# Not just a job: Combat occupations and socioeconomic attainment\*

Approximately 6,500 words

Alair MacLean
Washington State University Vancouver
14204 NE Salmon Creek Ave
Vancouver, WA 98686
maclean@vancouver.wsu.edu
(360) 546-9177

Fax: (360) 546-9036

Running head: Combat occupations and socioeconomic attainment

DRAFT: March 3, 2009. Please do not quote or cite without permission.

maclean@vancouver.wsu.edu.

\_

<sup>\*</sup> This research was supported by a research grant from the National Institute on Aging (R03 AG 029275). Questions and comments can be directed to Alair MacLean, Washington State University Vancouver, 14204 NE Salmon Creek Ave, Vancouver, WA 98686,

## Not just a job: Combat occupations and socioeconomic attainment

ABSTRACT: Sociologists and economists have long been interested in how credentials earned in the early life affect later labor market success. The following paper examines how the later socioeconomic attainment of veterans is affected by serving in a combat occupation. The paper uses longitudinal data from the National Longitudinal Study of Youth to test a hypothesis drawn from the theory of skills mismatch. Preliminary results suggest that these veterans are affected by a skills mismatch, as they are less likely to be employed and have lower earnings than other respondents, despite comparable rates of work-related disabilities.

Not just a job: Combat occupations and socioeconomic attainment

Previous research has shown that combat exposure affects health among veterans. Combat veterans tend to have worse health than people who did not experience combat. They are more likely to suffer from post-traumatic stress disorder, which is linked to anxiety, depression, and suicide (Elder, Shanahan, and Clipp 1997; Zatzick, Marmar, and Weiss 1997). Other research has shown that health is associated with socioeconomic status. People in worse health tend to have lower socioeconomic status than those in better health (Adams, Hurd, McFadden, Merrill, and Ribeiro 2003; Smith 1999). Not surprisingly, then, several papers show that combat veterans are more likely than non-combat veterans and the general population to have difficulty finding work, to have lost a job, and to be unemployed (Prigerson, Maciejewski, and Rosenheck 2002; Savoca and Rosenheck 2000). Yet little is known about how later health and socioeconomic success are affected by simply serving in a combat occupation. This paper examines how veterans who served in combat positions without experiencing combat fared in their later work lives relative to other veterans and to non-veterans.

### Skills mismatch

Sociologists and economists have long been interested in the relationship between credentials and labor market success. For example, much previous research has shown that people with just a high school degree earn less than those with a college degree (Morris and Western 1999).

Beginning in the 1970s, the earnings premium associated with a college degree began to increase (Morris and Western 1999). As the educational earnings gap was growing, the US and other

developed countries began to shift from a manufacturing to a "knowledge" economy (Powell and Snellman 2004). Noting the coincidence of these historical trends, some scholars have attributed at least part of the increasing wage gap between more and less educated workers to a skills mismatch (Handel 2003). According to the skills mismatch account, employers increasingly require skills that some job applicants do not have. Less educated workers tend to be less familiar than more educated workers with the technology required in the knowledge economy (DiNardo and Pischke 1997; Krueger 1993). Therefore, according to the skills mismatch account, workers with college degrees have become more valuable to employers, while those without such degrees have become less valuable (Handel 2003).

Scholars of the links between educational and socioeconomic attainment have often focused on vertical stratification, which refers to continuous or ordinal measures of education, such as years of schooling or highest degree completed (Blau and Duncan 1967; Mare 1980). However, they have also long recognized differences within levels of educational attainment, or horizontal stratification (Charles and Bradley 2002; Gerber and Cheung 2008). For instance, some scholars have examined the effects of college quality, focusing in particular on the effects of attending elite institutions (Dale and Krueger 2002). Other research on horizontal stratification in education has examined the relative earnings and status of people who enroll in different majors. According to this work, people who major in particular fields, such as business, engineering, and the sciences, earn more than those who major in other fields (Berger 1988; Griffin and Alexander 1978). The earnings gaps between people in different majors may be increasing. For example, workers who majored in science and engineering disciplines have watched their earnings increase with age and experience, while those who majored in the liberal arts have not (Berger

1988). Workers who majored in the science and engineering disciplines tend to work in occupations with higher average pay than the occupations in which workers who majored in, for example, education (Shauman 2006). Thus, horizontal stratification within education is associated with vertical stratification in socioeconomic attainment.

At the same age that people generally enroll in college, they may also choose to enlist in the armed forces. Accordingly, much previous research has assessed how veterans fare in the civilian labor market (Angrist 1990; Angrist 1998; Angrist and Krueger 1994; Teachman 2004; Teachman and Call 1996). It has examined how military service relates to status and income. Most of this research has focused on what might be termed vertical stratification, comparing the attainment of people who served in the military to those who did not. Overall, the findings regarding the impact of military service on socioeconomic attainment have been mixed. Some research finds that veterans had higher earnings than non-veterans (Xie 1992). Other research finds that they had lower earnings and status than non-veterans (Angrist 1990). And still other research finds a neutral effect of service (Angrist and Krueger 1994). The effects of service appear to vary according to of veterans' pre-service characteristics. Veterans who attained less education prior to service seem to benefit from their service (Teachman and Tedrow 2004). In some cases, minority veterans benefited as well (Lopreato and Poston 1977). In addition, several papers have looked at how the effects of military service differ by rank. For example, veterans who served as officers appear to benefit from their service, while those who served in the enlisted ranks appear not to have benefited in the civilian labor market (Dechter and Elder 2004; Hirsch and Mehay 2003; MacLean 2008).

