# MILITARY SERVICE AND MEN'S HEALTH OUTCOMES IN MIDLIFE: FINDINGS FROM THE WISONSIN LONGITUDINAL STUDY

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**[NOTE: This is a preliminary draft. We will be refining the analysis presented here in several ways prior to the PAA meetings. Refinements will include updating with more recent data, using restricted data to estimate hazard models, and models that look at cause of death.]**

## INTRODUCTION

The question of how military service shapes men's life course trajectories has received limited but sustained attention in the literature for more than 25 years. Investigators have examined the influence of military service on men's educational, marital, income, occupational, and, to a lesser extent, physical and mental health outcomes (Dechter & Elder 2004; Elder 1974, 1986, 1987; Elder & Clipp 1988a; Elder, Shanahan, & Clipp 1994, 1997; Hogan 1978a; 1978b; 1981; Laub & Sampson 2003; MacLean 2004; Parker et al. 2001; Pavalko & Elder 1990; Sampson & Laub 1996; Teachman, Vaughn, & Call 1996; Teachman, Call, & Segal 1993; Xie 1992). Through comparisons of veterans and non-veterans, as well as analyses of age at mobilization effects on these social, socioeconomic, and health statuses, previous research has examined continuities and discontinuities in men's life course trajectories as a function of whether or not they served in the military and at what point in the life course they entered military service.

To date, research on the impact of military service on mortality outcomes in later life has been limited. The more extensive studies that have examined the experiences of World War II veterans have not systematically considered mortality in later life as an outcome, although Elder and his colleagues did find that combat exposure was related to a greater risk of mortality during the fifteen years after WWII (Elder, Shanahan, & Clipp 1997). Two studies of Vietnam War veterans, one based on U.S. data (Hearst, Newman, & Hulley 1986) and one based on Australian data (Adena et al. 1985), have come to differing conclusions about the effect of military service during the Vietnam War on mortality; the U.S. investigators concluded that veterans had a higher death rate primarily

due to suicide and motor-vehicle accidents, while the Australian investigators reported no significant differences in the death rates of veterans and non-veterans. Consequently, our understanding of the impact of military service on mortality in later life is limited.

In a recent analysis (London & Wilmoth 2006), we used the HRS to examine the likelihood of dying over a ten-year period (see also Liu et al. 2005). We found that those who had served in the military had a greater likelihood of dying than those who had not served even after taking into account early-life circumstances (race and father's education) and mid- to late-life characteristics (socioeconomic, marital, and health statuses, and health behaviors). In a second recent analysis using the same data (Wilmoth & London 2005), we found that those who had served in the military reported better self-rated health in later life than those who had not served in the military, net of the same early- and later-life characteristics. We do not currently have a clear understanding of why men who served in the military would have better self-rated health in later life, but a greater risk of mortality.

In this paper, we use data from the Wisconsin Longitudinal Survey (WLS) to examine the effects of military service on men's health and mortality outcomes in midlife. Specifically, we are interested in further investigating the paradox our own research using the HRS has identified. Although the WLS first interviewed respondents in 1957, the study did not collect data on self-rated health until the 1992 mail interview. Thus, we are limited in our ability to answer address this paradox with these data. We can examine the effects of military service on self-rated health in 1992 among those who survived to and completed the 1992 mail survey, and we can examine subsequent mortality over the period from 1993 to 2004 since the WLS does have extensive data on

the mortality of the men in the cohort, which it obtained through matches to the National Death Index.

Despite this limitation related to addressing the paradox identified in our prior research, the WLS data are extremely valuable for examining a range of questions related to the effects of military service on men's life course trajectories. The WLS contains a broader set of early-life variables than are available in most data sets and the study collected information on a range of military service variables, such as intentions to enter the military, whether the respondent ever served in the military, age at enlistment, mode of initial entry into the military (e.g., drafted, enlisted voluntarily), branch of service, duration of service, and rank at final separation from the military. Thus, these data allow us to extend our prior research and address a number of important research questions. Specifically, in this paper, we examine: (1) the potential effect of military service on pre-1975 mortality using the intention to enter the military service as a proxy for actual military service (which was not collected in the WLS until the 1964 parent interview and the 1975 respondent interview); (2) among those who completed the 1975 interview, the effect of military service, and various dimensions of military service, on mortality over the period from 1976 to 2004, with a supplemental analysis that focuses on mortality over the period 1976 to 1992; (3) among those who completed the 1992 mail interview, the effect of military service, and various dimensions of military service on self-rated health in 1992; and (4) among those who completed the1992 mail interview, the effect of military service on mortality over the period from 1993 to 2004.

Addressing these questions is important for at least four reasons. First, men who served in the military are a substantial demographic group. In 2000, almost 9.5 million

men age 65 years and older were veterans, which represents nearly 65% of men in this age group (Federal Interagency Forum on Aging-Related Statistics, 2004). Second, similar to the education and prison systems, the military is a critical social institution that shapes cumulative (dis)advantage (Laub and Sampson 2003; London and Myers 2006; MacLean, 2004; Sampson and Laub 1996). Given this, it has the ability to exacerbate or ameliorate early-life disadvantage that generates disparities in later-life health. Third, current knowledge about aging is primarily based on cohorts that were born during the early part of the 20th century. A substantial percentage of men in these cohorts, and subsequent cohorts who are currently middle aged, served in the military. But, as noted by Richard Settersten (2006), "…wartime experiences are likely significant but to date largely hidden variables underlying current scientific knowledge about aging." To a large extent, we contend, military service in general is a hidden variable in aging research. Fourth, researchers who focus on studying veteran populations are increasingly interested in understanding how the health of veterans compares to those of non-veterans. For example, military researchers recently documented increased mortality in later life among veterans, relative to non-veterans, and stated that "a more extensive study on this topic is urgently needed" (Liu et al. 2005: 573).

## THEORETICAL CONSIDERATIONS

For more than two decades investigators have examined the influence of military service on men's life course trajectories, particularly educational, marital, income, and occupational outcomes (Dechter and Elder 2004; Elder 1974, 1986, 1987; Elder and Clipp 1988a; Elder, Shanahan, and Clipp 1994, 1997; Hogan 1978a; 1978b; 1981; Laub and Sampson 2003; MacLean 2005; Parker et al. 2001; Pavalko and Elder 1990;

Sampson and Laub 1996; Teachman and Call 1996; Teachman, Call, and Segal 1993; Xie 1992). Although there have been many studies that have examined psychological health (e.g., Elder and Clipp 1988b, 1989; Clipp and Elder 1996), research on the impact of military service on physical health outcomes in later-life has been limited (Bedard and Deschênes 2003, *unpublished manuscript*; Elder, Shanahan, and Clipp 1994, 1997). There is a substantial literature on the physical health of veterans (e.g., Aldwin, Levenson, and Spiro 1994; Beebe 1975; Card 1983; Centers for Disease Control 1998; Keehn 1980; Proctor et al. 1998; Schnurr, Spiro, and Paris 2000); however this literature focuses on veterans only or on comparisons of veterans from different wars, and often does not examine differences in health trajectories between veterans and non-veterans. There are two exceptions that are notable for the contributions they have made.

First, Elder, Shanahan, and Clipp (1994) posit a stress and health relationship within a life course framework. They hypothesize that late age at mobilization produces life course discontinuities, such as disruptions in ties to family members and the labor force. Such discontinuity produces stressful social disruptions, such as separation and divorce, residential changes, emotional distance from children, temporary periods of unemployment and erratic work lives, which have implications for health in later-life. Using data from the Stanford-Terman longitudinal study, which mostly includes World War II veterans, these authors report that veteran status per se is not a factor in these men's physical health trajectories, although late entrants, who are likely to have had the greatest social disruptions, do experience negative health consequences. Late entrants more often experienced sporadic health problems, more linear decline throughout life, and constant poor health after exiting the military compared to other men. Multivariate

analyses provide evidence that social disruption and other controls do not fully account for the effect of late entry, and that it is not late entry per se that contributes to adverse health consequences. Rather, it is the joint effect of late entry and high levels of social disruption that seems to adversely affect health. A subsequent investigation by these investigators using these same data (Elder, Shanahan, and Clipp 1997) found that exposure to combat predicted physical decline or death during the 15-year post-war interval from 1945-1960. Rank and theater were not important, additively or interactively, with combat exposure.

Second, Bedard and Deschênes (2003, *unpublished manuscript*) used an instrumental variables approach to estimate the causal effect of World War II military service on long-term disability and premature death. They found that military service caused a 5 percentage point increase in work-limiting disabilities for men between the ages of 40 and 60 and raised the premature death rate by 6 percentage points between the ages of 45 and 72. These investigators provide evidence that pro-tobacco military policy (i.e., free and reduced price distribution of cigarettes) during World War II played an important role in explaining the long-term negative health consequences among veterans.

There are numerous reasons to hypothesize that the experiences of veterans are different than those of non-veterans in ways that would affect subsequent life course trajectories and, ultimately, the risk of dying. The literature on military service and the life course generally extends beyond comparisons of veterans and non-veterans to take into account the timing of military service in men's lives and how that intersects with earlier circumstances and later trajectories. By focusing on early versus late entry into the military, this literature on the effects of age at mobilization on later-life outcomes

interrogates two corollary hypotheses grounded in the concepts of the life course: the military as positive turning point and the life course disruption hypotheses. Both of these hypotheses emphasize the potential of military service to produce discontinuity in the life course.

