[0.01713]	[0.00650]**	[0.04050]*
Mean	N/A	N/A	0.04156	0.04156	0.07398	0.07398

Notes: Estimated for men born 1950 - 1952. Regressions include dummies for race, birth month and survey year. Regressions are weighted to reflect sampling probabilities and are clustered on PSU. For 1974-1981 Health is measured on a 4-point scale with 1 being excellent health, in the other survey years it is on a 5-point scale. For the regressions using 1974-1981 surveys there are 20,133 observations. For the regressions using 1982-1996 surveys there are 34,068 observations. For the regressions using the 1997-2004 surveys there are 11,261 observations.

Table 5: OLS and 2SLS Estimates of Impact of Veteran Status on Specific Conditions

	1974-1981		1982-1996		1997-2004	
Dependant Variable	OLS	2SLS	OLS	2SLS	OLS	2SLS
Depression or Anxiety	0.00283	0.01189	0.00473	0.00384	0.01279	-0.01723
SE	[0.00119]*	[0.00553]*	[0.00168]**	[0.00975]	[0.00347]**	[0.02004]
Mean	0.00331	0.00331	0.01178	0.01178	0.01857	0.01857
Alcohol or Drug Abuse	0.00034	0.0023	0.00102	0.00036	0.00051	-0.00252
SE	[0.00062]	[0.00299]	[0.00067]	[0.00370]	[0.00082]	[0.00481]
Mean	0.00092	0.00092	0.00204	0.00204	0.00099	0.00099
Hypertension	0.00069	-0.00619	0.00524	0.00568	0.00478	0.00527
SE	[0.00162]	[0.00840]	[0.00219]*	[0.01279]	[0.00286]	[0.01747]
Mean	0.00735	0.00735	0.02377	0.02377	0.01352	0.01352
Heart Cond or Disease	-0.00105	0.00059	-0.00005	0.00934	0.00183	-0.00409
SE	[0.00093]	[0.00553]	[0.00141]	[0.00890]	[0.00291]	[0.01952]
Mean	0.00351	0.00351	0.01036	0.01036	0.01639	0.01639

Notes: See notes from Table 4.

Table 6: OLS and 2SLS Estimates of Impact of Veteran Status on Health (1997-2004)

	OLS	2SLS	OLS	2SLS	OLS	2SLS
	Never Smoker		Current Smoker		Cigs Per Day	
Veteran	-0.1678	0.06772	0.1112	-0.05253	0.74187	0.04896
SE	[0.01753]**	[0.13559]	[0.01743]**	[0.12446]	[0.69160]	[5.73404]
Mean	0.40821	0.40821	0.29132	0.29132	20.59093	20.59093
	Never Drinker		Current Drinker		Days Drank Last Month	
Veteran	-0.05322	-0.05619	0.03472	0.1033	0.34199	0.34528
SE	[0.01022]**	[0.08316]	[0.01651]*	[0.12308]	[0.41848]	[3.06286]
Mean	0.1077	0.1077	0.70219	0.70219	7.23285	7.23285
	Feelings Interfere Life		Feelings Interfere Life (some)		Feelings Interfere Life (lots)	
Veteran	0.01792	0.0015	0.02905	-0.06102	0.00857	0.00168
SE	[0.01380]	[0.09912]	[0.01091]**	[0.07559]	[0.00679]	[0.05069]
Mean	0.16844	0.16844	0.09036	0.09036	0.03418	0.03418
	Angina Pectoris		Heart Cond or Disease		Heart Attack	
Veteran	0.00701	0.0454	0.0017	0.10549	0.0092	0.02758
SE	[0.00612]	[0.04349]	[0.00899]	[0.06712]	[0.00738]	[0.05161]
Mean	0.02613	0.02613	0.06502	0.06502	0.03695	0.03695

Notes: See notes from Table 4. These regressions are for men born 1950-1952 and captured in the NHIS Sample Adult Survey between 1997 and 2004. The sample size is 5,100 except for the following questions: Days Drank in the last 30 Days obs = 3,632 and Cigarettes per Day obs = 1,589.