The following paper focuses on the horizontal stratification of military service. Similar to college students, service-members enter different institutions and learn different skills and specialties. For example, they choose to enter the Army, Navy, Air Force, or Marines. They learn different skills and serve in different occupations. After basic training, service-members are trained for specific military jobs, referred to in the Army and Marines as military occupational specialties (MOS). MOS's range from positions in the artillery and infantry, to positions such as mechanics and administrators. Service-members who serve in combat occupational specialties may learn skills that have less value in the civilian labor market than the skills learned by those in non-combat occupations. While combat occupations do require some technological skills, they mostly emphasize skills that are not easily transferred to a civilian context. By contrast, many of the non-combat occupations are considered to require high or medium levels of skill (Department of Defense 2004). Some of these military positions may transfer directly to civilian occupations. Others incorporate technological or managerial skills that are more highly valued in the civilian work world.

Yet relatively little research has examined the horizontal dimensions of military service. There are apparently no papers that examine the different effects of serving in different branches of the armed forces. Only one previous paper has looked at the extent to which veterans of combat occupations have had different experiences from those of non-combat occupations when they enter the civilian labor market. The findings of this paper are consistent with the skills mismatch account. According to the paper, some types of military training were more valuable in the civilian labor market than others. For example, veterans who served in combat occupations were

less able to use their military training in their later civilian work than were veterans who served in non-combat occupations. In addition, their earned lower wages (Mangum and Ball 1987).

### Selection

With respect to education, some scholars argue that the relationship between horizontal educational stratification and vertical socioeconomic stratification stems from different types of human capital that people accumulate in different disciplines (van de Werfhorst and Kraaykamp 2001). Other scholars argue that the apparent association between major and later socioeconomic attainment stems from the pre-existing characteristics that cause people to major in different disciplines. Research in this vein argues that the association between major and earnings is spurious. It suggests that innate math skills cause people both to choose particular majors and to have higher earnings (Paglin and Rufolo 1990).

Similarly, if there is a relationship between military occupation and later civilian success, the selection account suggests that this apparent association stems from the pre-service characteristics of the people who are assigned to different occupations. Previous research on the impact of military service has focused on selection into the military (Angrist 1991). However, it may be that, once in the military, service-members who would be less successful in their later civilian lives are assigned to combat occupations. Indeed, service-members during the Vietnam era and the more recent volunteer era were assigned to military positions primarily on the basis of their entry test scores (Gimbel and Booth 1996). These test scores are likely related to the pre-service levels of technological skills that people have.

# The hypothesis

Based on the findings of previous research regarding the lack of transferability of particular types of military training, I expect to find that people who served in combat positions will be less successful in their civilian work lives than those who served in other positions. The armed forces train service-members to work in a bureaucracy and in particular military occupational specialties. The skills that are the focus of the skills mismatch hypothesis are most commonly learned in occupations that the military refers to as medium-skill jobs, such as those involving mechanics, and support and administration; and as high-skill jobs, such as those involving communications and intelligence (Department of Defense 2004). They are less likely to be incorporated into the training for combat occupations. All else equal, veterans of combat occupations should be more likely to suffer from a skills mismatch in the labor market than veterans in more technical, non-combat occupations.

Skills mismatch hypothesis: Among service-members, those who served in combat positions should be less likely to be employed and should earn less than those who did not.

## **Data and methods**

The following paper expands on previous research by looking at the relationship between military occupational specialty, on the one hand, and disability, employment, and earnings on the other. It also builds on previous research by directly estimating trajectories in these outcomes over the first two decades of the work life.

#### Data

To test this hypothesis, I use data from the National Longitudinal Survey of Youth 1979 (NLSY). The NLSY is a nationally representative survey of 12,686 men and women who were between the ages of 14 and 22 in 1979. These data are ideal for the current analyses because they include a number of detailed measures of military experiences (Center for Human Resource Research 2004b). Because the armed forces technically exclude women from combat roles (Department of Defense 2004), I analyze data provided by the male respondents. The descriptive statistics are based on weighted data. The multilevel, growth curve models are based on unweighted data. The growth curve models are based on data for all survey years, though, because of the age restrictions, the first year in which respondents could provide data was 1982.

#### **Outcomes**

In the analyses, I assess three different outcomes.

Disability. Combat veterans have been shown to have worse health than non-combat veterans and than non-veterans. The paper assesses whether veterans who served in combat positions were more or less likely than others to report a work-related disability as captured by their answers to two questions. The first question asked whether they had a physical condition that limited the type of work they could do. The second question asked whether they had such a condition that limited the amount of work they could do. If respondents answered yes to either or both questions, they are coded with a 1, if they answered no to both questions, they are coded with a 0. The respondents answered these questions in all of the survey years.

*Employment.* Previous research also suggests that combat veterans are less likely to be employed. Accordingly, I examine the extent to which serving in a combat position is associated with employment. The NLSY respondents answered a question derived from the employment question asked in the Current Population Survey. This question asked respondents what they were doing in the previous week. They responded to this question in every survey year up until 1998. If they answered that they were working, they were coded as 1 and if they answered anything else, they are coded as 0. To ensure that this measure captures employment among those who were available to work, the analyses exclude students and people who were serving in the military.