The *military as positive turning point hypothesis* focuses on young age at entry into the military because it maximizes the chances for redirection of the life course and minimizes disruption to established life course trajectories. Elder (1987) argues that early entry into the military represents a social and psychological moratorium, which both delays the transition to adulthood and allows for the maximal utilization of service benefits. Early entry reflects to some extent a selection of the most disadvantaged men, who have fewer other options and see military service as a route out of difficult life circumstances; however, these are precisely the persons who may benefit most from the health and educational benefits available to veterans. There is considerable evidence that early entry into the military can produce positive discontinuity in the life course trajectories of initially disadvantaged men. For example, Elder (1986) reports that early entrants had more disadvantaged family backgrounds, poorer grades, and lower feelings of self-adequacy, but in part, through a later transition to adult roles and responsibilities, they were able to equal the occupational achievements of non-veterans, to have more stable marriages than non-veterans, and to experience larger gains in psychological strength through mid-life than non-veterans. This is consistent with the beliefs of the majority of early entrants, who were much more likely than later entrants to report retrospectively that their lives had followed a different and more rewarding course as a result of their military service (Elder 1987). Other studies have also provided evidence in

support of the military as positive turning point hypothesis. For example, Sampson and Laub (1996: 364) conclude: "Military service in the World War II era provided American men from economically disadvantaged backgrounds with an unprecedented opportunity to better their lives though on-the-job training and further education" (see also Laub & Sampson 2003). From this perspective, those who serve in the military (particularly those who enlisted at a relatively young age) should be in better health and less likely to die than those who did not serve. In addition, early life disadvantage should be ameliorated to some extent by military service.

The *life course disruption hypothesis* is a corollary to the military as positive turning point hypothesis. According to this hypothesis, relatively late entry into the military has the potential to disrupt established marital, parenting, and occupational trajectories, which may have consequences for the subsequent patterning of the life course and later-life outcomes. Later entrants often come from more advantaged backgrounds than earlier entrants. Because later entrants are more likely to have completed their educations and will have less time upon completion of their service to take advantage of educational benefits for veterans, the gains that accrue to more disadvantaged, earlier entrants may not materialize to the same degree or with the same effects in the lives of later entrants. In addition to the corollary evidence regarding late entry that is reported in the studies that focus on early entrants, Elder, Shanahan, and Clipp (1994) provide direct evidence in support of this life course disruption hypothesis. They report that each year entrance into military service was delayed reduced the economic and job benefits associated with military service and increased the risk of life disruption and related costs. Moreover, partly as a result of the work-life disadvantages

they experienced, late-mobilized men were at greatest risk of negative physical health trajectories over the life course. Consequently, according to the life course disruption hypothesis, late entrants into the military should have worse health and a higher risk of death at any given point in later life than those who entered the military at a younger age. These effects should be exacerbated for relatively advantaged men.

The disruptiveness of military service is also likely to be related to service during wartime in general and service in certain wars in particular. To the extent that wartime service is associated with relatively short-term enlistment via a non-voluntary draft, such enlistment should be more disruptive than voluntary enlistment because it involves an unplanned life event that interrupts established routines more so than voluntary, planned, long-term enlistment for a career. In addition, wartime enlistment involves combat assignments for many military personnel (Gimbel & Booth 1996) and combat experience may be more important than age of enlistment in predicting mortality risk (Elder et al. 1997). There is evidence that the Vietnam War was more disruptive to the lives of veterans than previous wars (Frey-Wouters & Laufer 1986; Kulka et al. 1990). Therefore, men who served during wartime, particularly during the Vietnam War, should experience more negative socioeconomic and health outcomes in mid- to late-life that will subsequently influence their risk of dying.

While models of discontinuity have been the primary focus of analyses that aim to understand how military service shapes the life course of men, an alternative *cumulative (dis)advantage hypothesis* can also be derived from the life course perspective (Dannefer 1987; O'Rand 1996; Settersten 2003). If a social institution is not organized to ameliorate the effects of, or otherwise reproduces, existing systems of social

stratification, then participation in that social institution is unlikely to enable individuals to overcome early life disadvantage. Such a process creates continuity in the life course and may serve to reinforce processes of cumulating (dis)advantage. Therefore, the cumulative (dis)advantage perspective reminds us that for military service to generate life course discontinuity, the military as a social institution must enable individuals to overcome early-life disadvantage by providing opportunities that alter life chances and choices. But, if social hierarchies of (dis)advantage are reproduced within the military or in the implementation of benefits, then it is possible that earlier (dis)advantages will be propelled forward through the life course in a more or less continuous manner. In this case, military service would have no effect on the likelihood of death from many or most causes in later life and would not mediate or moderate the effects of early-life (dis)advantage on later-life mortality. We expect this is most likely among older cohorts who served in the military prior to the civil rights movement in the 1960s, and will be particularly relevant for African Americans and Hispanics (and possibly persons of other races/ethnicities). Our preliminary work (London & Wilmoth 2006) suggests cumulative (dis)advantage operated more forcefully among men who served in WWII than men who served in subsequent wars.

There are two additional hypotheses that are relevant for this investigation even though they are not specifically grounded in a life course perspective. The first is the *military service effect hypothesis*. This hypothesis suggests that military service, in particular combat exposure, has a direct impact on the likelihood of death and the specific cause of death. For example, WWII veterans who experienced combat were at a higher risk of physical decline and death during the 15 years after the war (Elder et al. 1997). In

addition, tobacco-related causes of death may be higher among WWII veterans (Bedard & Deschênes 2003, *unpublished manuscript*). Among Air Force veterans who served in Southeast Asia during Vietnam, length of service is associated with an increased risk of cancer (Pavuk et al. 2005), while serving during Vietnam increased the short-term risk of death due to suicide and motor vehicle accidents (Hearst et al. 1985). Such studies suggest military service may directly expose veterans to circumstances or produce injuries that have negative implications for their health trajectories and specific mortality risks.

A related hypothesis is the *selectivity of military service hypothesis,* which focuses instead on the characteristics of those who serve. If men with particular characteristics are more likely to enlist, then the effect of military service on later-life causes of death could be due to this selectivity instead of military service. Various factors potentially influence voluntary enlistment including race, class, education, family, and work (Appy 1993; Berryman 1988; Binkin et al. 1982; Fligstein 1980; Moskos 1970; Teachman, Call, & Segal 1993), and the relevance of particular factors may vary across cohorts. Therefore, it is important to include controls for early-life characteristics. The issue of selectivity can be accounted for to some extent by taking into consideration whether military service was voluntary or involuntary. Voluntary enlistment is likely to be more selective than involuntary enlistment based on a random draft procedure. But, in either case, military service is definitely selective on the basis of health status given the military's pre-induction physical examination screening and physical inspections conducted at the time of induction. The existence of selection into the military on the basis of good health means that any positive effect military service may have on the

likelihood of death in later life could be attributed to the better physical condition of those who enlisted. However, health selection is not a consideration if military service increases the risk of death, which one of our initial studies indicates is the case (London & Wilmoth 2006).

Figure 1 presents a summary of the conceptual model that guides our research. It is important to note at the outset that the processes under consideration in this paper are embedded in historical time, as indicated by the heavy solid line at the bottom of the figure. This reminds us of the importance of taking the particular experiences of this cohort of men into account as we examine the role of military service in their lives. In this conceptual model, the effects of cumulative (dis)advantage are shown by the solid line running from early-life circumstances to cause of death in later life. Evidence in support of a cumulative (dis)advantage interpretation would emerge if early-life effects continue to have a direct effect on later-life cause of death regardless of military service or mid-to late-life characteristics. The discontinuities predicted by the military as a positive turning point and life course disruption hypotheses are indicated by the dashed lines that represent the notion that the effects of early-life circumstances can be offset by military service, which places individuals on a different life path that influences subsequent characteristics and ultimately cause of death in later life. In this instance, the effect of early-life circumstances and military service would be either mediated or moderated by mid- to late-life characteristics. The dotted line demonstrates the direct effect military service can have on cause of death in later life, controlling for early life circumstances and mid- to late- life characteristics. Finally, the line with dashes and two

dots is indicative of selection into military service. It reminds us of the importance of considering the implications of non-random selection into military.

## DATA AND METHODS

*Study Description*

The WLS includes a random sample of 10,317 men and women who graduated from high school in Wisconsin in 1957. Survey data were collected from respondents in 1957, 1975, and 1992/93, and from their parents in 1964. Data on survivorship and date of death (as well as other information) were obtained through by matching information about non-respondents to the National Death Index.[1] For the analyses presented in this paper, we draw on data from all of these interviews, including the 1964 parent interview. The initial analysis we present in this paper is based on the full sample of men in the WLS cohort (N=4,992). The second set of analyses is based on the sample of men who survived to and completed the 1975 interview (N=4,331). The final set of analyses is based on the sample of men who survived to and completed the 1992 mail interview (N=3,193).

Although they have numerous strengths, not the least of which is the fact that the study has followed a large sample over a very long period extending from late adolescence to midlife, the WLS data are limited in ways that must be borne in mind when interpreting the results of our analyses. Most importantly for the present study, everyone in the primary sample graduated from high school. As such, men who did not graduate from high school, who probably come from more disadvantaged backgrounds and may, on average, be more likely than those with higher educational attainments to

[1] We need to add more information about this matching procedure here or elsewhere in the paper.

select into the military (Zeitlin [date], *Social Forces* reference and others), are not represented in these data.[2] Additionally, there are relatively few African American, Hispanic, and Asian men in the study.

*Military Variables*

The WLS did not ask the main respondents to report on their military service experience until 1975. Thus, if we relied solely on this information to construct a measure of having served in the military, all of the men who left the sample prior to 1975, including those who died, would be missing on whether they served in the military. However, the parents of the main respondents were asked in 1964 whether their sons had ever served in the military. We derived two variables to measure whether the respondent had ever served in the military. The first, our preferred measure, uses data from the 1964 parental and 1975 main respondent interviews, and substantially reduces the number of men missing on whether they had ever served in the military. The second measure just draws on information from the 1975 interview with the main respondent (WLS Variable MILTY). It is noteworthy that these two measures yield identical classifications of respondents in the analyses that focus on those who completed the 1975 and 1992 main interviews respectively.

In order to indirectly gauge the extent of potential military service-related mortality prior to the 1975 interview, we use the respondents' intention to enter the military within the next year (measured in 1957) as a proxy for military service. Our preliminary analyses, reported below, indicate that the intention to serve significantly increases the odds of serving and being missing on military service (relative to not

[2] We need to look more closely at Sewell and Hauser (1975: 207-15); they estimate that 75% of youth in Wisconsin in the late 1950s graduated from high school.

serving) and that those who are missing on military service are disproportionately likely to die from 1957 to 2004. This suggests that our estimates of military service-related mortality are to some extent under-estimated.