*Earnings*. Veterans of different eras have been shown to have lower, higher, and the same earnings as non-veterans. Therefore, I assess the labor market earnings of people who reported positive earnings. For most years, I compare the labor market earnings of people with non-zero earnings. Respondents answered these questions in every survey year. The regression analyses are based on the logged measure of earnings.

# Measures of military service and position

The first measure of military service reflects whether or not the respondent had served in the military by 1984. It categorizes men as having served in the military if they answered "yes" to a series of questions about military service asked every year up until 1984. After 1984, the NLSY stopped asking detailed questions about military service.

The second military measure concerns whether or not the respondent served in a combat position. Men are classified as having served in a combat position if they reported serving in a military occupational specialty (MOS) that fell within the "Infantry, Gun Crews, and Seamanship Specialists" category established by the 1977 Department of Defense 3-Digit Enlisted Occupational Classification System (Center for Human Resource Research 2004a). This category also includes people who worked in combat engineering and artillery occupational specialties. Unfortunately, the NLSY does not include a measure of whether or not these men experienced combat in addition to having served in a combat occupation.

### Other predictors

**Age:** In 1979, the NLSY collected information about the birthdates of the respondent. Using this information, the survey staff created age at interview measures. The analyses include these age measures to control for change in the outcomes as respondents grow older.

**Birth year**: NLSY respondents were born between the years of 1957 and 1964. Therefore, they first became eligible to serve in the armed forces between 1975 and 1982, the early years of the All-Volunteer Force. Between 1975 and 1980, the number of men entering the military declined. In 1981 and 1982, that number increased again, but only slightly (U.S. Census Bureau 2008).

**Race/ethnicity**: I construct two dummy variables to measure race/ethnicity: one if the respondent reported being black and the other if the respondent reported being non-black and Hispanic.

**Family Background**: I use two family background measures. The first measure reflects whether or not the respondent grew up in an intact family. In 1979, the NLSY asked respondents who they lived with at age 14. I consider those respondents who indicated that they lived with their biological father and mother to have been raised in an intact family. Respondents who provided a different answer are coded with a 0. Intact families tend to have greater financial resources than do other types of families (McLanahan and Sandefur 1994).

The second family background measure is the average years of schooling completed by the respondents' parents. People with higher educational attainment are more likely than those with lower attainment to earn more and work in jobs with higher status (Sewell and Hauser 1975). Scholars examining selection into military service and wartime mortality have commonly used parental education to assess class background (Bachman, Segal, Freedman-Doan, and O'Malley 2000; Kleykamp 2006; Merli 2000; Teachman, Call, and Segal 1993a; Teachman, Call, and Segal 1993b). If the respondent only provided information on the educational level of one parent, I use this as the measure of parental education. In some households, the NLSY surveyed more than one respondent. If parental education of one respondent was missing, I substitute the parental education information from a sibling who reported information on parental education and reported the same family structure.

Neither of these two measures of family background directly captures class position. However, these indirect measures of class more accurately capture class position than two other, more direct measures available in the current case. First, the NLSY includes a family poverty measure. Unfortunately, this measure captures poverty at the time of interview rather than during the time

when the respondent was growing up. Many of the service-members in the sample were not living with their families of origin at the time of interview and so reported their own poverty status. Second, the survey includes a measure of father's occupational status. This measure is less likely to capture the family background of service-members who served in combat occupations than it is of other respondents. These service-members were less likely than the civilians to have lived with their fathers when they were growing up. Approximately 63 percent of them reported that they lived with their fathers when they were 14 years old, compared to 73 percent of the civilians.

**AFQT score**: In 1980, 94 percent of the NLSY sample took the Armed Services Vocational Aptitude Battery (ASVAB) test. Results from this test were used to construct an unofficial Armed Forces Qualifying Test (AFQT) score. AFQT scores are converted to percentiles ranging from 0 to 100. I adopt the percentile categories used by the military: 1 = 91-100; 2 = 65-90; 3 = 31-64; 4 = 10-30; 5 = 0-9 (Laurence and Ramsberger 1991). Because there are so few respondents in the first and fifth categories, I combine the respondents in each of these categories with the respondents in the second and fourth categories respectively.

Educational attainment: Higher education is potentially endogenous to military service. People may not enter or complete college because they enlist in the military. Indeed, previous research examining military service has alternately treated educational attainment as a dependent, independent, and jointly determined outcome variable. Several papers have examined the extent to which military service affects educational attainment (MacLean 2005; Teachman 2005). At least one other paper has examined the reverse: the extent to which educational attainment

affects military service (Mazur 1995). Still another paper has examined the extent to which other predictor variables simultaneously affect both educational attainment and military service (Kleykamp 2006). Nevertheless, schooling may play an important role in determining whether people enter the military and whether they serve in combat positions and may play a role in determining socioeconomic attainment. Therefore, I report models with and without educational attainment. I am accordingly cautious in any causal claims about the relationship between educational attainment and military service.

The measure of education is based on the respondents' reports of the highest grade of schooling that they completed. Among service-members, the measure is based on the respondents' answer to a question asking them to report the highest grade they had completed before they entered the military. If the answer to this question is missing, the measure is based on the answers to three questions: the highest grade completed, the date on which that education was completed, and the date the respondents entered the military. The linear measure of educational attainment is then transformed into a categorical measure with the following categories: 0-11 = less than high school; 12 = high school; 13-15 = some college; >16 = college graduate.

### Methods

The following analyses take advantage of the longitudinal nature of the data to estimate multilevel, growth curve models that include multiple observations of the respondents at different ages and during different survey years. These growth curve models represent the disability, employment, and earnings trajectories of veterans who served in combat and non-combat occupations during the late 1970s and early 1980s. In contrast to traditional logistic models, they incorporate measures that reflect the fact that the multiple observations are not

dependent, or nested, within people. In the current case, for example, the disability, employment or earnings status of a respondent in one wave of the survey is assumed to be related to such status in other waves. In the NLSY, respondents were asked to report their earnings and whether or not they had a work-related disability in 19 waves of the survey, and to report if they were employed in 15 waves of the survey. On average, because of the age restrictions and missing data, respondents answered the disability questions at 7.8 waves, the earnings questions at 6.8 waves, and the disability questions at 5.9 waves.

To account for unobserved differences between respondents, the models include individual intercepts for each of the respondents. The tables report the variance of these unobserved intercepts around the estimated intercept. This variance reflects unobserved differences between people that affect the initial level of earnings and the initial odds of disability and employment. The models also include individual slopes for each time-varying characteristic, which, in the current case, is age. The tables report the variance of these individual slopes around the parameter estimate of the slope of age. This variance reflects the unobserved differences across respondents in their age trajectories. Both of these variances therefore provide information about average deviations from the reported parameter estimates. Finally, the models incorporate the covariance of the individual slopes and intercepts, which represents the relationship within respondents between initial differences and age trajectories.

The models are estimated as two-level, random-intercept, random-coefficient models. The level-1 model is specified by the following equation:

$$y_{ii} = \eta_{1i} + \eta_{2i} x_{ii} + \beta_3 x_{ii}^2 + \varepsilon_{ii}$$
 [1]

Where  $y_{ij}$  refers to the outcomes for occasion i and respondent j;  $x_{ij}$  is age; and  $\varepsilon_{ij}$  is the residual. The coefficient  $\eta_{1j}$  is the respondent-specific intercept for respondent j. The coefficient  $\eta_{2j}$  is the respondent-specific slope of age. The level-2 model represents the level-1 coefficients,  $\eta_{1j}$  and  $\eta_{2j}$ , as responses:

$$\eta_{1j} = \gamma_{11} + \gamma_{12}z_j + \zeta_{1j} \tag{2}$$

$$\eta_{2i} = \gamma_{2i} + \zeta_{2i} \tag{3}$$

The coefficient  $\gamma_{11}$  is the intercept in the first equation, which represents the respondent-specific intercepts. The coefficient  $\gamma_{21}$  is the intercept in the second level-2 equation, which represents the respondent-specific slopes. Equation 2 includes all of the covariates that do not vary within people, such as combat status, birthyear, family structure, and parental education. In the simple case described by equation 2, z represents combat status. The coefficients  $\varsigma_{1j}$  and  $\varsigma_{2j}$  are the residuals. These equations are not estimated separately, because the random effects are unobserved. Therefore, the reported estimates are from the reduced form equation. The reduced form equation is as follows:

$$y_{ij} = \beta_1 + \beta_2 x_{ij} + \beta_3 x_{ij}^2 + \beta_4 z_j + \zeta_{1j} + \zeta_{2j} x_{ij} + \varepsilon_{ij}$$
 [4]

This equation relies on the following substitutions:  $\beta_1 \equiv \gamma_{11}$ ,  $\beta_2 \equiv \gamma_{21}$ , and  $\beta_4 \equiv \gamma_{12}$ . All of the other terms are defined as above.

The level-2 models can also incorporate interactions between level-1 or time-varying characteristics and level-2 or time-constant characteristics. For example, they can incorporate interactions between age and combat or birth-year. They can also incorporate interactions between different level-2 or time-constant characteristics, such as combat and race.

# **Findings**

Table 1 presents descriptive statistics for the sample in selected survey years: 1986, 1990, 1994, 1998, and 2002. These statistics therefore provide snapshots of the characteristics of the sample at four-year intervals. The sample is restricted to respondents who were 25 years old and older in a particular year. Over the course of the 16 years covered by the table, the respondents grew older, starting in their mid-twenties, the beginning of the work life, to their early forties, the middle of the work life. In 1986, some of the NLSY respondents were still younger than 25. However, in the remaining years, all of the respondents met the age restriction. In 1990, they were, on average, 29 years old. The table also shows that men who served in non-combat occupations had the highest average AFQT scores between 51-52. Those who served in combat occupations had the lowest, between 41-43.

Over the period of time covered by the table, the share of men reporting a work-related disability increased from 3-4 percent to 7-8 percent. Men who served in non-combat occupational specialties in the military were the most likely to report such a disability in the second and the last survey years. Men who served in combat occupational specialties were more likely to report

a disability than the other respondents in 1986, 1994 and 1998, when the respondents were, on average 26, 33, and 37 years old. However, in the last survey year, they were the least likely to report being disabled. These findings suggest that men who served in combat occupations were not significantly more likely to have a work-related disability than were other men.