In 1975, the WLS collected data on a number of other dimensions of military service. These variables are only available for those who completed the 1975 interview. At this point, all but 31 of the men who had ever served in the military had separated from the military for a final time. These variables are analyzed in a parallel fashion to our main analyses, which focus on the ever versus never served variable. For each of these analyses, the reference group is those who never served. After addressing the question of whether military service per se matters for mortality in later life, the question we are asking in the analyses that focus on these variables is whether veterans with different experiences in the military are differentially affected with respect to mortality (and self-rated health) relative to those who never served. The dimensions of service we consider are: (1) age at entry (less than 20 years old, 20 to 23 years old, 24 years or older)[3]; (2) how the men entered military service (i.e., drafted, enlisted, reserves, or by other means); (3) branch of service (Army, Navy, Air Force, Marines, other branch); (4) duration in the military (less than 2 years, 2-3 years, or 4 years or more); and (5) what

[3] Data to derive accurate ages at entry are restricted and not available in the WLS public use sample. We used CMMLBG (i.e., year of entry) and BRDXDY (i.e., birth year, with imputed values) to obtain a first approximation of age at entry. We would like to obtain access to the restricted data at some point to refine this variable. We used the age cutoffs that we used for our previous analysis; we might want to explore different cutoffs with these data.

their rank was at the time they finally separated from the military (enlisted rank or officer rank).[4]

*Dependent Variables*

In preliminary analyses aimed at trying to gauge the extent of under-reporting of military service-related mortality, we use the ever served in the military measure as dependent variable. This allows us to evaluate the extent to which respondents' intentions to enter the military within the next year (measured in 1957) are associated with having served in the military and being missing on military service as of 1975.

Our primary dependent variables measure mortality and self-rated health. We derived our mortality outcomes using data obtained by WLS from their procedures for matching non-respondents to the National Death Index. We use the measure of year of death (DEATYR) and the LIVGRAD variable provided in the public use file to ascertain whether the respondent had died between 1957 and 2004. For the analyses that focus on those who completed the 1975 interview, we examine: (1) mortality from 1976 to 2004 and (2) mortality from 1976 to 1992. For those who completed the 1992 mail interview, we examine mortality from 1993-2004.

Self-rated health is also a primary dependent variable in one of our analyses. Among those who completed the 1992 mail interview, we examine self-rated health using a 5-point scale ranging from 1 (poor health) to 5 (excellent health). We also include self-

[4] There are some problems with some of these variables that are documented in WLS Memo026. For example, there is some concern that the dates used to derive the duration measure do not correspond well with other dates reported in the interview. This represents a first approximation of our findings; we will need to do some checks on and possibly make some refinements to these variables.

rated health as an independent variable in our analysis of mortality from 1993 to 2004 among those who completed the 1992 mail interview.

*Control Variables*

We include a number of control variables in the analyses we present in this paper. Some of these control variables were measured in 1957. These include: year of birth (BRDXDY), with the mean for non-missing cases substituted for those with missing birth year); a measure of the respondents IQ in high school (GWIIQ_BM)[5]; a measure of whether the students' program in high school met the requirements for admission to the University of Wisconsin (i.e., whether it was a college preparatory program) (HSPROG)[6]; the respondents' parents SES scale score (SES57)[7]; the respondents' perception of their parents SES (SESP57); and the size of the place where the respondents' high school was located (RLUR57).

Other control variables were measured in 1975. In analyses that focus on those who completed the 1975 and 1992 mail interviews respectively, we include a measure of the respondents' age in 1975 (we substitute this for the birth year measure used in the prior analyses). We also include a measure of whether the respondent lived with one or

[5] This is a best measure derived by WLS. We need to add more detail to describe the test and how the score is translated into a measure of IQ. We also need to add more detail about the proportion of respondents who score came from the fresh(wo)man year administration of the test, the junior year administration of the test, or both. The scores were averaged for those who were tested in both years.

[6] We only include this measure in preliminary analyses. In subsequent analyses when we can include the respondents educational attainment directly, we drop this measure.

[7] This is an index comprised of standardized scores for mothers' and fathers' education, occupational prestige, and income derived by WLS. We need to add more detail about how this scale was constructed.

both parents during high school (BKLVPR).[8] Additionally, we include respondents' educational attainment in 1975 (EDEQYR)[9], the respondent's marital status in 1975 (MRSTAT), and the respondent's income in 1974 (YRER74). As noted above, in our analysis of mortality from 1993 to 2004, we include self-rated health in the model.[10]

*Analysis Plan*

We begin with a description of the three main analysis samples: (1) the full sample; (2) men who completed the 1975 interview; and (3) men who completed the 1992 mail interview. We then conduct a sensitivity analysis to gauge the extent to which we may be mis-estimating the effect of military service on mortality from 1957 to 2004, as well as pre-1975 mortality, because we are missing information on military service for men who did not participate in the 1975 interview and whose parents did not participate in the 1964 interview. The procedures we use are outlined in that section of the paper. Then, we turn to our main analyses. Among men who completed the 1975 interview, we use multivariate logistic regression examine: (1) the effects of ever having served in the military, and various dimensions of military service, on mortality from 1976-2004; and (2) the effects of ever having served in the military, and various dimensions of military service, on mortality from 1976 to 1992. Finally, among men who completed the 1992 mail interview, we use multivariate order logistic regression to examine the effects of military service, and various dimensions of military service on self-rated health, and

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[8] This question was asked retrospectively in the 1975 interview. It was not asked in 1957.

[9] This variable was derived by the WLS and is considered a best measure. We need to add more information about how it was derived.

[10] As a first approximation, we include it as a continuous variable ranging from 1 to 5. We will refine this is subsequent analyses.

multivariate logistic regression to examine the effects of the military service variables on mortality from 1993 to 2004.

For our main analyses, we estimate hierarchical models. We begin by presenting bivariate models. We then add controls for the variable measured in or reflecting circumstances that pertained in 1957. Finally, we add additional controls for educational attainment, marital status, and income measured in 1975. In the final analysis of mortality from 1993 to 2004, we also add self-rated health in 1992 as a control variable. We have tested some interaction effects in order to evaluate the military as positive turning point hypothesis; however, none of these have been statistically significant. Although we need to do more work on this, at this point, we only present main effects in the tables because we have found no evidence that military service re-directs the life course of initially disadvantaged men.

## RESULTS

### *Sample Description*

As seen in Table 1, the characteristics of the men in these samples are very similar. The majority of men were born in 1939 (ranging from 76.96% in the full sample to 74.54% among those who completed the 1992 mail interview). In the full sample, the mean high school IQ score is 100.6, while it is 101.02 among those who completed the 1975 interview and 102.25 among those who completed the 1992 mail interview. Approximately two-thirds of the men in each sample completed high school programs that were college preparatory. The mean parental SES scale score in the full sample is 16.14; in the 1975 and 1992 samples, it is 16.28 and 16.40, respectively. Approximately two-thirds of the men in each sample perceived their parents' SES to be average (ranging

from 67.09% in the full sample to 67.65 in the sample of men who completed the 1992 mail survey). The distribution of size of place where the men's high schools were located is virtually identical across the three samples. Three 1975 variables are measured for the men who completed the 1975 and 1992 mail interviews respectively. The mean number of years of education completed as of 1975 is 13.80 in 1975, while it is 13.95 among the men who completed the 1992 mail interview. The marital status and income distributions in 1975 are also quite similar across the two samples.

Table 2 presents the military service characteristics of the men across these three samples. Again, the results suggest a high degree of comparability across the samples. In the full sample, 22.66% of the men indicated in 1957 that they intended to enter the military within one year; among men who completed the 1975 and 1992 mail interviews, the percentages were 22.30 and 21.99 respectively. Although only slightly more than 1 in 2 men intended to enter the military immediately after completing high school, approximately 60% of the men in each sample served at some point in the military (ranging from 59.38% in the full sample to 61.32% among the men who completed the 1992 mail interview).[11]

Data on a number of dimensions of military service is available for men who completed the 1975 interview, and the distributions on these variables among those who completed the 1975 and 1992 mail interviews respectively are very similar. Thus, only

[11] This estimate is based on our preferred measure of military service, which includes information from the 1964 and 1975 interviews. In Table 2, we also present information on a measure of ever having served in the military that draws on 1975 data only because we include that measure in one of our preliminary analyses that aims to indirectly gauge military-related mortality pre-1975. As seen in Table 2, these two measures of ever having served in the military are identical in the sample of men who completed the 1975 and 1992 mail interviews respectively.

the distributions of these variables among the men who completed the 1975 interview are described in the text.

Among those who completed the 1975 interview, 28.84% entered the military before the age of 20 years, 22.95% entered between the ages of 20 and 23 years, and 5.4% entered at ages older than 24 years. Approximately twice as many men enlisted as entered the military via the reserves (30.09% versus 17.39%); relatively few men were drafted (6.7%) or entered by other means (3.02%). More than three times as many men served in the Army (29.79%) than any other branch of the service, and most of those who served did so for less than 4 years; 19.67% served for 1-23 months, 23.07% served for 24-47 months, and 13.95% served for 48 months or more. Only 4.76% separated from the military for the last time as an officer (4.76%); the remainder (52.30%) had enlisted ranks.

*Missing Information on Military Service and Mortality*

As noted previously, the men in the WLS cohort were first asked specific questions about their military service in 1975. As a result, those who died prior to 1975 would be missing on a measure of military service that relied solely on responses to these questions. In 1964, the WLS completed interviews with the parents of these men and explicit questions about the men's military status and service were asked. As a result, this information can be used to supplement information collected in 1975 and provide an arguably more accurate portrait of the military service of all of these men, including those who died prior to the 1975 interview.