The fourth panel of the table presents employment statistics, which are based on the men who were neither students nor on active duty. Among these men, between 83 and 92 percent of the men were employed. Men who had served in combat occupations were less likely to be employed than were the other men. These findings suggest that men who served in combat positions may have had more difficulties finding jobs than other men, which could be consistent with the skills mismatch account.

The fifth panel presents the statistics regarding labor income (in 2003 dollars) among the men who were employed. Because the NLSY did not ask the employment question after 1998, these numbers are based on labor income among the men who reported more than zero dollars of income. In nearly every year, the men who served in combat positions had lower earnings than the men who did not serve in the military and the men who served in non-combat positions. These findings are at least partly consistent with the view that men who served in combat positions had skills that were less valuable in the civilian labor market. This skill gap could stem from either treatment or selection. The veterans of combat positions may have learned skills that were less valuable while in the military. Or they may have entered the military with fewer skills and abilities and been assigned to combat positions on this basis. If the latter is the case, combat occupations could serve as a proxy for lower pre-service skills.

These descriptive findings present evidence that could be consistent with the view that there is a skills mismatch that leaves men who served in combat occupations at a disadvantage in the later civilian labor market, even many years after their service.

Table 2 includes regressions of self-reported disability on selected characteristics among men who served in the military. The first three columns contain the estimates from traditional logistic regressions, while columns 4-6 include estimates from random-effects, growth curve models. Models 1 and 4 show an association between serving in a combat position and reporting a disability. Net of age and cohort differences, veterans who served in combat occupations were more likely to report being disabled than those who served in non-combat occupations. In model 1, in the logistic context, the effect is significant. In model 4, in the growth curve context, it is not. However, the estimates are similar in size and direction. Models 2 and 5 suggest that there is no association between combat occupation and disability net of race, class, and ability differences. Models 3 and 7 include interactions between combat occupation and age. This interaction effect is not significant, suggesting that the association between military occupation and disability did not change over time. Taken together, these results suggest that men who served in combat occupations may have been more likely to report being disabled due to pre-existing differences between different types of veterans.

Across both specifications, black veterans were less likely to be disabled than white veterans.

This could be consistent with previous work that finds that white men were negatively selected into the military while black men were positively selected (Teachman, Call, and Segal 1993b). In

addition, veterans who grew up in intact families were less likely to report a disability than those who grew up in non-intact families. Veterans who had AFQT scores in the top 45 percent were also less likely to report a disability than those who had lower test scores. As veterans grew older they also became more likely to report a disability. These models also show an effect of birthyear on disability net of age, race, class, and ability differences. According to these models, veterans born later in the period were less likely to be disabled than those born earlier in the period.

Table 3 presents regression coefficients of employment on selected variables. As above, the first three columns contain estimates from traditional logistic regression models, while columns 4-6 include estimates from growth curve models. These models are based on the sample of respondents who had completed their military service and were not enrolled in school. Models 2 and 5 suggest that veterans who served in combat positions were more likely than those who did not to be employed net of pre-existing race, class, and ability differences. The association between combat position and employment is significant in the logistic framework, but not in the growth curve framework. Models 3 and 6, which include interactions between combat occupation and age suggest that the association between military occupation and civilian employment changes as veterans grew older. According to these models, veterans who served in combat MOS's were more likely than those who did not to be employed early in the work life. However, as they grew older, they became less likely to be employed.

In both specifications, black veterans were less likely than white veterans to be employed. In addition, veterans who had lower AFQT scores were less likely than those with higher AFQT

scores to be employed. By contrast, family background characteristics had little effect on the employment of veterans. Finally, older veterans were more likely than younger veterans to report being employed. Similarly, veterans who were born later in the survey period were more likely to report being employed than veterans born earlier in the period.

Table 4 presents regressions of the log of earnings on selected predictors. These models are estimated using data provided by veterans who reported positive earnings in given survey years. In contrast to the findings regarding disability and employment, the estimate of the effect of serving in a combat occupation differs according to the type of model. However, similar to the case with employment, models 3 and 6 suggest that the association between combat occupation and earnings changed as the veterans aged. When the veterans were 25, those who had served in combat occupations earned more than those who did not net of pre-existing race, class, and ability differences. However, over time, they did not retain this earnings advantage.

According to the table, black veterans earned less than did whites, as did veterans with AFQT scores in the lowest categories. In contrast, veterans from intact families earned more. In addition, veterans earned more as they grew older, as did veterans who were born later in the period.

# **Conclusion**

Previous research has shown that combat veterans suffer worse health and lower socioeconomic attainment than non-combat veterans and non-veterans. In contrast, the preceding analyses showed that serving in a combat occupation had only a small effect on the odds of reporting a

disability. Net of pre-existing differences, veterans who served in combat roles were no more likely than those who did not to report being disabled. Over the work life, however, they were negatively affected by their service with respect to employment and earnings. As they grew older, they became less likely than veterans who did not serve in combat occupations to be employed. In addition, they had increasingly lower earnings relative to veterans who served in non-combat positions.

### References

- Adams, P., M. D. Hurd, D. McFadden, A. Merrill, and T. Ribeiro. 2003. "Healthy, wealthy, and wise? Tests for direct causal paths between health and socioeconomic status." *Journal of Econometrics* 112:3-56.
- Angrist, Joshua D. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery Evidence from Social-Security Administrative Records." *American Economic Review* 80:313-336.
- —. 1991. "The Draft Lottery and Voluntary Enlistment in the Vietnam Era." *Journal of the American Statistical Association* 86:584-595.
- —. 1998. "Estimating the labor market impact of voluntary military service using social security data on military applicants." *Econometrica* 66:249-288.
- Angrist, Joshua D. and Alan B. Krueger. 1994. "Why do World-War-II veterans earn more than nonveterans?" *Journal of Labor Economics* 12:74-97.
- Bachman, J. G., D. R. Segal, P. Freedman-Doan, and P. M. O'Malley. 2000. "Who chooses military service? Correlates of propensity and enlistment in the US armed forces." *Military Psychology* 12:1-30.
- Berger, M. C. 1988. "Predicted future earnings and choice of college major." *Industrial & Labor Relations Review* 41:418-429.
- Blau, Peter Michael and Otis Dudley Duncan. 1967. *The American occupational structure*. New York,: Wiley.
- Center for Human Resource Research. 2004a. "NLSY79 Attachment 3: 1970 & 1980 Census Industrial & Occupational Classification Codes and 1977 Department of Defense Enlisted Occupational Codes." The Ohio State University.
- —. 2004b. NLSY79 User's Guide 1979-2002. Columbus, OH: The Ohio State University.
- Charles, M. and K. Bradley. 2002. "Equal but separate? A cross-national study of sex segregation in higher education." *American Sociological Review* 67:573-599.
- Dale, S. B. and A. B. Krueger. 2002. "Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables." *Quarterly Journal of Economics* 117:1491-1527.
- Dechter, Aimee and Glen H. Elder, Jr. 2004. "World War II mobilization in men's work lives: Continuity or disruption for the middle class." *American Journal of Sociology* 110:761-793.
- Department of Defense. 2004. "Population representation in the military services, fiscal year 2004." Washington, DC: Office of the Assistant Secretary of Defense for Personnel and Readiness.
- DiNardo, J. E. and J. S. Pischke. 1997. "The returns to computer use revisited: Have pencils changed the wage structure too?" *Quarterly Journal of Economics* 112:291-303.
- Elder, Glen H., Jr., Michael J. Shanahan, and Elizabeth Colerick Clipp. 1997. "Linking combat and physical health: The legacy of World War II in men's lives." *The American Journal of Psychiatry* 154:330-6.
- Gerber, T. P. and S. Y. Cheung. 2008. "Horizontal stratification in postsecondary education: Forms, explanations, and implications." *Annual Review of Sociology* 34:299-318.
- Gimbel, Cynthia and Alan Booth. 1996. "Who fought in Vietnam?" Social Forces 74:1137-57.
- Griffin, Larry J. and Karl L. Alexander. 1978. "Schooling and Socioeconomic Attainments: High School and College Influences." *American Journal of Sociology* 84:319-347.

- Handel, Michael J. 2003. "Skills Mismatch in the Labor Market." *Annual Review of Sociology* 29:135-165.
- Hirsch, B. T. and S. L. Mehay. 2003. "Evaluating the labor market performance of veterans using a matched comparison group design." *Journal of Human Resources* 38:673-700.
- Kleykamp, Meredith A. 2006. "College, jobs, or the military? Enlistment during a time of war." *Social Science Quarterly* 87:272-290.
- Krueger, A. B. 1993. "How computers have changed the wage structure evidence from microdata, 1984-1989." *Quarterly Journal of Economics* 108:33-60.
- Laurence, Janice H. and Peter F. Ramsberger. 1991. Low-aptitude men in the military: Who profits, who pays? New York: Praeger.
- Lopreato, Sally C. and Dudley L. Poston, Jr. 1977. "Differences in Earnings and Earnings Ability between Black Veterans and Nonveterans in the United States." *Social Science Quarterly* 57:750-766.
- MacLean, Alair. 2005. "Lessons from the Cold War: Military service and college education." *Sociology of Education* 78:250-266.
- —. 2008. "The privileges of rank: The peacetime draft and later life attainment." *Armed Forces & Society* 34:682-713.
- Mangum, Stephen L. and David E. Ball. 1987. "Military Skill Training: Some Evidence of Transferability." *Armed Forces and Society* 13:425-441.
- Mare, Robert D. 1980. "Social background and school continuation decisions." *Journal of the American Statistical Association* 75:295-305.
- Mazur, A. 1995. "Was Vietnam a class war?" Armed Forces and Society 21:455-459.
- McLanahan, Sara and Gary D. Sandefur. 1994. *Growing up with a single parent: What hurts, what helps.* Cambridge, Mass.: Harvard University Press.
- Merli, M. G. 2000. "Socioeconomic background and war mortality during Vietnam's wars." *Demography* 37:1-15.
- Morris, Martina and Bruce Western. 1999. "Inequality in Earnings at the Close of the Twentieth Century." *Annual Review of Sociology* 25:623-657.
- Paglin, M. and A. M. Rufolo. 1990. "Heterogeneous human-capital, occupational choice, and male-female earnings differences." *Journal of Labor Economics* 8:123-144.
- Powell, W. W. and K. Snellman. 2004. "The knowledge economy." *Annual Review of Sociology* 30:199-220.
- Prigerson, H. G., P. K. Maciejewski, and R. A. Rosenheck. 2002. "Population attributable fractions of psychiatric disorders and behavioral outcomes associated with combat exposure among US men." *American Journal of Public Health* 92:59-63.
- Savoca, Elizabeth and Robert Rosenheck. 2000. "The civilian labor market experiences of Vietnam-era veterans: The influence of psychiatric disorders." *Journal of Mental Health Policy & Economics* 3:199-207.
- Sewell, William H. and Robert M. Hauser. 1975. *Education, occupation, and earnings: Achievement in the early career*. New York: Academic Press.
- Shauman, K. A. 2006. "Occupational sex segregation and the earnings of occupations: What causes the link among college-educated workers?" *Social Science Research* 35:577-619.
- Smith, James P. 1999. "Healthy bodies and thick wallets: The dual relation between health and economic status." *Journal of Economic Perspectives* 13:145-167.
- Teachman, Jay D. 2004. "Military service during the Vietnam era: Were there consequences for subsequent civilian earnings?" *Social Forces* 83:709-730.