Since information about mortality is available from the National Death Index matches, it is possible to calculate the percentage that died between 1957 and 2004 by

military status, where military status is determined respectively on the basis of 1975 data only and data from 1964 and 1975 combined. As seen in Figure 2, regardless of which military service measure is used, those who served in the military have *lower* mortality than those who did not serve in the military.[12] However, the mortality rates are higher among those who served in the military are higher when information from 1964 and 1975 is used to determine military service status than when the 1975 data only are used. Using our preferred measure, which includes information from the 1964 and 1975 interviews, 13.83% of those who had served in the military died sometime between 1957 and 2004 compared to 15.45% of men who did not serve in the military. It is also noteworthy, that a very high proportion of men who are missing on the military status variable had died by 2004: 46.3 percent using the 1975 only coding scheme (N missing=421) and 49.7 percent using the 1964/75 coding scheme (N missing=151). Further analysis using data on year of death (not shown here) indicates that 28.3 percent of the 421 men who were missing on military status using the 1975 coding scheme had died by 1975, while 33.8 percent of those who were missing on military status using the 1964/75 coding scheme had died.

Although there is no direct way to determine whether the men who are missing on military status actually served or did not serve, the 1957 interview included a measure of intention to enter the military within the next year (i.e., in 1958). Supplemental analyses indicate that the intending to serve in the military is strongly associated with military service and with being missing on military service.[13] As seen in Table 3, adjusting for a variety of background characteristics, men who reported in 1957 that they intended to

[12] It might be good to add information about the statistical significance of these differences here.
[13] It might be good to add a measure of association here.

enter the military within the next year were 5.3 times more likely to have served than not served in the military. Similarly, they were 3.6 times more likely to be missing on the military service variable (coded using the 1964 and 1975 data; similar results, not presented here were found with the 1975 only coding scheme). Moreover, the other characteristics that are significantly associated with the odds of having served in the military are for the most part similarly associated with being missing on the military service measure. Those who had higher IQ test scores in high school were less likely than those with lower scores to have either served or be in the missing category compared to those in the never served category, while those who lived in cities with more than 100,000 population (Milwaukee or Madison) were significantly more likely to have either served or be in the missing category. Taken together, this evidence suggests that the characteristics of those who are missing on military service are more similar to those of the men who served in the military than those who did not serve in the military. It also suggests that some men who are missing by the 1975 interview might have, in fact, served in the military and experienced a military service-related death.

In a supplemental analysis (not shown here), we examined the effect of having served in the military and being missing on military service on mortality from 1957 to 1975. Controlling for birth year, high school IQ, whether the respondent's high school program was college preparatory, parental SES scale score in 1957, respondents' perceptions of parental SES, and the size of place in which the respondents' high schools were located, men who were missing on the military service variable were 46 times more likely to have died pre-1975 than were men who had never served in the military

(AOR=46.09).[14] The odds of dying pre-1975 were 37% higher among men who served, relative to men who did not serve; however, this difference was not statistically significant.[15]

The strong association between being missing on the military service variable and both overall and pre-1975 mortality is important because our conclusions about the effect of military service on mortality are to some extent compromised by the fact that we have incomplete information on military service and the death rate is so high in the subgroup that is missing on the military service measure. If those who are missing disproportionately served in the military (which we believe to be the case), then the apparent mortality benefit of serving in the military relative to not serving in the military (which we report later in this paper) may be to some extent an artifact of the data. Although it is extreme to assume that all those who are missing actually served in the military, it is instructive to re-calculate the mortality rate under that assumption to estimate the upper-bound magnitude of the potential problem.[16] Under this assumption, using the 1964/75 coding scheme, which is our preferred measure, the percent dead among those who served would be 15.57 compared to 15.45 among those who did not

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[14] The association captured here likely reflects mortality selection; the men who died in the war or otherwise during this period were missing on this variable, which was measured using parental reports from 1964 and respondent reports from 1975.

[15] Interestingly, the only other variable that is statistically significant in this model is the size of place in which the respondents' high school was located. Relative to those who went to school in rural/farm areas, the odds of dying from 1957 to 1975 (i.e., at relatively young ages) was significantly lower about those who went to school in places with populations of 1,000-9,999 (AOR=0.467, p=0.004), in places with populations from 10,000-99,999 (AOR=0.495, p=0.012), and in places with populations over 100,000 (AOR=0.329, p=0.002). A preliminary search of the literature on rural/farm residence and mortality suggests that there is "conflicting evidence" on the extent of rural-urban differentials in mortality, with some early studies showing higher mortality in rural areas (add cites). This may be a topic worthy of further investigation.

[16] It might be good to add a test statistics here.

serve.[17] These sensitivity analyses suggest that we should exercise some caution in concluding from these data that there is a mortality benefit from military service as the inference might be different if we could adequately allocate the men who are missing on military status, be they dead or alive.

*Military Service and Mortality from 1976 to 2004*

We now turn to analyses of data from the sub-sample who survived to and completed the 1975 interview (N=4,331). We begin with a logistic regression analysis of the effect of military service on mortality from 1976 to 2004.[18] As noted above, we test a set of hierarchical models. We begin by estimating the bivariate relationship between military service and the mortality outcome. We then add a set of individual and family background controls. Finally, we add the respondents' educational attainment, marital status, and income measured in 1975. All of these variables represent characteristics or statuses that are established prior to the measurement of the dependent variable. Following the presentation of results from the analysis of the effect of ever having served in the military on mortality from 1976 to 2004, we present parallel analyses in which we substitute measures of a range of military status variables for the ever served in the military variable. In all of these analyses, the reference category for the military status variables is men who did not serve in the military.

As seen in Table 4, there is a marginally significant bivariate relationship between having served in the military and mortality from 1976 to 2004. With the addition of the background control variables, this relationship becomes and remains statistically

[17] Using the 1975 only coding scheme, the percent dead among those who served would be 16.6 percent compared to 13.9 percent among those who did not serve.
[18] There are a few deaths in 1975 among people who appear to have completed the interviews (~3). This will need to be cleaned up at some point.

significant. Net of the full range of control variables, men who served in the military were significantly less likely to die from 1976 to 2004 than men who did not serve in the military (AOR=0.79). The early background variables are generally not associated with subsequent mortality, with the exception of size of place where the respondents' high school was located.[19] In the final model, the odds of dying between 1976 and 2004 among men who went to high schools in moderate-sized locales (10,000-99,999) were significantly higher than they were among men who went to high school in rural/farm areas (AOR=1.40). The odds of dying were significantly lower among men with higher educational attainments in 1975 (AOR=0.91), while they were significantly higher among never-married men relative to those who in 1975 were currently married (AOR=1.88).

Table 5 presents parallel analyses for various dimensions of military service. Odds ratios for the control variables are suppressed in the table for ease of presentation and because they are by and large the same as those presented in Table 4. Although we present results from bivariate models and models that include all of the background measures except education, marital status, and income in 1975, we for the most part only discuss in the text the results from the full model that includes all of the control variables. Separate models were run for each of the military service variables.

As seen in Table 5, compared to men who did not serve in the military, the odds of dying from 1976 to 2004 are significantly lower among men who entered the military between the ages of 20 and 23 years (AOR= 0.66), among men who enlisted (AOR=0.76), among men who served in the Army (0.78) and the Navy (0.62), and those who served for moderate durations of 24-47 months (AOR=0.65). In the model that does

[19] It is noteworthy that most control variables are not significant even in the bivariate models presented in the first column of the table.

not include the measure of educational attainment, marital status, and income in 1975 (presented in the second column), we see that the odds of dying are significantly lower for both men who separated from the military at an enlisted rank (AOR=0.83) and an officer rank (AOR=0.54). When the educational attainment, marital status, and income variables are introduced into the model, the effect separating as an office becomes non-significant, while that of separating at an enlisted rank remains statistically significant (AOR=0.77).[20]

*Military Service and Mortality from 1976 to 1992*

Because information about self-rated health is only available for those who completed the 1992 mail interview, it is important to ascertain the extent to which the overall results reported above for mortality from 1976 to 2004 are the same for the period from 1976 to 1992. Table 6 presents a summary of the results for all of the measures of military service among those who completed the 1975 interview. The first column presents bivariate results for each military service variable, while the second column adds controls for variables that were measured in 1957 or pertain to the high school period (i.e., whether the respondent lived with both parents for most of the time while he was in high school, which was measured retrospectively in 1975). The third column adds controls for educational attainment, marital status, and income in 1975. We suppress the results for the covariates for ease of presentation.

[20] This might reflect selection. However, since the vast majority of the men in this cohort separated from the military prior to 1975, it may also be the case that being an officer allowed these men to achieve better socioeconomic and/or marital outcomes, which in turn had a protective effect with respect to their survivorship. These are not mutually exclusive potential explanations.

As seen in Table 6, the results regarding the relationship between all of the military service variables and are virtually identical to those presented in Tables 4 and 5 for mortality over the period 1976 to 2004. In the full model, the odds of dying from 1976 to 1992 are significantly lower for men who served in the military relative to those who did not (AOR=0.71). Compared to men who did not serve, the odds of dying over this period are significantly lower among men who enlisted (AOR=0.61) and men who served in the Army (AOR=0.65) and Navy (AOR=0.46). The odds of dying over this period are significantly lower among men who served for longer durations; compared to those who did not serve, the AORs for those who served for 24-47 months and 48 months or more are respectively 0.52 and 0.59. Relative to men who didn't serve, the odds of dying over this period are significantly lower among men who separated from the military for the final time as officers (AOR=0.67), even after controlling for educational attainment, marital status, and income in 1975.

*Military Service and Self-Rated Health in 1992*

The foregoing analyses suggest, on the one hand, that men who served in the military may have disproportionately left the sample early as a result of mortality (and for other reasons), while on the other hand, conditional on surviving to and completing the 1975 interview, men who served in the military were significantly less likely to die than men who did not serve in the military. Thus, we seem to have countervailing selection processes operating, although the extent to which they cancel one another out is uncertain.

In this section of the paper, we begin to address one part of the paradox that our previous research identified. Among those who survived to and completed the 1992 mail

interview,[21] we examine how military service and various dimensions of military service are related to self-rated health in 1992. Table 7 presents the results for the ever served in the military (versus never served) variable along with controls; Table 8 presents the results for the other military service variables, with the odds ratios for the covariates suppressed for ease of presentation and because they are similar to those presented in Table 7. The results are presented in a fashion parallel to previous tables, with bivariate results presented in the first column, with controls measured during or pertaining to the high school period added next, and controls for educational attainment, marital status, and income measured in 1975 added next.[22]

As seen in Table 7, in the full model (but not in the earlier models), men who served in the military report themselves to be in better health than men who did not serve. This result is consistent with our finding from the HRS. It also reveals a suppression effect, as the effect of military service emerges once education, marital status, and income in 1975 are controlled. Considering the control variables in the full model, the results indicate that men whose parents had higher SES scale scores in 1957 reported significantly better self-rated health, as did men who had higher educational attainments in 1975. Compared to men with incomes of $25,000 or more in 1975, men with incomes of less than $5,000, of $5,000-9,999, and of $10,000-14,999 respectively had significantly worse self-rated health.