- —. 2005. "Military service in the Vietnam era and educational attainment." *Sociology of Education* 78:50-68.
- Teachman, Jay D. and Vaughn R. A. Call. 1996. "The effect of military service on educational, occupational, and income attainment." *Social Science Research* 25:1-31.
- Teachman, Jay D., Vaughn R. A. Call, and Mady Wechsler Segal. 1993a. "Family, work, and school influences on the decision to enter the military." *Journal of Family Issues* 14:291-313
- —. 1993b. "The selectivity of military enlistment." *Journal of Political and Military Sociology* 21:287-309.
- Teachman, Jay D. and Lucky M. Tedrow. 2004. "Wages, earnings, and occupational status: did World War II veterans receive a premium?" *Social Science Research* 33:581-605.
- U.S. Census Bureau. 2008. "Department of Defense Personnel: 1960 to 2006" Washington, DC: U.S. Census Bureau, Retrieved: September 23, 2008

  (http://www.census.gov/compendia/statab/cats/national\_security\_veterans\_affairs.html).
- van de Werfhorst, H. G. and G. Kraaykamp. 2001. "Four field-related educational resources and their impact on labor, consumption, and sociopolitical orientation." *Sociology of Education* 74:296-317.
- Xie, Yu. 1992. "The Socioeconomic Status of Young Male Veterans, 1964-1984." *Social Science Quarterly* 73:379-396.
- Zatzick, Douglas F., Charles R. Marmar, and Daniel S. Weiss. 1997. "Posttraumatic stress disorder and functioning and quality of life outcomes in a nationally representative sample of male Vietnam veterans." *The American Journal of Psychiatry* 154:1690-5.

Table 1. Means and proportions of selected variables by veteran status and survey year in the NLSY, among 25 year olds and older

	•						
	1005	1000	<u>Year</u>	1000	•		
	1986	1990	1994	1998	2002		
Age							
Nonveteran	26.61	29.12	33.05	36.85	40.91		
	(1.13)	(2.22)	(2.13)	(2.14)	(2.15)		
Non-combat MOS	26.53	29.03	32.90	36.68	40.76		
	(1.59)	(2.44)	(2.38)	(2.43)	(2.34)		
Combat MOS	26.74	28.68	32.74	36.61	40.76		
	(1.65)	(2.75)	(2.69)	(2.77)	(2.68)		
AFQT score							
Nonveteran	53.84	49.46	49.72	49.85	49.81		
	(28.04)	(29.24)	(28.01)	(27.93)	(28.22)		
Non-combat MOS	57.05	51.27	51.76	51.60	52.41		
	(32.49)	(28.64)	(27.98)	(28.60)	(28.26)		
Combat MOS	45.83	40.96	41.09	42.96	41.09		
	(34.48)	(27.39)	(28.13)	(28.55)	(28.43)		
<u>Disability</u>							
Nonveteran	0.029	0.032	0.041	0.040	0.073		
	(0.156)	(0.168)	(0.183)	(0.182)	(0.240)		
Non-combat MOS	0.037	0.033	0.033	0.025	0.077		
	(0.218)	(0.195)	(0.195)	(0.171)	(0.284)		
Combat MOS	0.042	0.024	0.042	0.057	0.069		
	(0.239)	(0.173)	(0.225)	(0.255)	(0.281)		
Employed (not student	or active duty)						
Nonveteran	0.899	0.907	0.897	0.907			
	(0.291)	(0.286)	(0.299)	(0.285)			
Non-combat MOS	0.837	0.901	0.895	0.924			
	(0.459)	(0.336)	(0.349)	(0.306)			
Combat MOS	0.830	0.867	0.892	0.863			
	(0.449)	(0.394)	(0.365)	(0.407)			
Labor income (among those with positive earnings)							
Nonveteran	30,159.56	35,977.21	41,078.85	48,892.30	59,135.81		
	(16,880.74)	(25,296.30)	(28,676.11)	(33,637.02)	(49,050.15)		
Non-combat MOS	23,167.62	26,804.91	32,715.43	40,447.16	49,374.82		
	(19,220.14)	(17,316.46)	(25,787.75)	(35,949.60)	(44,237.24)		
Combat MOS	20,676.04	25,061.93	37,458.20	38,448.18	36,124.31		
	(16,326.35)	(16,829.05)	(50,174.92)	(35,920.70)	(23,893.48)		
		· · · · · · · · · · · · · · · · · · ·	, ,		<u> </u>		

Table 2. Regressions of disability on selected predictors

	Logistic regressions			Growth curve models			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	
Combat MOS	0.239*	0.0918	0.0233	0.29	3 0.01	-0.104	
	(0.096)	(0.110)	(0.190)	(0.250	(0.270)	(0.320)	
Age (past 25 years)	0.0601***	0.0616***	0.0599***	0.0901***	0.0907***	0.0874***	
	(0.006)	(0.007)	(0.008)	(0.008	(0.009)	(0.010)	
Birthyear (past 1957)	0.001	-0.030	-0.030	-0.045	3 -0.0998**	-0.0988*	
	(0.019)	(0.021)	(0.021)	(0.047	(0.050)	(0.050)	
Black		-0.581***	-0.581***		-0.570**	-0.572**	
		(0.110)	(0.110)		(0.260)	(0.260)	
Parents' education		0.0395**	0.0396**		0.0706	0.0708	
		(0.018)	(0.018)		(0.045)	(0.045)	
Intact family		-0.366***	-0.366***		-0.586**	-0.583**	
		(0.094)	(0.094)		(0.230)	(0.230)	
AFQT score (ref: Categories 1 & 2)							
Category 3		0.350***	0.350***		0.750**	0.752**	
		(0.130)	(0.130)		(0.310)	(0.310)	
Categories 4 & 5		0.714***	0.714***		1.271***	1.274***	
-		(0.140)	(0.140)		(0.350)	(0.350)	
Interaction combat and	d age		0.00696			0.013	
			(0.015)			(0.019)	
Constant	-3.517***	-3.842***	-3.828***	-5.423***	-6.156***	, ,	
	(0.097)	(0.270)	(0.270)	(0.240	) (0.670)	(0.670)	

Standard errors in parentheses
\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 3. Regressions of employment on selected predictors

	Logistic regressions			Growth curve models		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Combat MOS	0.0124	0.181**	0.415***	0.0455	0.276	0.559**
	(0.078)	(0.088)	(0.140)	(0.180)	(0.200)	(0.230)
Age (past 25 years)	0.0455***	0.0477***	0.0580***	0.0504***	0.0474***	0.0623***
	(0.008)	(0.009)	(0.010)	(0.011)	(0.012)	(0.013)
Birthyear (past 1957)	0.0614***	0.0805***	0.0794***	0.116***	0.151***	0.149***
	(0.015)	(0.016)	(0.016)	(0.033)	(0.036)	(0.036)
Black		-0.368***	-0.369***		-0.422**	-0.424**
		(0.079)	(0.079)		(0.180)	(0.180)
Parents' education		-0.000768	-0.00067		-0.00964	-0.00924
		(0.014)	(0.014)		(0.030)	(0.030)
Intact family		0.179**	0.178**		0.181	0.177
		(0.073)	(0.073)		(0.170)	(0.170)
AFQT score (ref: Categories 1	& 2)					
Category 3		-0.412***	-0.418***		-0.565***	-0.572***
		(0.110)	(0.110)		(0.220)	(0.220)
Categories 4 & 5		-0.617***	-0.620***		-0.857***	-0.863***
		(0.120)	(0.120)		(0.250)	(0.250)
Interaction combat and age			-0.0481**			-0.0650**
			(0.022)			(0.027)
Constant	1.303***	1.719***	1.678***	1.915***	2.491***	2.439***
	(0.067)	(0.200)	(0.200)	(0.130)	(0.430)	(0.430)

Standard errors in parentheses
\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 4. Regressions of log of earnings on selected predictors

	OLS regressions			Growth curve models		
	Model 1	Model 2	Model 3	Model 4 Model 5 Model 6		
Combat MOS	-0.0485**	0.00933	3 0.0602*	-0.00483		
	(0.021)	(0.023	(0.036)	(0.053)  (0.058)  (0.060)		
Age (past 25 years)	0.0412***	0.0417***	0.0431***	0.0387***0.0382***0.0404***		
	(0.001)	(0.002	(0.002)	(0.001)  (0.001)  (0.001)		
Birthyear (past 1957)	0.0329***	0.0363***	0.0362***	0.0389***0.0485***0.0481***		
	(0.004)	(0.004)	(0.004)	(0.010)  (0.011)  (0.011)		
Black		-0.0900***	-0.0894***	-0.0957* -0.0941*		
		(0.021	(0.021)	(0.056) $(0.056)$		
Parents' education		-0.000	-0.0002	-0.00162 -0.00197		
		(0.004)	(0.004)	(0.009) $(0.009)$		
Intact family		0.0843***	0.0840***	0.128*** 0.128***		
		(0.020	(0.020)	(0.049) $(0.049)$		
AFQT score (ref: Categories 1	& 2)					
Category 3		-0.0709***	-0.0719***	-0.0787 -0.0811		
		(0.025	(0.025)	(0.060) $(0.060)$		
Categories 4 & 5		-0.235***	-0.236***	-0.200*** -0.203***		
		(0.028	(0.028)	(0.071) $(0.071)$		
Interaction combat and age			-0.00645*	-0.0100***		
			(0.004)	(0.003)		
Constant	9.642***	9.722***	9.713***	9.518*** 9.560*** 9.553***		
G. 1 1	(0.019)	(0.053	(0.053)	(0.035) $(0.130)$ $(0.130)$		

Standard errors in parentheses
\*\*\* p<0.001, \*\* p<0.01, \* p<0.05