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[21] Note that those who survived to 1992 are not precisely the same as those who completed the 1992 mail interview. This is a first approximation that may need a little refinement.

[22] We will need to update these variables to measure marital status and income in 1992. This represents a first approximation of the results.

Table 8 presents parallel analyses for the other measures of military service among men who completed the 1992 mail interview. Compared to men who did not serve in the military, the results indicate that men who entered between the ages of 20 and 23 years reported significantly better self-rated health, as did men who served in the Navy and other branches of the military, and men who served for 24-47 months.

*Military Service and Mortality from 1993 to 2004*

The final set of analyses we present in this paper also speak to the paradox we identified in our earlier work. Here, we examine the effect of military service on mortality from 1993 to 2004. Recall that the results presented earlier indicated that military service and various dimension of military service were found to be beneficial for mortality over the period from 1976 to 2004 and over the period 1976 to 1992. The question we address here is whether the self-reported health advantage associated with military service in 1992 translates into improved mortality over the subsequent 11-year period from 1993 to 2004.

The results from this analysis are presented in Tables 9 and 10 and follow the same presentation format as the prior tables. The results are easy to summarize: we find no evidence that there is any differential in the odds of dying among those who served in the military (relative to those who did not) (Table 9), and there is no evidence that any of the dimensions of military service differentially predict mortality (Table 10).

We do find that some of the control variables are associated with mortality from 1993 to 2004. As seen in the fourth column of Table 9, which includes a control for self-rated health in 1992, compared to men whose high schools were located in rural/farm areas, the odds of dying over this period were significantly higher among men whose

high schools were located in areas with populations of 1,000-9,999 and men whose high schools were located in areas with populations of 10,000-99,999 (AORs=1.84 and 1.96 respectively). The odds of dying were also significantly higher among men who never married as of 1975 than they were among men who were married in 1975 (AOR=1.78). The odds of dying were significantly lower among men who reported their health to be better in 1992 than they were among men who reported themselves to be in worse health at the outset of this 11-year period.

**DISCUSSION**

In this paper, we presented results from our preliminary and still somewhat provisional analyses of the WLS data. Here, we provide a brief summary of the key findings and a brief discussion of how they relate to other findings. We also include a brief discussion of next steps.

Our initial analyses suggest that we may be under-estimating the effect of military service on overall mortality because a high proportion of the men who are missing data on military service probably served in the military and a proportionately high number of them died over the whole period and prior to 1975. Some of these men appear to have died at young ages during the years the Vietnam War. Because they exited the cohort early, they are not carried forward in subsequent analyses that focus on the effects of military service on mortality and self-rated health among those who completed subsequent interviews. Although it is a somewhat speculative conclusion, we believe these results suggest military service may have been related to higher mortality early in the life course of this cohort.

Conditional on surviving to 1975 and completing the interview, we find that military service confers a significant mortality advantage relative to those who did not serve, net of a range of controls. Moreover, each of the different dimensions of military service is also related to the likelihood of dying. The odds of dying from 1976 to 2004 are significantly lower among men who entered the military between the ages of 20 and 23 years, among men who enlisted, among men who served in the Army and the Navy, and those who served for moderate durations of 24-47 months. Very similar results are observed when we focus on the effects of these variables on mortality during the early part of this period (1976-1992).

These preliminary analyses provide a wealth of new information about the role of military service in relation to mortality among men from this cohort in midlife. They also provide context for the further investigation of the paradox that was revealed in our earlier work. In that work, using data from the HRS, among men who survived to 1992/93, we found that men who served in the military reported themselves to be in better health than men who had not been in the military, but the were more likely to die over the course of the next 10 years. Our results using data from the men in the WLS who survived to and completed the 1992 mail interview indicate that men who served in the military report themselves to be in significantly better health than men who did not serve; however, they are no more or less likely to die over the subsequent 11 years. In broad terms, it seems that these results are similar to our previous results; men who served in the military are more likely to perceive themselves to be in good health, but they are unable to translate that perception in an achieved survivorship advantage over the subsequent period.

It is intriguing that the results regarding the relationship between military service and mortality are so similar for the overall period (1957-2004) and the period from 1976-1992) and that they are so distinctly different for the later part of the period (1993-2004). We do not have a clear explanation for this at this point, although we note the finding of a mortality advantage in the early period and the better self-rated health of veterans is consistent with the description of the "healthy veteran effect" provided by Liu et al. (2005). These authors argue that because of screening and selection on the basis of good health, veterans experience better health earlier in the life course and that there is a cross-over later in life.[23] At this point, it is still unclear to us whether these results represent health selection or an effect of military service per se, or both. Our preliminary results suggest some countervailing selection (higher mortality among veterans early in the life course of this cohort, and lower mortality later), which further complicates interpretation. Some of the evidence we see in this analysis suggests it may be military service per se (e.g., we find some evidence that earlier age at entry and longer durations in the military are more beneficial). However, we will need to do additional analyses and explore ways to better take selection into account as we proceed.

It is noteworthy that we found less evidence of cumulative (dis)advantage than we anticipated we might have (i.e., many of the early life indicators of (dis)advantage were not found to be associated with mortality. Additionally, we found no evidence of the military to support the military as positive turning point hypothesis (although we need to do some more work on this). This may in part be an artifact of the data. Since all of the

[23] Liu et al. (2005) use data from the AHEAD, and like London and Wilmoth (2006), they find higher mortality among those who served in the military. They posit a cross-over in midlife, but they provide no evidence that this is in fact occurring.

men in the WLS cohort completed high school, we are missing some of the more disadvantaged men who may have entered the military explicitly to try to re-direct their lives or who had their lives re-directed via the mechanisms of the institution.

Our analyses are still preliminary and provisional. There are many details we need to check and additional analyses we need to do. We may want to make a request to use some of the restricted use data to help us refine our analyses further. There are many other health outcomes besides self-rated health that we can explore with the WLS data. We welcome all comments, suggestions, and corrections at this point. We are still at the beginning of our understanding of the WLS data and their potential to answer some of the questions we have about military service and health in later life.

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**Figure 1: Conceptual Model for the Effect of Military Service on Self-Rated Health and Mortality in Later Life**

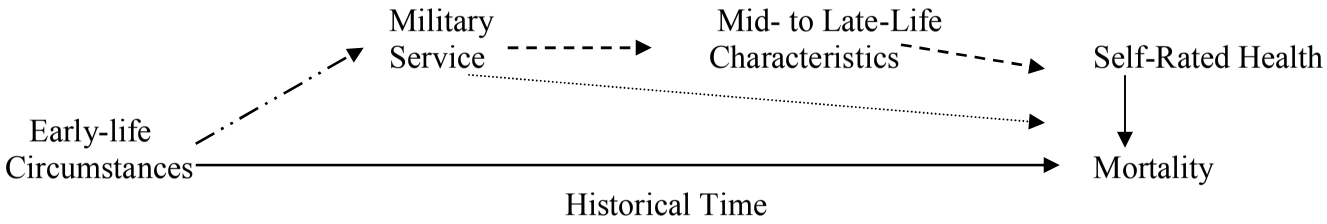

**Table 1: Sample Characteristics for the Full Sample of WLS Males, WLS Males Who Completed the 1975 Interview, and WLS Males Who Completed the 1992 Mail Interview.**

| | Full Sample (N=4,992) | Completed 1975 Interview (N=4,331) | Completed 1992 Mail Interview (N=3,193) |
|---|---|---|---|
| **Birth Year (%)** | | | |
| 1937 | 2.04 | 2.24 | 2.16 |
| 1938 | 17.65 | 19.30 | 19.51 |
| 1939 | 76.96 | 74.97 | 74.54 |
| 1940 | 3.35 | 3.49 | 3.79 |
| **Mean IQ in High School** *(Range=61-145)* | 100.65 | 101.02 | 102.25 |
| **High School Program Is College Preparatory (%)** | | | |
| Yes | 63.66 | 64.81 | 66.18 |
| No | 36.34 | 35.19 | 33.82 |
| **Mean Parental SES Scale Score in 1957** *(Range=1-81)* | 16.14 | 16.28 | 16.40 |
| **Perception of Parental SES (%)** | | | |
| Below Average | 7.07 | 6.97 | 7.08 |
| Average | 67.09 | 67.58 | 67.65 |
| Above Average | 22.52 | 22.33 | 22.42 |
| Missing | 3.33 | 3.12 | 2.85 |
| **Li** | | | |
| --- | | | |
| ----- | | | |
| ----- | | | |
| | 90.51 | 90.35 | |
| | 9.31 | 9.55 | |
| | 0.18 | 0.09 | |
| **Size of Place Where High School Is Located (%)** | | | |
| Rural/Farm | | | |
| 1,000-9,999 | 18.63 | 18.63 | 18.63 |
| 10,000-99,999 | 34.17 | 34.01 | 34.42 |
| 100,000 or More | 31.09 | 31.91 | 31.57 |
| | 16.11 | 15.45 | 15.38 |
| **Mean Years of School Completed Through 1975** *(Range=12-20)* | | | |
| | ----- | 13.80 | 13.95[a] |
| **M** | | | |
| **a** | | | |
| **r** | | | |

| | | | |
|---|---|---|---|
| Married | | | |
| Missing | | | |
| - | | | |
| ----- | | | |
| ----- | 6.56 | 5.61 | |
| ----- | 4.80 | 3.91 | |
| | 88.29 | 85.25 | |
| | 0.35 | 5.23[b] | |
| **Income in 1975 (%)** | | | |
| Less Than $5,000 | ----- | 7.92 | 6.17 |
| $5,000-9,999 | ----- | 10.41 | 8.93 |
| $10,000-14,999 | ----- | 36.25 | 34.11 |
| $15,000-19,999 | ----- | 24.45 | 24.77 |
| $20,000-24,999 | ----- | 10.64 | 10.55 |
| More Than $25,000 | ----- | 9.86 | 10.12 |
| Missing | ----- | 0.46 | 5.36[c] |

Notes:

a. One man in the 1992 mail sample has a value of -3 on the education through 1975 variable; this will need to be cleaned up later.

b. In the 1992 mail sample, 167 men are missing on marital status in 1975. I suspect these are people who did not complete the 1975 interview, but did complete the 1992 mail interview. This will need to be checked and, possibly, cleaned up later.

c. In the 1992 mail sample, 171 men are missing on income in 1975. I suspect these are people who did not complete the 1975 interview, but did complete the 1992 mail interview. This will need to be checked and, possibly, cleaned up later.

**Table 2: Military Service Variables for the Full Sample of WLS Males, WLS Males Who Completed the 1975 Interview, and WLS Males Who Completed the 1992 Mail Interview.**

| | Full Sample (N=4,992) | Completed 1975 Interview (N=4,331) | Completed 1992 Mail Interview (N=3,193) |
|---|---|---|---|
| **Intends to Enter the Military in 1958 (%)** | | | |
| Yes | 22.66 | 22.30 | 21.99 |
| No | 76.56 | 76.91 | 77.36 |
| Missing | 0.78 | 0.79 | 0.66 |
| **Ever Served in the Military 1964 & 1975 Data (%)** | | | |
| Yes | 59.38 | 60.68 | 61.32 |
| No | 37.60 | 39.32 | 38.68 |
| Missing | 3.02 | ----- | ----- |
| **Ever Served in the Military 1975 Data Only (%)** | | | |
| Yes | 52.58 | 60.68 | 61.32 |
| No | 38.98 | 39.32 | 38.68 |
| Missing | 8.43 | ----- | ----- |
| **Age at Entry (%)** | | | |
| Never Served | ----- | 42.81 | 42.12 |
| Less Than 20 Years | ----- | 28.84 | 29.00 |
| 20-23 Years | ----- | 22.95 | 23.65 |
| 24 Years or Older | ----- | 5.40 | 5.23 |
| Missing | ----- | ----- | ----- |
| **Mode of Entry Into Military (%)** | | | |
| Never Served | ----- | 42.81 | 42.12 |
| Drafted | ----- | 6.70 | 6.45 |
| Enlisted | ----- | 30.09 | 30.94 |
| Reserves | ----- | 17.39 | 17.26 |
| Enter Some Other Way | ----- | 3.02 | 3.23 |
| Missing | ----- | ----- | ----- |
| **Branch of Military Service (%)** | | | |
| Never Served | ----- | 42.81 | 40.18 |
| Army | ----- | 29.79 | 28.88 |
| Navy | ----- | 9.88 | 9.90 |
| Air Force | ----- | 9.40 | 8.71 |
| Marines | ----- | 4.43 | 3.79 |
| Other Branch | ----- | 3.53 | 3.35 |
| Missing | ----- | 0.16 | 5.20[a] |
| **Duration in the Military (%)** | | | |

| | | | |
|---|---|---|---|
| Never Served | ----- | 42.81 | 40.18 |
| 1-23 Months | ----- | 19.67 | 18.63 |
| 24-47 Months | ----- | 23.07 | 22.17 |
| 48 Months or More | ----- | 13.95 | 13.53 |
| Missing | ----- | 0.51 | 5.48[b] |
| **Rank at Last Separation from the Military (%)** | | | |
| Never Served | ----- | 42.81 | 40.18 |
| Enlisted Rank | ----- | 52.30 | 49.77 |
| Officer Rank | ----- | 4.76 | 4.85 |
| Missing | ----- | 0.14 | 5.20[c] |

Notes:

a. In the 1992 mail sample, 166 men are missing on branch of service. This will need to be checked and, possibly, cleaned up later.

b. In the 1992 mail sample, 166 men are missing on branch of service. This will need to be checked and, possibly, cleaned up later.

c. In the 1992 mail sample, 166 men are missing on rank at last separation. This will need to be checked and, possibly, cleaned up later.

## Figure 2: Percent Dead, by Military Service Status, WLS 1957-2004

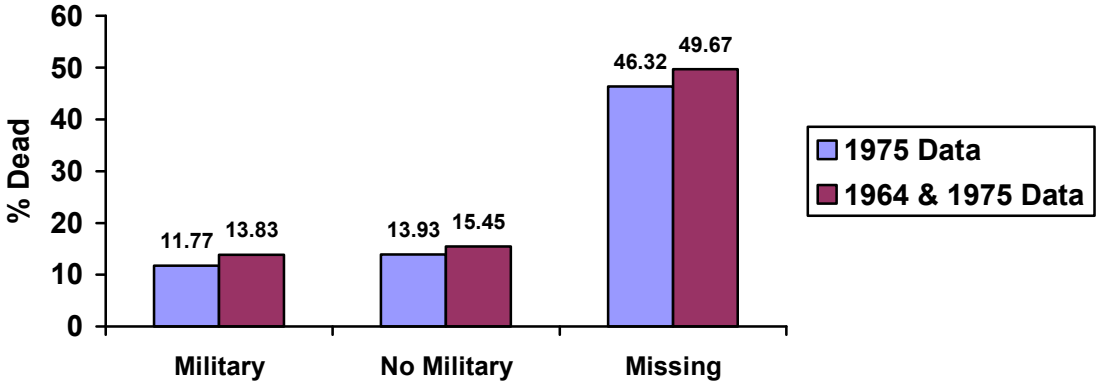

**Table 3: Multinomial Logistic Regression Analysis of the Effects of Intending to Enter Military Service in 1958 on Having Served in the Military, WLS Males.**

| | **Military Service:** ***(Reference=Never Served)*** | |
|---|---|---|
| | **Served** | **Missing** |
| | *RRR* *(SE)* | *RRR* *(SE)* |
| **Intends to Enter Military in 1958**[a] *(Reference=No)* | 5.269*** (0.487) | 3.562*** (0.499) |
| **Year of Birth** *(Range=1937-1940)* | 0.988 (0.064) | 1.141 (0.128) |
| **IQ in High School** *(Range=61-145)* | 0.994* (0.002) | 0.983*** (0.004) |
| **High School Program Is College Preparatory** *(Reference=No)* | 1.131 (0.085) | 0.816 (0.104) |
| **Parental SES Scale Score in 1957** *(Range=1-81)* | 1.003 (0.003) | 0.995 (0.006) |
| **Perception of Parental SES:** *(Reference=Below Average)* | | |
| Average | 1.062 (0.132) | 1.235 (0.261) |
| Above Average | 1.070 (0.087) | 1.444** (0.197) |
| Missing | 0.811 (0.148) | 1.017 (0.293) |
| **Size of Place Where High School Is Located:** *(Reference=Rural/Farm)* | | |
| 1,000-9,999 | 1.103 (0.102) | 0.974 (0.151) |
| 10,000-99,999 | 1.106 (0.107) | 0.792 (0.134) |
| 100,000 or More | 1.297* (0.146) | 1.615** (0.294) |

# = p < 0.10; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

Notes:

a. Thirty-nine men are missing on intention to enter the military and are not included in this analysis.

**Table 4: Multivariate Logistic Regression Analysis of the Effects of Ever Serving in the Military on Mortality from 1976-2004, WLS Males Who Completed the 1975 Interview.**

| | **Unadjusted Odds Ratio** *(SE)* | **Adjusted Odds Ratio** *(SE)* | **Adjusted Odds Ratio** *(SE)* |
|---|---|---|---|
| **Served in the Military** *(Never Served)* | 0.833# (0.079) | 0.822* (0.079) | 0.793* (0.077) |
| **Age in 1975** *(Range=33-38)* | 1.069 (0.075) | 1.041 (0.070) | 1.016 (0.064) |
| **IQ in High School** *(Range=61-145)* | 0.997 (0.003) | 0.996 (0.003) | 1.002 (0.004) |
| **Parental SES Scale Score in 1957** *(Range=1-81)* | 0.999 (0.004) | 1.000 (0.005) | 1.005 (0.005) |
| **Perception of Parental SES:** *(Below Average)* | | | |
| Average | 0.964 (0.176) | 0.961 (0.177) | 0.918 (0.170) |
| Above Average | 0.900 (0.181) | 0.909 (0.190) | 0.885 (0.187) |
| Missing | 0.678 (0.237) | 0.641 (0.225) | 0.604 (0.213) |
| **Did Not Live with Both Parents During High School** *(Lived with Both Parents)* | 1.000 (0.162) | 0.960 (0.158) | 0.938 (0.155) |
| **Size of Place Where High School Is Located:** *(Rural/Farm)* | | | |
| 1,000-9,999 | 1.209 (0.168) | 1.248 (0.179) | 1.304# (0.189) |
| 10,000-99,999 | 1.245 (0.175) | 1.299# (0.192) | 1.400* (0.209) |
| 100,000 or More | 1.002 (0.170) | 1.047 (0.188) | 1.125 (0.205) |
| **Years of School Completed Through 1975** *(Range=12-20)* | 0.932** (0.019) | ----- | 0.908*** (0.024) |
| **Marital Status in 1975:** *(Married)* | | | |
| Never Married | 1.908*** (0.303) | ----- | 1.876*** (0.307) |
| Previously Married | 1.403# (0.283) | ----- | 1.312 (0.268) |
| **Income in 1975:** | | | |

| | | | |
|---|---|---|---|
| *($25,000 or More)* | | | |
| Less Than $5,000 | 1.385 | ----- | 1.206 |
| | (0.302) | | (0.272) |
| $5,000-9,999 | 1.489* | ----- | 1.204 |
| | (0.301) | | (0.259) |
| $10,000-14,999 | 1.176 | ----- | 1.009 |
| | (0.203) | | (0.184) |
| $15,000-19,999 | 0.830 | ----- | 0.763 |
| | (0.155) | | (0.147) |
| $20,000-24,999 | 0.934 | ----- | 0.909 |
| | (0.203) | | (0.199) |

# = p < 0.10; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

Notes:

**Table 5: Multivariate Logistic Regression Analysis of the Effects of Various Dimensions of Military Service on Mortality from 1976 to 2004, WLS Males Who Completed the 1975 Interview.**

| Military Service Variable[c] | Unadjusted Odds Ratio *(SE)* | Adjusted Odds Ratio[a] *(SE)* | Adjusted Odds Ratio[b] *(SE)* |
|---|---|---|---|
| **Age at Entry:** | | | |
| *(Never Served)* | | | |
| Less Than 20 Years | 0.885 | 0.872 | 0.822# |
| | (0.098) | (0.098) | (0.095) |
| 20-23 Years | 0.661** | 0.650** | 0.618*** |
| | (0.086) | (0.085) | (0.082) |
| 24 Years or Older | 1.035 | 1.059 | 1.137 |
| | (0.209) | (0.216) | (0.235) |
| **Mode of Entry Into Military:** | | | |
| *(Never Served)* | | | |
| Drafted | 0.790 | 0.784 | 0.688# |
| | (0.160) | (0.159) | (0.142) |
| Enlisted | 0.823# | 0.803# | 0.761* |
| | (0.092) | (0.091) | (0.088) |
| Reserves | 0.812 | 0.812 | 0.787# |
| | (0.110) | (0.110) | (0.109) |
| Enter Some Other Way | 0.661 | 0.699 | 0.873 |
| | (0.206) | (0.221) | (0.282) |
| **Branch of Military Service:** | | | |
| *(Never Served)* | | | |
| Army | 0.806# | 0.798* | 0.776* |
| | (0.091) | (0.091) | (0.089) |
| Navy | 0.679* | 0.659* | 0.624* |
| | (0.122) | (0.119) | (0.114) |
| Air Force | 0.918 | 0.910 | 0.846 |
| | (0.152) | (0.152) | (0.143) |
| Marines | 0.900 | 0.895 | 0.876 |
| | (0.210) | (0.210) | (0.207) |
| Other Branch | 0.818 | 0.823 | 0.783 |
| | (0.218) | (0.220) | (0.211) |
| **Duration in the Military**: | | | |
| *(Never Served)* | | | |
| 1-23 Months | 0.891 | 0.888 | 0.858 |
| | (0.112) | (0.113) | (0.110) |
| 24-47 Months | 0.691** | 0.679** | 0.651** |
| | (0.088) | (0.087) | (0.085) |
| 48 Months or More | 0.835 | 0.827 | 0.785 |
| | (0.122) | (0.121) | (0.117) |

| | | | |
|---|---|---|---|
| **Rank at Last Separation from the Military:** | | | |
| *(Never Served)* | | | |
| Enlisted Rank | 0.837# | 0.825* | 0.776* |
| | (0.143) | (0.152) | (0.193) |
| Officer Rank | 0.516* | 0.538* | 0.668 |
| | (0.080) | (0.080) | (0.077) |

# = p < 0.10; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

Notes:

a. These models control for the following background variable: age in 1975; IQ in high school; parental SES scale score in 1957; perception of parental SES; whether the respondent lived with both parents in high school; and the size of place where the respondents' high school was located.

b. These models include all of the control variables included in the previous model, plus the following control variables measured in 1975: years of education completed; marital status; and income.

c. A separate set of hierarchical models was estimated for each military service variable.

**Table 6: Multivariate Logistic Regression Analysis of the Effects of Various Dimensions of Military Service on Mortality from 1976 to 1992, WLS Males Who Completed the 1975 Interview.**

| Military Service Variable[c] | Unadjusted Odds Ratio *(SE)* | Adjusted Odds Ratio *(SE)* [a] | Adjusted Odds Ratio *(SE)* [b] |
|---|---|---|---|
| **Ever Served in the Military** | 0.748# | 0.733* | 0.708* |
| *(Never Served)* | (0.114) | (0.113) | (0.110) |
| **Age at Entry:** | | | |
| *(Never Served)* | | | |
| Less Than 20 Years | 0.750 | 0.729# | 0.684* |
| | (0.137) | (0.135) | (0.129) |
| 20-23 Years | 0.514** | 0.505** | 0.484** |
| | (0.116) | (0.114) | (0.110) |
| 24 Years or Older | 1.305 | 1.315 | 1.404 |
| | (0.375) | (0.382) | (0.414) |
| **Mode of Entry Into Military:** | | | |
| *(Never Served)* | | | |
| Drafted | 0.831 | 0.811 | 0.715 |
| | (0.261) | (0.256) | (0.228) |
| Enlisted | 0.654* | 0.636* | 0.607* |
| | (0.123) | (0.121) | (0.117) |
| Reserves | 0.739 | 0.735 | 0.709 |
| | (0.163) | (0.163) | (0.159) |
| Enter Some Other Way | 0.759 | 0.744 | 0.913 |
| | (0.355) | (0.356) | (0.445) |
| **Branch of Military Service:** | | | |
| *(Never Served)* | | | |
| Army | 0.676* | 0.664* | 0.650* |
| | (0.126) | (0.125) | (0.124) |
| Navy | 0.506* | 0.492* | 0.459* |
| | (0.164) | (0.160) | (0.150) |
| Air Force | 0.782 | 0.759 | 0.722 |
| | (0.216) | (0.210) | (0.202) |
| Marines | 1.401 | 1.388 | 1.354 |
| | (0.430) | (0.428) | (0.422) |
| Other Branch | 0.513 | 0.522 | 0.494 |
| | (0.265) | (0.271) | (0.257) |
| **Duration in the Military**: | | | |
| *(Never Served)* | | | |
| 1-23 Months | 0.966 | 0.953 | 0.914 |
| | (0.186) | (0.185) | (0.179) |
| 24-47 Months | 0.553** | 0.540** | 0.520** |
| | (0.121) | (0.119) | (0.115) |
| 48 Months or More | 0.623# | 0.610# | 0.594* |

| | | | |
|---|---|---|---|
| | (0.160) | (0.157) | (0.154) |
| **Rank at Last Separation from the Military:** *(Never Served)* | | | |
| Enlisted Rank | 0.575 | 0.551 | 0.669 |
| | (0.246) | (0.241) | (0.301) |
| Officer Rank | 0.720* | 0.708* | 0.668* |
| | (0.112) | (0.111) | (0.107) |

# = p < 0.10; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

Notes:

a. These models control for the following background variable: age in 1975; IQ in high school; parental SES scale score in 1957; perception of parental SES; whether the respondent lived with both parents in high school; and the size of place where the respondents' high school was located.

b. These models include all of the control variables included in the previous model, plus the following control variables measured in 1975: years of education completed; marital status; and income.

c. A separate set of hierarchical models was estimated for each military service variable.

**Table 7: Ordered Logistic Regression Analysis of the Effects of Military Service on Self-Rated Health in 1992, WLS Males Who Completed the 1992 Mail Interview.**

| | Unadjusted Coefficient *(SE)* | Adjusted Coefficient *(SE)* | Adjusted Coefficient *(SE)* |
|---|---|---|---|
| **Served in the Military** | -0.011 | 0.044 | 0.169* |
| *(Never Served)* | (0.072) | (0.073) | (0.077) |
| **Age in 1975** | 0.003 | 0.003 | -0.018 |
| *(Range=33-38)* | (0.004) | (0.004) | (0.061) |
| **IQ in High School** | 0.014*** | 0.009*** | -0.004 |
| *(Range=61-145)* | (0.002) | (0.003) | (0.003) |
| **Parental SES in 1957** | 0.025*** | 0.019*** | 0.011** |
| *(Range=1-81)* | (0.003) | (0.004) | (0.004) |
| **Perception of Parental SES:** | | | |
| *(Below Average)* | | | |
| Average | 0.151 | 0.132 | 0.144 |
| | (0.141) | (0.142) | (0.149) |
| Above Average | 0.461** | 0.231 | 0.220 |
| | (0.153) | (0.159) | (0.166) |
| Missing | 0.335 | 0.415# | 0.624* |
| | (0.250) | (0.253) | (0.264) |
| **Did Not Live with Both Parents During High School** | -0.113 | 0.006 | -0.006 |
| *(Lived with Both Parents)* | (0.120) | (0.122) | (0.129) |
| **Size of Place Where High School Is Located:** | | | |
| *(Rural/Farm)* | | | |
| 1,000-9,999 | 0.009 | -0.114 | -0.166 |
| | (0.102) | (0.105) | (0.109) |
| 10,000-99,999 | 0.177# | -0.028 | -0.131 |
| | (0.103) | (0.109) | (0.113) |
| 100,000 or More | 0.391** | 0.139 | 0.082 |
| | (0.121) | (0.128) | (0.133) |
| **Years of School Completed Through 1975** | 0.165*** | ----- | 0.141*** |
| *(Range=12-20)* | (0.014) | | (0.018) |
| **Marital Status in 1975:** | | | |
| *(Married)* | | | |
| Never Married | -0.278# | ----- | -0.261 |
| | (0.157) | | (0.160) |
| Previously Married | -0.251 | ----- | -0.175 |
| | (0.186) | | (0.187) |
| **Income in 1975:** | | | |
| *($25,000 or More)* | | | |
| Less Than $5,000 | -0.884*** | ----- | -0.636** |

| | | | |
|---|---|---|---|
| | (0.184) | | (0.188) |
| $5,000-9,999 | -1.222*** | ----- | -0.730*** |
| | (0.164) | | (0.175) |
| $10,000-14,999 | -0.709*** | ----- | -0.319* |
| | (0.127) | | (0.135) |
| $15,000-19,999 | -0.376** | ----- | -0.107 |
| | (0.131) | | (0.136) |
| $20,000-24,999 | 0.019 | ----- | 0.131 |
| | (0.153) | | (0.156) |
| Intercept 1 | ----- | -4.417 | -5.002 |
| | | (0.470) | (2.265) |
| Intercept 2 | ----- | -3.566 | -4.081 |
| | | (0.396) | (2.248) |
| Intercept 3 | ----- | -2.454 | -3.001 |
| | | (0.354) | (2.241) |
| Intercept 4 | ----- | -0.532 | -1.055 |
| | | (0.336) | (2.238) |
| Intercept 5 | ----- | 2.488 | 2.085 |
| | | (0.340) | (2.238) |

# = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Notes:

**Table 8: Ordered Logistic Regression Analysis of the Effects of Various Dimensions of Military Service on Self Rated Health in 1992, WLS Males Who Completed the 1992 Mail Interview.**

| Military Service Variable | Unadjusted Coefficient *(SE)* | Adjusted Coefficient *(SE)* | Adjusted Coefficient *(SE)* |
|---|---|---|---|
| **Age at Entry:** | | | |
| *(Never Served)* | | | |
| Less Than 20 Years | -0.124 | -0.044 | 0.134 |
| | (0.085) | (0.087) | (0.092) |
| 20-23 Years | 0.058 | 0.097 | 0.209* |
| | (0.091) | (0.091) | (0.096) |
| 24 Years or Older | 0.237 | 0.111 | -0.037 |
| | (0.161) | (0.162) | (0.169) |
| **Mode of Entry Into Military:** | | | |
| *(Never Served)* | | | |
| Drafted | -0.346* | -0.254# | -0.059 |
| | (0.149) | (0.150) | (0.155) |
| Enlisted | -0.079 | -0.016 | 0.146 |
| | (0.084) | (0.085) | (0.090) |
| Reserves | 0.045 | 0.085 | 0.188# |
| | (0.101) | (0.102) | (0.107) |
| Enter Some Other Way | 0.925*** | 0.644** | 0.303 |
| | (0.203) | (0.209) | (0.218) |
| **Branch of Military Service:** | | | |
| *(Never Served)* | | | |
| Army | -0.025 | 0.036 | 0.121 |
| | (0.086) | (0.087) | (0.089) |
| Navy | 0.115 | 0.130 | 0.274* |
| | (0.124) | (0.125) | (0.128) |
| Air Force | -0.105 | -0.081 | 0.019 |
| | (0.132) | (0.133) | (0.135) |
| Marines | 0.049 | 0.094 | 0.099 |
| | (0.188) | (0.191) | (0.193) |
| Other Branch | 0.277 | 0.334# | 0.420* |
| | (0.198) | (0.200) | (0.204) |
| **Duration in the Military**: | | | |
| *(Never Served)* | | | |
| 1-23 Months | 0.011 | 0.065 | 0.125 |
| | (0.098) | (0.099) | (0.101) |
| 24-47 Months | 0.100 | 0.150 | 0.251** |
| | (0.093) | (0.094) | (0.096) |
| 48 Months or More | -0.138 | -0.113 | 0.006 |
| | (0.112) | (0.113) | (0.115) |

| | | | |
|---|---|---|---|
| **Rank at Last Separation from the Military:** | | | |
| *(Never Served)* | | | |
| Enlisted Rank | -0.058 | 0.010 | 0.143# |
| | (0.075) | (0.076) | (0.079) |
| Officer Rank | 0.746*** | 0.489** | 0.177 |
| | (0.169) | (0.175) | (0.180) |

# = p < 0.10; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

Notes:

**Table 9: Multivariate Logistic Regression Analysis of the Effects of Ever Serving in the Military on Mortality from 1993-2004, WLS Males Who Completed the 1992 Mail Interview.**

| | **Unadjusted Odds Ratio** ***(SE)*** | **Adjusted Odds Ratio** ***(SE)*** | **Adjusted Odds Ratio** ***(SE)*** | **Adjusted Odds Ratio** ***(SE)*** |
|---|---|---|---|---|
| **Served in the Military** *(Never Served)* | 1.105 (0.162) | 1.078 (0.160) | 1.076 (0.168) | 1.120 (0.177) |
| **Age in 1975** *(Range=33-38)* | 1.000 (0.009) | 1.000 (0.009) | 0.955 (0.114) | 0.974 (0.117) |
| **IQ in High School** *(Range=61-145)* | 0.995 (0.005) | 0.996 (0.005) | 1.000 (0.006) | 1.000 (0.006) |
| **Parental SES in 1957** *(Range=1-81)* | 0.997 (0.006) | 0.995 (0.007) | 0.997 (0.008) | 0.998 (0.008) |
| **Perception of Parental SES:** *(Below Average)* | | | | |
| Average | 1.107 (0.320) | 1.136 (0.331) | 1.194 (0.375) | 1.185 (0.374) |
| Above Average | 1.095 (0.344) | 1.165 (0.379) | 1.293 (0.449) | 1.290 (0.452) |
| Missing | 1.069 (0.539) | 1.064 (0.541) | 1.185 (0.621) | 1.289 (0.680) |
| **Did Not Live with Both Parents During High School** *(Lived with Both Parents)* | 0.979 (0.238) | 0.912 (0.225) | 0.877 (0.228) | 0.853 (0.226) |
| **Size of Place Where High School Is Located:** *(Rural/Farm)* | | | | |
| 1,000-9,999 | 1.766* (0.401) | 1.844** (0.427) | 1.910** (0.457) | 1.842* (0.445) |
| 10,000-99,999 | 1.672* (0.386) | 1.782* (0.427) | 1.978** (0.488) | 1.960** (0.489) |
| 100,000 or More | 1.271 (0.352) | 1.323 (0.383) | 1.324 (0.402) | 1.344 (0.413) |
| **Years of School Completed Through 1975** *(Range=12-20)* | 0.942* (0.028) | ----- | 0.944 (0.037) | 0.973 (0.038) |
| **Marital Status in 1975:** *(Married)* | | | | |
| Never Married | 1.760* (0.449) | ----- | 1.796* (0.474) | 1.778* (0.473) |
| Previously Married | 1.455 (0.474) | ----- | 1.344 (0.442) | 1.331 (0.442) |

| | | | | |
|---|---|---|---|---|
| **Income in 1975:** *($25,000 or More)* | | | | |
| Less Than $5,000 | 1.411 (0.497) | ----- | 1.281 (0.468) | 1.107 (0.417) |
| $5,000-9,999 | 1.326 (0.430) | ----- | 1.115 (0.386) | 1.065 (0.373) |
| $10,000-14,999 | 1.433 (0.374) | ----- | 1.264 (0.349) | 1.240 (0.347) |
| $15,000-19,999 | 0.778 (0.226) | ----- | 0.718 (0.214) | 0.730 (0.220) |
| $20,000-24,999 | 0.897 (0.304) | ----- | 0.862 (0.294) | 0.897 (0.309) |
| **Self Rated Health** *(Range=1-5)* | 0.612*** (0.043) | ----- | ----- | 0.619*** (0.047) |

# = p < 0.10; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

Notes:

**Table 10: Multivariate Logistic Regression Analysis of the Effects of Various Dimensions of Military Service on Mortality from 1993-2004, WLS Males Who Completed the 1992 Mail Interview.**

| | **Unadjusted Odds Ratio** *(SE)* | **Adjusted Odds Ratio** *(SE)* | **Adjusted Odds Ratio** *(SE)* | **Adjusted Odds Ratio** *(SE)* |
|---|---|---|---|---|
| **Age at Entry:** | | | | |
| *(Never Served)* | | | | |
| Less Than 20 Years | 1.268 | 1.243 | 1.164 | 1.184 |
| | (0.210) | (0.208) | (0.209) | (0.216) |
| 20-23 Years | 0.938 | 0.910 | 0.937 | 0.977 |
| | (0.178) | (0.175) | (0.185) | (0.194) |
| 24 Years or Older | 1.044 | 1.061 | 1.247 | 1.296 |
| | (0.346) | (0.355) | (0.424) | (0.442) |
| **Mode of Entry Into Military:** | | | | |
| *(Never Served)* | | | | |
| Drafted | 1.084 | 1.079 | 1.018 | 1.063 |
| | (0.324) | (0.324) | (0.312) | (0.327) |
| Enlisted | 1.217 | 1.172 | 1.147 | 1.153 |
| | (0.200) | (0.195) | (0.201) | (0.206) |
| Reserves | 1.033 | 1.040 | 1.034 | 1.107 |
| | (0.212) | (0.216) | (0.224) | (0.242) |
| Enter Some Other Way | 0.601 | 0.612 | 0.769 | 0.804 |
| | (0.314) | (0.324) | (0.415) | (0.436) |
| **Branch of Military Service:** | | | | |
| *(Never Served)* | | | | |
| Army | 1.178 | 1.174 | 1.147 | 1.202 |
| | (0.202) | (0.204) | (0.202) | (0.214) |
| Navy | 0.961 | 0.897 | 0.871 | 0.893 |
| | (0.253) | (0.237) | (0.233) | (0.244) |
| Air Force | 1.346 | 1.320 | 1.215 | 1.206 |
| | (0.332) | (0.327) | (0.308) | (0.311) |
| Marines | 0.933 | 0.890 | 0.894 | 0.792 |
| | (0.379) | (0.364) | (0.367) | (0.344) |
| Other Branch | 1.045 | 1.037 | 1.017 | 1.136 |
| | (0.426) | (0.424) | (0.419) | (0.470) |
| **Duration in the Military**: | | | | |
| *(Never Served)* | | | | |
| 1-23 Months | 0.938 | 0.932 | 0.928 | 0.958 |
| | (0.196) | (0.198) | (0.199) | (0.208) |
| 24-47 Months | 1.120 | 1.090 | 1.052 | 1.093 |
| | (0.210) | (0.206) | (0.201) | (0.212) |
| 48 Months or More | 1.320 | 1.276 | 1.191 | 1.199 |
| | (0.278) | (0.270) | (0.259) | (0.263) |
| **Rank at Last Separation** | | | | |

| | | | | |
|---|---|---|---|---|
| **from the Military:** | | | | |
| *(Never Served)* | | | | |
| Enlisted Rank | 1.194 | 1.167 | 1.119 | 1.151 |
| | (0.179) | (0.178) | (0.175) | (0.183) |
| Officer Rank | 0.605 | 0.622 | 0.720 | 0.745 |
| | (0.261) | (0.273) | (0.323) | (0.336) |

# = p < 0.10; * = p < 0.05; ** = p < 0.01; *** = p < 0.001

Notes: