

We Want You! The Role of Human Capital in Explaining the Veteran- Non-Veteran Earnings Differential*

Alfred O. Gottschalck, Ph.D. and Kelly A. Holder, M.A.

Email: alfred.o.gottschalck@census.gov

Housing and Household Economic Statistics Division
U.S. Census Bureau, Washington, DC

Veterans have frequently been found to earn more than non-veterans in the civilian labor market, even after controlling for social and demographic variables (e.g., Holder, 2007; Hisnanick, 2001; and Prokos and Padavic, 2000). Studies on this topic have generally been categorized into two groups: those that view military service as a bridging environment in which, all else being equal, veterans should do better economically than their non-veteran counterparts, and those that view military service and training as factors that contribute to the stock of human capital for veterans.

Prior research into post-military economic outcomes has focused mainly on male veterans and found conflicting results (e.g., DeTray, 1982; Angrist, 1990; and Hirsch and Mehay, 2003). Because sex is highly correlated with veteran status, this analysis examines males and females separately. In this paper, we examine the earnings differential between employed veterans and non-veterans between the ages of 25 and 64 using data from the 2005 American Community Survey. Using a human capital framework, we estimate earnings equations which account for selection into the labor market for four groups: White male veterans and non-veterans, White female veterans and non-veterans, Black male veterans and non-veterans, and Black female veterans and non-veterans.

Black male veterans earned on average 10 percent more than black male non-veterans earned in 2005. White male veterans earned on average 8 percent less than white male non-veterans. The earnings differential was even more striking for females. Black female veterans earned 20 percent more than their non-veteran counterparts while white female veterans earned 9 percent more than similar non-veterans.

The observed earnings differential between these groups is evaluated using the Blinder-Oaxaca decomposition technique to identify the share of the observed earnings differential that is explained by human capital differences and the share attributed to labor market imperfections.

JEL Codes: J31, J24

Presentation: 2009 Eastern Economic Association Annual Meeting
February 27 – March 1, 2009, New York, NY

* This paper reports the results of research and analysis undertaken by U.S. Census Bureau staff. It has undergone a more limited review than official U.S. Census Bureau publications. This paper is released to inform interested parties of research and to encourage discussion.

I. INTRODUCTION

Previous research on earnings differentials between veterans and non-veterans has employed various data sources and methodologies, which has often resulted in conflicting findings. In general, these studies can be classified into two approaches: those that view military service as a bridging environment in which, all else being equal, veterans should do better economically than their non-veteran counterparts, and those that view military service and training as factors that contribute to the overall stock of human capital for veterans.

The vast majority of prior research into the post-military economic outcomes of veterans has either focused on all males – due to the small numbers of women with military service prior to the inception of the All Volunteer Force (AVF) (which began in 1973 with the end of the draft) – or on veterans who served during particular war periods. It has been suggested by numerous studies that military service has been a historically positive adult life strategy for male veterans and, more specifically, for minority male veterans.

Research on Vietnam veterans done within a decade of the end of the Vietnam era found an earnings disadvantage for these men compared to their non-veteran counterparts (Berger and Hirsch, 1983; Schwartz, 1986; Angrist, 1990). More recent studies of Vietnam veterans have found the negative effects of service on earnings have diminished with time. Using data from the 1966 to 1987 National Longitudinal Study of Young Men (NLSYM), Teachman (2004) found that net of unmeasured individual and family-specific factors that might affect income, as well as measured background characteristics

and cumulative labor market experience, the negative effect on wages of military service in Vietnam is short-lived and mostly confined to veterans who were drafted.

As for the findings of the literature in regard to the examination of the earnings of veterans and non-veterans of different racial groups, generalizing thirty years of findings is difficult due to the limited scope of some studies and institutional changes, such as the existence and eventual elimination of discriminatory practices, which may affect the interpretation of the results. Previous literature on veterans from the era prior to the AVF may also not be relevant to the present time.

For example, using 1960 Public Use Microdata Sample (PUMS) data, Browning, Lopreato, and Poston (1973) found a wage premium for black and Mexican-American veterans. However, their analysis only included five southwestern states and was further restricted to men 25 to 50 years old who were not in farm occupations, were literate, and worked fulltime.

Berger and Hirsch (1983) found veteran status to be advantageous for non-whites but noted that they could not perform a detailed analysis by race due to sample size restrictions in the Current Population Survey data. Even though Berger and Hirsch were unable to provide a detailed examination of racial differences, they believed it would be necessary to estimate separate earnings functions by race, as well as by veteran status, to attain a better understanding of veteran and non-veteran earnings differences.

In an analysis of males aged 23 to 26 in the 1984 National Longitudinal Surveys of Labor Market Experience Youth Cohort, Phillips, et al. (1992) found that while blacks and Hispanics had a significant in-service economic advantage over their respective civilian counterparts, there was not a post-service earnings advantage. However, the

results for non-Hispanic whites showed a significant value-added effect in post-service earnings.

In a more recent study of black males that used data from selected years of the Current Population Survey, Hisnanick (2001) found black male veterans had higher earnings, higher education, and a greater labor force attachment than their non-veteran counterparts.

As previously stated, few studies have attempted to examine in depth the outcomes for women. In their study of women veterans using data from the 1990 Census, Prokos and Padavic (2000) found that women veterans over the age of 35 had higher mean earnings than non-veteran women while younger women veterans were at an earnings disadvantage. On the contrary, Cooney, et al.(2003), using the same dataset, found no earnings advantage for women veterans.

In this paper, our goal is to determine whether and how veterans' post-military earnings are different from those of similar non-veterans. Is there something about the experiences of military service, or the resources and benefits provided by military service, which impacts the economic outcomes of service members? Are these differences merely explained by how veterans and non-veterans select into the labor market? How much of the earnings differential is due to differing levels of human capital or endowment levels? Does employer preference contribute to any wage differentials between these groups?

Given the recent higher participation rates of women in the military and the large sample sizes available to us, we examine veteran and non-veteran earnings differentials

by sex and race.¹ Employing a human capital framework, we estimate earnings equations which account for selection into the labor market for four groups: white male veterans and non-veterans, white female veterans and non-veterans, black male veterans and non-veterans, and black female veterans and non-veterans. The observed earnings differential between these groups is evaluated using the Blinder-Oaxaca decomposition technique to identify the share of the observed earnings differential that is explained by human capital differences and the share attributed to labor market imperfections.

The remainder of this paper is organized as follows: section two provides a description of the data used for these analyses; section three describes our methodology; section four presents the results of our analyses; and the final section provides concluding remarks.

II. DATA

This paper uses data from the 2005 American Community Survey (ACS), which is collected, processed, and distributed by the U.S. Census Bureau. The ACS collects detailed person-level data from a national sample of three million household addresses each year. Data for the ACS are collected continuously throughout the year using a combination of mail-out/mail-back questionnaires, Computer-Assisted Telephone Interviewing (CATI), and Computer-Assisted Personal Interviewing (CAPI).

Each month a unique national sample of addresses receives an ACS questionnaire. Addresses that did not respond were telephoned during the second month of collection if a phone number for the address was available, and personal visits were conducted during

¹ In 1980, women made up less than 3 percent of the veteran population, today they make up about 8 percent (Holder, 2008). Today, about 14 percent of the active duty military population are women (Office of the Undersecretary of Defense, Personnel, and Readiness, 2005).

the third and last month of data collection for a sub-sample of the remaining non-responding units. The 2005 ACS achieved an overall survey response rate of 97.3 percent, calculated as the initial weighted estimate of interviews divided by the initial weighted estimate of cases eligible to be interviewed.

The 2005 ACS interviewed a total of 1,924,527 housing units. People living in group quarters were not included in the 2005 ACS sample. The “number of interviews” is the actual sample that is used to produce all weighted estimates for the survey year and includes both occupied and vacant housing units. The ACS household population totals are controlled by demographic characteristics at the county level to the annual Intercensal Population Estimates (IPE). The IPE are produced using a variety of administrative records including registered births and deaths, federal income tax returns, Medicare enrollees, and military movement.

The universe for our analysis is the population 25 to 64 years old. Employed individuals are defined as civilians who either (1) were “at work” – those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a family business; or (2) were “with a job but not at work” – those who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons.

Typically, the prime working age is defined as ages 20 to 64 years; however, the universe for our analysis is restricted to 25 to 64 years to account for the average time necessary to complete a post-secondary education. The active-duty military population is

excluded from our analysis. Veterans in this sample were old enough to have served between the Korean War and the Vietnam Era, during the Vietnam Era, and since the inception of the All-Volunteer Force (AVF) which began in 1973 with the end of the draft.

All results presented in this analysis are based on weighted estimates. The dataset consisted of weighted estimates representing 10 million veterans and 102 million non-veterans. The large sample size and rich demographic detail of the ACS allows for a more in-depth analysis than may be possible with other national surveys. Included in the weighted sample, are 52 million women, of which 832,191 were veterans. The ACS offers a rare opportunity to study, in fine detail, the differences between female veterans and female non-veterans as well as the differences between these veterans by race.

III. METHODOLOGY

In order to examine the observed earnings differential between veterans and non-veterans, we jointly estimate the labor market participation decision and log-earnings functions for veterans and non-veterans while accounting for selectivity bias. The outcomes from this simultaneous estimation are used as the basis for our Blinder-Oaxaca decomposition analysis, accounting for selectivity.

It is well recognized in the literature that it is important to account for selectivity bias when analyzing earnings differentials (Greene, 2007; Neuman and Oaxaca, 2003; and Yun, 2000). Even though two groups are observed to have the same levels of human capital, they may have different levels of unobserved earnings power (e.g., ability and motivation). If veterans have more unobserved earning power than non-veterans due to a different pattern of selection into the labor market, then failing to account for selection

will underestimate the “true” differences in rates of return to the same individual characteristics (i.e., the differences in the estimated coefficients of the earnings equation) due to labor market imperfections. Thus, if selection issues are not accounted for, the estimates of labor market imperfections may be biased or misleading. By jointly estimating labor market participation and annual earnings, we account for the possible existence of selection bias in our data.

Hence, our model is specified as follows:

$$W_{ij} = \beta_{ij}(X_j) + \varepsilon_{ij} \quad (1)$$

$$P_{ij}^* = \alpha_{ij}(Z_j) + v_{ij} \quad (2)$$

where $i = (1, \dots, n)$ and $j = (1, \dots, 8)$, representing our eight race/sex/veteran status analysis sub-groups. W_{ij} is the (natural) logarithm of annual earnings and P_{ij}^* is an underlying variable for labor market participation.² Individuals will participate in the labor market ($P = 1$) when P_{ij}^* is positive; they will not participate ($P = 0$) otherwise.³ Earnings (W_{ij}) are only observed for those who participate in the labor market and are missing for those who do not participate in the labor market. X_j and Z_j represent exogenous variables, β_{ij} and α_{ij} are the associated parameter vectors, and ε_{ij} and v_{ij} are error terms. The error terms ε_{ij} and v_{ij} are jointly normal with zero mean, standard deviations of one and σ , and correlation of ρ . The correlation, ρ , summarizes the selection bias mechanism. Finally, equations (1) and (2) are estimated jointly via

² Annual earnings for each individual are for the prior twelve months from the interview date.

³ Labor market participation is usually defined to include both employment and unemployment. However, most studies of labor supply do not count unemployment in the definition of participation, thereby treating unemployment as the same as leisure or non-employment. Hence, we treat unemployment as non-participation.

maximum likelihood for each of our eight sub-groups, as well as for our pooled samples (i.e., for our four sex/race sub-groups).⁴

The exogenous variables (X_j) included in equation (1) are: age, dummy variable indicators for educational attainment (i.e., some college but less than a four-year degree, bachelor's degree, and advanced degree), marital status (i.e., whether currently married), part-time employment (i.e., work less than 35 hours per week), private sector employment, geographic region (i.e., Midwest, West, and South Census regions), occupation (i.e., management and professional, service, and construction, production, transportation, and fabricators), and disability status. The exogenous variables (Z_j) included in equation (2) are the same as in equation (1) minus the dummy variable indicators for part-time employment, private sector employment, and occupation.

We use the estimated coefficients from our joint estimation of equations (1) and (2) for each analysis group (i.e., our eight race/sex/veteran status groups) as input to our decomposition analyses. Following Yun (2000), our decomposition takes the following form for our black male, black female, and white female sub-groups:

$$W_v - W_n = \Delta X(\beta_n) + \Delta\beta(X_v) + \Delta\lambda \quad (3)$$

where W_v and W_n are the mean values for the log annual earnings for veterans and non-veterans, respectively; ΔX represents the difference in sample means of the exogenous variables between veterans and non-veterans; $\Delta\beta$ represents the difference in the estimated coefficients from equation (1) between veterans and non-veterans; $\Delta\lambda$ represents the difference in the sample average of residuals between veterans and non-

⁴ The model expressed in equations (1) and (2) can also be estimated using Heckman's two-step procedure (see Heckman, 1979). However, use of maximum likelihood estimation eliminates the burden of deriving the functional form of the selection bias mechanism. Consequently, maximum likelihood estimation does not introduce a measurement error problem, and is both consistent and efficient (see Kennedy, 2003; Yun, 2000; and Nawata, 1994).

veterans (i.e., $\varepsilon = W - \beta(X)$); β_n represents the estimated coefficients of equation (1) for non-veterans; and X_v represents the means of the exogenous variables of veterans. Our decomposition analysis shown in (3) assumes that the veterans group is the non-discriminatory norm.

For our white male sub-group, our decomposition takes the following form:

$$W_n - W_v = \Delta X(\beta_v) + \Delta \beta(X_n) + \Delta \lambda \quad (4)$$

where terms are similarly defined as in equation (3) and equation (4) assumes that the non-veterans group is the non-discriminatory norm.

As shown in equations (3) and (4), the earnings differential between veterans and non-veterans can be decomposed into three components: (1) a human capital or endowment component; (2) a labor market imperfections component; and (3) a selectivity component. The first term in equations (3) and (4) represents the portion of the earnings differential explained by differences in observed individual characteristics ($\Delta X(\beta_n)$ and $\Delta X(\beta_v)$, respectively) (i.e., due to differences in human capital and endowments). The second term represents the portion of the earnings differential explained by differences in the coefficients in observed characteristics ($\Delta \beta(X_v)$ and $\Delta \beta(X_n)$, respectively) (i.e., due to labor market imperfections). Lastly, the third term represents the portion explained by differences in unobserved individual characteristics leading to labor market participation and their resulting returns ($\Delta \lambda$).

IV. RESULTS

Our sample comprises all civilian individuals 25 to 64 years of age and their characteristics are shown in Table 1.⁵ Currently employed black male, black female, and white female veterans earn on average 10 percent, 20 percent, and 9 percent more, respectively, than their non-veteran counterparts (\$41,823 versus \$37,981; \$36,414 versus \$30,413; and \$39,680 versus \$36,375, respectively).⁶ Currently employed white male veterans earn on average 8 percent less than white male non-veterans (\$56,366 versus \$61,621).

On average, black male veterans were older, more likely to be married, less likely to possess only a high-school diploma, and more likely to live in the southern region of the country (and less likely to live in the Northeast region) than their non-veteran counterparts. Furthermore, those black male veterans currently employed were less likely to be employed in the private sector but more likely to be employed in a management or professional occupation.

As for black female veterans, on average they were more likely to be divorced, more likely to possess at least some college or associate's degree, and more likely to live in the southern region of the country (and less likely to live in the Northeast region). As was the case for black male veterans, those black female veterans currently employed were less likely to be employed in the private sector but more likely to be employed in a management or professional occupation.

⁵ Our sample does not include individuals in group quarters. Appendix Table A1 shows descriptive statistics for the same sample structure but for 2007 data. Given our goal of further extending Holder (2007), which used 2005 ACS data, we are using 2005 ACS data in this paper. Future work will replicate this paper but use the 2007 ACS data to see if our findings and conclusions still hold.

⁶ While the earnings differences between veterans and non-veterans for black males and white females are statistically significant, the earnings differentials between veterans and non-veterans for black males (i.e., 10 percent) and white females (i.e., 9 percent) are not themselves significantly different from each other.

For white female veterans, on average they were less likely to be married, more likely to possess some college or associate's degree, and more likely to live in the southern region of the country (and less likely to live in the Midwest region). Those white female veterans currently employed were less likely to be employed in the private sector and less likely to be employed in the sales and office occupations.

Lastly, white male veterans on average were older, more likely to be married, less likely to possess a bachelor's degree or above, and more likely to live in the southern region of the country. Those white male veterans currently employed were more likely to be employed in the government sector and less likely to be employed in a management or professional occupation than their non-veteran counterparts.

The patterns observed in our descriptive statistics suggest that all veteran groups are being filtered into "nontraditional" occupations.⁷ While this seems to benefit women and minorities, it appears to have the opposite effect for white males. If white males are considered to be at the "top of the heap" in regard to advantages and opportunities, and white male veterans get sorted into jobs they wouldn't normally have as civilians, maybe this occupational sorting contributes to the earnings results we observe.

In order to further explore the veteran/non-veteran earnings differentials shown in Table 1, we first estimate our above described model for each sex/race sub-group by pooling together both non-veterans and veterans, and incorporating into our earnings equation a veteran status dummy variable that equals one if an individual is a veteran and zero otherwise. Then we separately estimate the same regression model for both the veteran and non-veteran sex/race sub-groups, minus the veteran dummy variable. As

⁷ For example, because women cannot hold combat-related jobs, they are less likely than male veterans to receive skills in the military that are difficult to transfer into civilian jobs, thereby giving them occupational opportunities not available to women non-veterans.

discussed above, the separate sub-group earnings equation regression results provide the basis for decomposing the observed veteran/non-veteran earnings differentials shown in Table 1.

Tables 2, 3, 4, and 5 show the regression results of the earnings and participation equations (i.e., equations (1) and (2) from above) for the pooled samples and the veteran and non-veteran sex/race sub-groups. Focusing on the earnings equation, we will first discuss the results for the pooled samples, followed by a discussion of the sex/race sub-group regression results and decomposition analyses.

Beginning with the black male sub-group, and for the pooled sample (column (1)), of particular note is the fact that the veteran status dummy variable is significant and positive, indicating that being a veteran results in higher levels of earnings. Even after accounting for selectivity, the magnitude of this coefficient implies that those black males who are veterans earn 7 percent more than black male non-veterans, which is less than the observed differential without accounting for selectivity as discussed above (i.e., 10 percent).⁸

For the remaining independent variables of the earnings equation, the intercept is positive, and the age and age-squared coefficients have the expected signs and magnitude, respectively, demonstrating the existence of the typical hump-shaped age-earnings profile. As indicated by the positive and increasing coefficients on the education dummy variables, and relative to those possessing a high-school diploma or less, each successive level of educational attainment on average translates into higher

⁸ If β is the estimated coefficient on a dummy variable X where the dependent variable is $\ln(Y)$, then the percentage difference in the predicted value of Y when X equals 1 versus when X equals 0 is equal to $100[\exp(\beta) - 1]$. Also, the correlation coefficient, ρ_{ev} , is significant, indicating that selection bias is evident in the data and should be taken into account in estimating our model. The correlation coefficients for the other three sex/race groups (discussed below) are also significant.

earnings: 21 percent more for some college education, 45 percent more for a bachelor's degree, and 70 percent more for an advanced degree. Married black males on average earn 17 percent more than non-married black males. Relative to those living in the Northeast region of the U.S., those living in the South and Midwest regions earn less on average (13 percent and 8 percent less, respectively), while those living in the West region earn more (3 percent) on average. Those possessing a managerial or professional occupation earn the most on average (25 percent more compared to those employed in the sales and office occupations) while those employed in the services occupations earn the least on average. Not surprisingly, those employed part time would expect to have lower earnings (66 percent less) than those employed full-time and those with a disability earn on average 22 percent less than those not possessing a disability.

For the black female sub-group, again the veteran status dummy variable is significant and positive, implying that after accounting for selectivity, veterans earn on average 9 percent more, and roughly half the earnings differential evident when not accounting for selectivity. Many of the remaining independent variables are similar to the results found for black males with the data again demonstrating the existence of the typical hump-shaped age-earnings profile and increasing returns to education.

The veteran status dummy variable for white females is also significant and positive, implying that after accounting for selectivity white female veterans earn on average 4 percent more, roughly a third of the earnings differential evident when not accounting for selectivity. Again, the remaining independent variables are similar to the results found for the black male and female sub-groups, except that the signs of the married and private sector indicator variables are reversed.

Lastly, for white males the veteran status dummy variable is significant, but in contrast to the other three sex/race groups, the coefficient is negative. The coefficient implies that after accounting for selectivity, veterans earn on average 2 percent less than non-veterans, roughly a quarter of the earnings differential evident when not accounting for selectivity. Again, the results for the other independent variables are similar to the other three sub-groups.

Using equation (3), and as previously discussed, the veteran/non-veteran earnings differential for the black male, black female, and white female sub-groups demonstrated in Tables 1, 2, 3, and 5 can be decomposed into three components: (1) a human capital or endowment component; (2) a labor market imperfections component; and (3) a selectivity component. Using equation (4), the veteran/non-veteran earnings differential for the white male sub-group demonstrated in Tables 1 and 4 can also be decomposed into the three components discussed above. The three components of equations (3) and (4) can be calculated by estimating equations (1) and (2) for both the veteran and non-veteran sex/race sub-groups separately.

Columns (2) and (3) of Tables 2, 3, 4, and 5 show the regression results for the veteran and non-veteran sex/race sub-groups. As can be seen in column (2) of Tables 2, 3, 4, and 5, the results for the non-veteran groups mirror the results of the pooled samples: all of the coefficient signs are the same and the magnitudes of the coefficients are very similar.

For the veteran groups (column (3) of Tables 2, 3, 4, and 5), we find differences in the signs and magnitudes of the coefficients compared to the non-veteran group results. First, for all four sex/race groups, and relative to a person who only possesses a high

school diploma, the returns to education for veterans are in most cases lower compared to the returns experienced by non-veterans.

Second, the return to working in the private sector differs by sex/race group and veteran status. Black male veterans on average earn 10 percent less for working in the private sector while non-veterans earn on average 3 percent less. Black female veterans and non-veterans experience similar negative returns to working in the private sector. For the white sub-groups, non-veterans experience higher returns to working in the private sector compared to veterans.

Lastly, relative to those employed in the sales and office occupations, black male and female non-veterans experience higher returns for management and professional occupations compared to veterans: black male and female non-veterans can expect to earn 26 percent and 25 percent more, respectively, for being employed in a managerial or professional occupation while black male and female veterans can expect to earn 20 percent and 15 percent more, respectively.⁹

Using the regression results from columns (2) and (3) of Tables 2, 3, 4, and 5, we can now calculate the three decomposition components of equation (3). Table 6 shows the results of our decomposition analyses. Recall, our decomposition methodology shown in equation (3) assumes that the veteran group is the non-discriminatory norm for the black male, black female, and white female sub-groups. For the white male sub-group, the non-veteran group is the non-discriminatory norm. The mean sample

⁹ The higher returns for black male and female non-veterans who work in management and professional occupations (i.e., 26 percent and 25 percent, respectively) are not statistically different from each other. The same is the case for the returns experienced by black male and female veterans (i.e., 20 percent and 15 percent, respectively).

characteristics (i.e., the means of X_j from equation (1)) used in decomposing the earnings differential are shown in Appendix Table A1.

The decomposition results in Table 6 show that almost sixty percent of the earnings differential between black male veterans and non-veterans can be explained by differences in human capital or endowment factors, such as age, education, marital status, and disability status, and employment characteristics, such as part-time or full-time work status, and occupation. The analogous proportions for the black female, white male, and white female sub-groups are 62 percent, 55 percent, and 70 percent, respectively.

However, even though we can explain a majority of the veteran/non-veteran earnings differential for our four sex/race sub-groups, the unexplained portion (i.e., the portion attributable to labor market imperfections) of the decomposition is still sizeable. The unexplained portion suggests that black male, black female, and white female non-veterans are facing labor markets that are more favorable to their veteran counterparts, and white male veterans are facing labor markets that are more favorable to white male non-veterans. In other words, if there were only labor market imperfections confronting black male, black female, and white female non-veterans (and veterans in the case of the white male sub-group), the earnings differential would be smaller than the observed differential, though still present.¹⁰

The reasons for this labor market flaw are not readily explainable given our data. Data that would aid in explaining the veteran/non-veteran earnings differentials would be

¹⁰ The earnings differential would be 60 percent lower (0.0578 log points versus 0.1447 log points) for black males; 62 percent lower (0.0821 log points versus 0.2140 log points) for black females; 65 percent lower (0.0401 log points versus 0.1161 log points) for white females; and 50 percent lower (0.0261 log points versus 0.0522 log points) for white males.

data on employer preferences and government programs designed to encourage the employment of veterans; however, we do not have such data.

Many employers have positive attitudes towards recruiting candidates with military experience.¹¹ Among them are: veterans have the proven ability to learn new skills and concepts; veterans understand the rigors of tight schedules and limited resources; and veterans are usually aware of technical trends pertinent to industry. Also, many companies consider hiring veterans to be a cost-effective solution to staffing as veterans come out of the military with the transferable skills to “hit the ground running.” Employers can also take advantage of the wealth of resources available from outplacement programs and career centers geared specifically to helping service members make the transition to the civilian workforce.¹²

Gaining employees with an attractive skill set is not the only reason employers may seek out veterans. There are federal tax credits available for some businesses hiring veterans.¹³ For example, the Work Opportunity Tax Credit (WOTC) is a federal tax credit available to all private sector businesses, and from the employer’s perspective, lowers the opportunity cost of hiring a veteran relative to a non-veteran.¹⁴

Returning to our decomposition results in Table 6, the portion of the earnings differential attributable to selectivity differences indicates that differences in how male non-veterans and veterans select into the labor market favor veterans, while selectivity

¹¹ The website <http://www.hirevetsfirst.gov>, devoted to promoting the employment of veterans, provides information concerning the benefits of hiring veterans and employer testimonials concerning the employment of veterans.

¹² For example, <http://www.monster.com> powers its own veteran recruiting site called <http://www.military.com>.

¹³ For more information concerning tax incentives targeting veteran employment, see <http://www.military.com/Finance/content/0,15356,89658,00.html>.

¹⁴ Veterans receiving food stamps and those with service-connected disabilities are two of the groups targeted by the WOTC. More information concerning the WOTC can be found at: <http://www.doleta.gov/business/Incentives/opptax/>.

differences in how female non-veterans and veterans select into the labor market favor non-veterans. Recall, this effect is caused by differences in unobserved characteristics and the returns to these characteristics. Differences in unobserved characteristics, such as ability and motivation, indicate that black male and white male veterans have an advantage over non-veterans and this advantage increases the earnings differential by 0.0021 log points for black males, while decreasing the earnings differential by -0.0027 log points for white males. For black and white females, returns to unobserved characteristics decrease the earnings differential by -0.0005 log points and -0.0049 log points, respectively.

Lastly, a brief note about self-selection issues concerning the decisions to enlist and separate from military service that arise in any study of veteran and non-veteran earnings differentials. First, because those enlisting in the Armed Forces chose the military over other alternatives and, second, because veterans represent those service members who have chose to separate from the military at the end of their term of service, the potential for self-selection bias arises concerning both of these decisions as these decisions are based on unobservable characteristics. Individuals are not randomly chosen into the military in the AVF environment. They choose to join and the military chooses whether or not to accept them based on strict criteria. Individuals who volunteer for military service may be those who face poor civilian employment and earnings opportunities while those who choose not to serve have better opportunities. Also, the standards and qualifications (i.e., physical and mental requirements) for entry into the military set veterans apart from non-veterans. It may be argued that any differences between veterans and non-veterans could be due to the fact that volunteers for the Armed

Forces are different from non-volunteers in ways that tend to have an impact on the dependent variable in our analysis. If this is true, the effects ascribed to military service may actually be due to these pre-service characteristics and not to military service at all, or a combination of both.

V. CONCLUSION

In this paper, we analyze and decompose the earnings differential observed between male and female veterans and non-veterans. The purpose was to gain a better understanding of the veteran/non-veteran earnings differential observed in the data by estimating a straightforward model of earnings to determine the extent to which human capital and selectivity differences play a role in explaining the earnings differential. Our data come from the 2005 American Community Survey (ACS).

Our data show that currently employed black male, black female, and white female veterans, aged 25 to 64, earn on average 10 percent, 20 percent, and 9 percent more, respectively, than their non-veteran counterparts ((\$41,823 versus \$37,981, \$36,414 versus \$30,413, and \$39,680 versus \$36,375, respectively).¹⁵ After accounting for selectivity, the corresponding percentage differentials are 7 percent, 9 percent, and 4 percent, respectively.¹⁶ Currently employed white male veterans aged 25 to 64 earn on average 8 percent less than white male non-veterans ((\$56,366 versus \$61,621). After accounting for selectivity, the corresponding percentage differential is 2 percent.

On average, black male veterans were older, more likely to be married, less likely to possess only a high-school diploma, and more likely to live in the southern region of

¹⁵ While the earnings differences between veterans and non-veterans for black males and white females are statistically significant, the earnings differentials between veterans and non-veterans for black males (i.e., 10 percent) and white females (i.e., 9 percent) are not themselves significantly different from each other.

¹⁶ The 7 percent and 9 percent earnings differentials are not statistically different from each other.

the country (and less likely to live in the Northeast region) than their non-veteran counterparts. Furthermore, those black male veterans currently employed were less likely to be employed in the private sector and more likely to be employed in a management or professional occupation.

As for black female veterans, on average they were more likely to be divorced, more likely to possess at least some college or associate's degree, and more likely to live in the southern region of the country (and less likely to live in the Northeast region). As was the case for black male veterans, those black female veterans currently employed were less likely to be employed in the private sector and more likely to be employed in a management or professional occupation.

For white female veterans, on average they were less likely to be married, more likely to possess some college or associate's degree, and more likely to live in the southern region of the country (and less likely to live in the Midwest region). Those white female veterans currently employed were less likely to be employed in the private sector and less likely to be employed in the sales and office occupations.

Lastly, white male veterans on average were older, more likely to be married, less likely to possess a bachelor's degree or above, and more likely to live in the southern region of the country. Those white male veterans currently employed were more likely to be employed in the government sector and less likely to be employed in a management or professional occupation than their non-veteran counterparts.

In order to further explore the veteran/non-veteran earnings differentials shown in Table 1, we jointly estimate the labor market participation decision and log-earnings

functions for each of our four sex/race sub-groups. We use the outcomes from this simultaneous estimation as the basis for our Blinder-Oaxaca decomposition analysis.

The decomposition results reveal that almost sixty percent of the earnings differential between black male veterans and non-veterans can be explained by differences in human capital or endowment factors, such as age, education, marital status, and disability status, and employment characteristics, such as part-time or full-time work status, and occupation. The analogous proportions for the black female, white male, and white female sub-groups are 62 percent, 55 percent, and 70 percent, respectively. The remaining portion (i.e., the unexplainable portion) is attributable to labor market imperfections and the lack of data on other variables that may or may not affect the earnings of non-veterans and veterans.

We hypothesize as to the possible sources of this unexplainable portion of the earnings differential and that data on employer preferences and government programs designed to encourage the employment of veterans would aid in explaining the earnings differential. Regardless, we consider the existence of the sizeable unexplained portion as partial evidence of the presence of these anecdotal scenarios.

Lastly, we find weak evidence of selection differences between the veteran and non-veteran groups. In regard to the returns on these unobserved characteristics, such as ability and motivation, our data show that black and white male veterans have an advantage over their non-veteran counterparts, while black and white female non-veterans have an advantage over their veteran counterparts.

Given that the patterns in our descriptive statistics suggest that all veteran groups are being filtered into “nontraditional” occupations, we feel future research aimed at

further explaining the veteran/non-veteran earnings differential should also address within-occupational group differences. We control for between-occupational group differences in our analysis, but we view examining within-occupational group differences as being a fruitful research avenue.

VI. REFERENCES

- Angrist, Joshua D. (1990). "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records," *American Economic Review*, Vol. 80(3), pp. 313-36.
- Browning, Harley, Sally C. Lopreato, and Dudley L. Poston (1973). "Income and Veteran Status: Variations Among Mexican Americans, Blacks, and Anglos," *American Sociological Review*, Vol. 38, pp. 74-85.
- Berger, Mark and Barry Hirsch (1983). "The Civilian Earnings Experience of Vietnam-Era Veterans," *Journal of Human Resources*, Vol. 28, pp. 455-79.
- Cooney, Richard T. Jr., Mady W. Segal, David R. Segal, and William W. Falk (2003). "Racial Differences in the Impact of Military Service on the Socioeconomic Status of Women Veterans," *Armed Forces and Society*, Vol. 30, pp. 53-86.
- DeTray, Dennis (1982). "Veteran Status as a Screening Device," *American Economic Review*, Vol. 72(1), pp. 133-142.
- Greene, William H. (2007). Econometric Analysis, 6th edition, New York, NY: Prentice Hall.
- Heckman, James J. (1979). "Sample Selection Bias as a Specification Error," *Econometrica*, Vol. 47, No. 1, pp. 153-161.
- Hirsh, Barry T. and Stephen L. Mehay (2003). "Evaluating the Labor Market Performance of Veterans Using a Matched Comparison Group Design," *Journal of Human Resources*, Vol. 38 (3), pp. 673-700.
- Hisnanick, John J. (2001). "Military Service as a Factor in the Economic Progress of African American Men: A Post-Draft Era Analysis," *Journal of African American Men*, Vol. 5(4), pp. 65-80.
- Holder, Kelly A. (2007). "Exploring the Veteran-Nonveteran Earnings Differential in the 2005 American Community Survey." Presented at the Annual Meeting of the American Statistical Association. New York, NY.
- Holder, Kelly A. (2008). "Counting Women Veterans: Sources of Data from the U.S. Census Bureau." Presented at the Department of Veterans Affairs Advisory Committee on Women Veterans Meeting. Washington, DC.
- Kennedy, Peter E. (2003). A Guide to Econometrics, 5th edition, Cambridge, MA: The MIT Press.

Nawata, Kazumitsu (1994). "Estimation of Sample Selection Bias Models By the Maximum Likelihood Estimator and Heckman's Two-Step Estimator," *Economic Letters*, Vol. 45, pp. 33-40.

Neuman, Shoshana and Ronald L. Oaxaca (2003). "Estimating Labor Market Discrimination with Selectivity-Corrected Wage Equations: Methodological Considerations and An Illustration from Israel," Discussion Paper No. 2-2003, The Pinhas Sapir Center for Development, Tel-Aviv University.

Office of the Undersecretary of Defense, Personnel, and Readiness (2005). *Population Representation in the Military Services*,
<http://www.defenselink.mil/prhome/poprep2005/contents/contents.html>. Accessed on February 16, 2009.

Phillips, Robert L., Paul J. Andrisani, Thomas N. Daymont, and Curtis L. Gilroy (1992). "The Economic Returns to Military Service: Race-Ethnic Differences," *Social Science Quarterly*, Vol. 73(2) pp. 340-359.

Prokos, Anastasia H. and Irene Padavic (2000). "Earn All That You Can Earn: Income Differences Between Women Veterans and Non-Veterans," *Journal of Political and Military Sociology*, Vol. 28(1), pp. 60-74.

Schwartz, Saul (1986). "The Relative Earnings of Vietnam and Korean-Era Veterans," *Industrial and Labor Relations Review*, Vol. 39, pp. 564-72.

Teachman, Jay D. (2004). "Military Service During the Vietnam Era: Were There Consequences for Subsequent Civilian Earnings?" *Social Forces*, Vol. 83(2), pp. 709-730.

U.S. Department of Labor. <http://www.hirevetsfirst.gov>. Accessed on February 16, 2009.

Yun, Myeong-Su (2000). "Selection Bias and the Decomposition of Wage Differentials," Working Paper, Department of Economics, University of Western Ontario, London, Ontario, Canada.

Table 1. Sample Characteristics of Non-Veterans and Veterans 25 to 64 Years of Age by Race and Sex

Characteristic	Black Males		Black Females		White Males		White Females	
	Non-Veterans n = 6,176,866	Veterans n = 1,521,059	Non-Veterans n = 9,340,970	Veterans n = 257,640	Non-Veterans n = 41,875,333	Veterans n = 10,109,010	Non-Veterans n = 52,705,957	Veterans n = 809,138
Mean annual earnings ¹ (in 2005 dollars)	\$37,981 (\$128)	\$41,623 (\$252)	\$30,413 (\$72)	\$36,414 (\$456)	\$61,621 (\$70)	\$56,366 (\$124)	\$36,375 (\$35)	\$39,680 (\$266)
Age (percent)								
25 to 34 years	30.3 (0.12)	11.9 (0.30)	27.1 (0.06)	23.7 (1.03)	25.2 (0.00)	9.2 (0.12)	21.9 (0.00)	18.6 (0.30)
35 to 54 years	56.3 (0.12)	56.8 (0.43)	55.7 (0.06)	66.9 (1.08)	59.6 (0.06)	41.9 (0.12)	55.7 (0.00)	62.6 (0.42)
55 to 64 years	13.4 (0.12)	29.3 (0.36)	17.1 (0.06)	9.4 (0.55)	15.2 (0.06)	48.9 (0.12)	22.3 (0.00)	18.7 (0.36)
Educational Attainment (percent)								
High-school diploma or less	56.2 (0.24)	40.6 (0.55)	47.6 (0.18)	22.2 (1.03)	38.3 (0.12)	36.5 (0.18)	35.6 (0.06)	22.7 (0.36)
Some college or associate's degree	26.3 (0.12)	42.7 (0.55)	33.5 (0.18)	50.9 (1.03)	27.0 (0.06)	37.8 (0.12)	32.0 (0.06)	46.1 (0.42)
Bachelor's degree	12.1 (0.18)	11.6 (0.30)	12.5 (0.12)	17.3 (0.91)	22.1 (0.06)	16.0 (0.12)	21.0 (0.06)	19.8 (0.42)
Advanced degree	5.5 (0.12)	5.2 (0.18)	6.4 (0.06)	9.5 (0.61)	12.6 (0.06)	9.8 (0.00)	11.4 (0.06)	11.4 (0.30)
Marital Status (percent)								
Married	47.2 (0.30)	57.1 (0.42)	36.6 (0.18)	40.1 (1.15)	66.0 (0.12)	72.2 (0.18)	67.0 (0.06)	58.0 (0.55)
Divorced	10.9 (0.18)	19.1 (0.36)	16.5 (0.12)	26.4 (1.21)	11.4 (0.06)	15.9 (0.12)	15.0 (0.06)	23.3 (0.42)
Region (percent)								
Northeast	17.9 (0.12)	10.9 (0.24)	17.3 (0.06)	8.8 (0.49)	20.5 (0.00)	16.4 (0.06)	20.0 (0.00)	13.4 (0.30)
South	55.3 (0.12)	59.9 (0.36)	56.4 (0.06)	68.7 (1.03)	33.2 (0.06)	37.5 (0.12)	34.3 (0.00)	41.3 (0.49)
Midwest	18.2 (0.06)	17.0 (0.24)	18.3 (0.06)	12.5 (0.73)	27.0 (0.00)	25.0 (0.12)	26.4 (0.00)	21.6 (0.42)
West	8.6 (0.06)	12.3 (0.24)	8.1 (0.06)	10.1 (0.67)	19.3 (0.00)	21.1 (0.12)	19.2 (0.00)	23.7 (0.42)
Disabled (percent)	16.7 (0.18)	20.6 (0.36)	18.4 (0.18)	16.6 (0.79)	11.8 (0.06)	18.6 (0.12)	13.1 (0.06)	16.2 (0.30)
Employment (percent)								
Employed	70.9 (0.24)	70.6 (0.42)	68.0 (0.18)	69.8 (1.03)	83.7 (0.06)	75.1 (0.12)	68.5 (0.06)	70.1 (0.42)
Part-time ¹	9.3 (0.18)	8.1 (0.30)	15.7 (0.18)	11.8 (1.03)	6.6 (0.06)	7.8 (0.06)	23.4 (0.06)	16.7 (0.49)
Private sector ¹	76.0 (0.24)	63.0 (0.67)	71.2 (0.18)	54.8 (1.46)	72.0 (0.06)	67.6 (0.18)	71.6 (0.06)	65.4 (0.55)
Occupation Group ¹ (percent)								
Management and professional	22.8 (0.30)	24.4 (0.49)	33.4 (0.24)	41.7 (1.46)	39.2 (0.06)	33.6 (0.18)	44.5 (0.12)	46.1 (0.67)
Service	18.8 (0.24)	19.7 (0.49)	26.2 (0.18)	15.3 (0.85)	8.4 (0.06)	10.7 (0.12)	14.2 (0.06)	12.8 (0.42)
Sales and office	16.7 (0.18)	17.5 (0.49)	30.9 (0.24)	33.3 (1.28)	17.7 (0.06)	16.9 (0.12)	35.1 (0.06)	30.5 (0.49)
Other	41.7 (0.24)	38.4 (0.45)	9.5 (0.11)	9.7 (0.65)	34.7 (0.06)	38.8 (0.13)	6.2 (0.03)	10.6 (0.31)

¹ For those individuals employed.

² Federal surveys now give respondents the option of reporting more than one race. There are two basic ways of defining a race group. A group such as Black may be defined as those who reported Black and no other race (the race-alone or single-race concept) or as those who reported Black regardless of whether they also reported another race (the race-alone-or-in-combination concept). This table shows data using the first approach (race alone). The use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. Information on people who reported more than one race, such as White and American Indian and Alaska Native, or Asian and Black or African American, is available from Census 2000 through the American Factfinder[®]. About 2.6 percent of people reported more than one race in Census 2000.

Note: All estimates are weighted and standard errors are in parentheses.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy/2005.pdf>

Table 2. Regression Results for Black Males 25 to 64 Years of Age

Earnings Equation¹:

Independent Variable	(1) All n = 5,446,647	(2) Non-Veterans n = 4,374,667	(3) Veterans n = 1,071,980
	Coefficient	Coefficient	Coefficient
Constant	9.1426 *** (0.0062)	9.0978 *** (0.0069)	9.7615 *** (0.0156)
Veteran Status	0.0644 *** (0.0008)	---	---
Age	0.0479 *** (0.0003)	0.0478 *** (0.0003)	0.0306 *** (0.0007)
Age-squared	-0.0005 *** (0.0000)	-0.0005 *** (0.0000)	-0.0003 *** (0.0000)
Some College	0.1925 *** (0.0008)	0.2076 *** (0.0009)	0.1299 *** (0.0016)
Bachelor's Degree	0.3706 *** (0.0011)	0.3834 *** (0.0013)	0.3031 *** (0.0024)
Advanced Degree	0.5298 *** (0.0015)	0.5475 *** (0.0017)	0.4394 *** (0.0034)
Married	0.1616 *** (0.0007)	0.1595 *** (0.0008)	0.1614 *** (0.0015)
Part-time	-1.0772 *** (0.0011)	-1.0546 *** (0.0012)	-1.1743 *** (0.0025)
Private Sector	-0.0454 *** (0.0007)	-0.0267 *** (0.0008)	-0.1010 *** (0.0014)
Midwest Region	-0.0858 *** (0.0011)	-0.0770 *** (0.0012)	-0.1280 *** (0.0028)
West Region	0.0331 *** (0.0013)	0.0465 *** (0.0015)	-0.0152 *** (0.0029)
South Region	-0.1354 *** (0.0009)	-0.1307 *** (0.0010)	-0.1599 *** (0.0023)
Management and Professional Occupations	0.2215 *** (0.0011)	0.2347 *** (0.0012)	0.1811 *** (0.0022)
Service Occupations	-0.2153 *** (0.0011)	-0.2180 *** (0.0012)	-0.2004 *** (0.0022)
Other Occupations	-0.0419 *** (0.0009)	-0.0421 *** (0.0011)	-0.0324 *** (0.0020)
Disability Status	-0.2483 *** (0.0019)	-0.2674 *** (0.0022)	-0.1752 *** (0.0038)
Sigma (σ_e)	0.7394 *** (0.0002)	0.7473 *** (0.0002)	0.7025 *** (0.0005)
Rho (ρ_{ev})	0.0097 *** (0.0027)	0.0071 *** (0.0031)	0.0194 *** (0.0057)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is the natural log of earnings over the last 12 months.

*** Indicates the coefficient is significant at the one percent level.

Unweighted counts: Non-veterans: 43,469; Veterans: 11,737.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 2. Regression Results for Black Males 25 to 64 Years of Age (continued)

Participation Equation¹:

Independent Variable	(1) All n = 7,693,044	(2) Non-Veterans n = 6,173,191	(3) Veterans n = 1,519,853
	Coefficient	Coefficient	Coefficient
Constant	-1.3635 *** (0.0084)	-1.1799 *** (0.0091)	-1.7131 *** (0.0242)
Age	0.1029 *** (0.0004)	0.0926 *** (0.0004)	0.1261 *** (0.0011)
Age-squared	-0.0013 *** (0.0000)	-0.0012 *** (0.0000)	-0.0016 *** (0.0000)
Some College	0.3069 *** (0.0012)	0.3343 *** (0.0014)	0.1952 *** (0.0026)
Bachelor's Degree	0.5540 *** (0.0018)	0.5738 *** (0.0020)	0.4608 *** (0.0042)
Advanced Degree	0.5848 *** (0.0027)	0.6038 *** (0.0030)	0.5041 *** (0.0060)
Married	0.3463 *** (0.0011)	0.3579 *** (0.0012)	0.2935 *** (0.0024)
Midwest Region	-0.1303 *** (0.0017)	-0.1458 *** (0.0019)	-0.0355 *** (0.0044)
West Region	-0.0457 *** (0.0021)	-0.0976 *** (0.0024)	0.1552 *** (0.0049)
South Region	0.0664 *** (0.0015)	0.0489 *** (0.0016)	0.1619 *** (0.0038)
Disability Status	-1.2354 (0.0013)	-1.2191 (0.0015)	-1.2796 (0.0028)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is equal to one for employed and zero otherwise.

*** Indicates the coefficient is significant at the one percent level.

Unweighted counts: Non-veterans: 63,928; Veterans: 17,467.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 3. Regression Results for Black Females 25 to 64 Years of Age

Earnings Equation¹:

Independent Variable	(1) All n = 6,343,005	(2) Non-Veterans n = 6,163,385	(3) Veterans n = 179,620
	Coefficient	Coefficient	Coefficient
Constant	8.8307 *** (0.0061)	8.8163 *** (0.0061)	9.5749 *** (0.0471)
Veteran Status	0.0829 *** (0.0018)	---	---
Age	0.0547 *** (0.0003)	0.0552 *** (0.0003)	0.0325 *** (0.0021)
Age-squared	-0.0005 *** (0.0000)	-0.0005 *** (0.0000)	-0.0003 *** (0.0000)
Some College	0.1759 *** (0.0008)	0.1791 *** (0.0008)	0.0088 (0.0054)
Bachelor's Degree	0.4266 *** (0.0011)	0.4302 *** (0.0011)	0.2546 *** (0.0073)
Advanced Degree	0.6089 *** (0.0014)	0.6083 *** (0.0014)	0.5512 *** (0.0084)
Married	0.0321 *** (0.0006)	0.0338 *** (0.0006)	-0.0465 *** (0.0040)
Part-time	-0.9910 *** (0.0008)	-0.9887 *** (0.0008)	-1.0766 *** (0.0059)
Private Sector	-0.0179 *** (0.0006)	-0.0172 *** (0.0006)	-0.0298 *** (0.0039)
Midwest Region	-0.1096 *** (0.0010)	-0.1098 *** (0.0010)	-0.0849 *** (0.0083)
West Region	-0.0162 *** (0.0013)	-0.0133 *** (0.0013)	-0.0881 *** (0.0087)
South Region	-0.1969 *** (0.0008)	-0.1974 *** (0.0008)	-0.1724 *** (0.0068)
Management and Professional Occupations	0.2172 *** (0.0008)	0.2202 *** (0.0008)	0.1375 *** (0.0046)
Service Occupations	-0.2469 *** (0.0008)	-0.2483 *** (0.0008)	-0.1139 *** (0.0058)
Other Occupations	-0.0707 *** (0.0011)	-0.0655 *** (0.0011)	-0.2296 *** (0.0069)
Disability Status	-0.2334 *** (0.0016)	-0.2373 *** (0.0016)	-0.1300 *** (0.0092)
Sigma (σ_e)	0.7477 *** (0.0002)	0.7460 *** (0.0002)	0.7911 *** (0.0013)
Rho (ρ_{ev})	0.0105 *** (0.0025)	0.0119 *** (0.0025)	0.0094 (0.0188)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is the natural log of earnings over the last 12 months.

*** Indicates the coefficient is significant at the one percent level.

Unweighted counts: Non-veterans: 68,842; Veterans: 2,043.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 3. Regression Results for Black Females 25 to 64 Years of Age (continued)

Participation Equation¹:

Independent Variable	(1) All n = 9,596,888	(2) Non-Veterans n = 9,339,348	(3) Veterans n = 257,540
	Coefficient	Coefficient	Coefficient
Constant	-1.7605 *** (0.0072)	-1.7577 *** (0.0072)	-2.1779 *** (0.0491)
Age	0.1131 *** (0.0003)	0.1129 *** (0.0003)	0.1355 *** (0.0023)
Age-squared	-0.0014 *** (0.0000)	-0.0014 *** (0.0000)	-0.0016 *** (0.0000)
Some College	0.3570 *** (0.0001)	0.3609 *** (0.0010)	0.2404 *** (0.0066)
Bachelor's Degree	0.5804 *** (0.0015)	0.5835 *** (0.0015)	0.4757 *** (0.0088)
Advanced Degree	0.6896 *** (0.0020)	0.7004 *** (0.0021)	0.4167 *** (0.0105)
Married	-0.0274 *** (0.0009)	-0.0235 *** (0.0009)	-0.1558 *** (0.0055)
Midwest Region	-0.0728 *** (0.0015)	-0.0745 *** (0.0015)	0.0288 ** (0.0118)
West Region	-0.1127 *** (0.0019)	-0.1172 *** (0.0019)	0.0523 *** (0.0125)
South Region	0.0088 *** (0.0012)	0.0116 *** (0.0012)	-0.0132 (0.0097)
Disability Status	-1.0767 *** (0.0012)	-1.0835 *** (0.0012)	-0.8139 *** (0.0071)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is equal to one for employed and zero otherwise.

*** Indicates the coefficient is significant at the one percent level.

** Indicates the coefficient is significant at the five percent level.

Unweighted counts: Non-veterans: 107,513; Veterans: 3,035.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 4. Regression Results for White Males 25 to 64 Years of Age

Earnings Equation¹:

Independent Variable	(1) All n = 42,554,396	(2) Non-Veterans n = 34,975,956	(3) Veterans n = 7,578,440
	Coefficient	Coefficient	Coefficient
Constant	8.4720 *** (0.0021)	8.3869 *** (0.0023)	9.0483 *** (0.0063)
Veteran Status	-0.0240 *** (0.0003)	---	---
Age	0.0819 *** (0.0001)	0.0857 *** (0.0001)	0.0557 *** (0.0003)
Age-squared	-0.0008 *** (0.0000)	-0.0009 *** (0.0000)	-0.0006 *** (0.0000)
Some College	0.1658 *** (0.0003)	0.1719 *** (0.0003)	0.1330 *** (0.0006)
Bachelor's Degree	0.3991 *** (0.0003)	0.4083 *** (0.0004)	0.3372 *** (0.0009)
Advanced Degree	0.6162 *** (0.0004)	0.6197 *** (0.0005)	0.5945 *** (0.0011)
Married	0.2266 *** (0.0002)	0.2305 *** (0.0003)	0.2004 *** (0.0006)
Part-time	-1.0525 *** (0.0004)	-1.0342 *** (0.0005)	-1.1192 *** (0.0010)
Private Sector	0.1106 *** (0.0002)	0.1261 *** (0.0003)	0.0416 *** (0.0006)
Midwest Region	-0.1002 *** (0.0003)	-0.1031 *** (0.0003)	-0.0816 *** (0.0008)
West Region	-0.0117 *** (0.0003)	-0.0114 *** (0.0004)	-0.0078 *** (0.0009)
South Region	-0.0972 *** (0.0003)	-0.1011 *** (0.0003)	-0.0737 *** (0.0008)
Management and Professional Occupations	0.1928 *** (0.0003)	0.1800 *** (0.0004)	0.2611 *** (0.0008)
Service Occupations	-0.2093 *** (0.0005)	-0.2232 *** (0.0005)	-0.1469 *** (0.0010)
Other Occupations	-0.1028 *** (0.0003)	-0.1156 *** (0.0004)	-0.0326 *** (0.0008)
Disability Status	-0.2910 *** (0.0006)	-0.3051 *** (0.0007)	-0.2356 *** (0.0012)
Sigma (σ_e)	0.7204 *** (0.0001)	0.7188 *** (0.0001)	0.7244 *** (0.0002)
Rho (ρ_{ev})	0.0266 *** (0.0009)	0.0194 *** (0.0010)	0.0221 *** (0.0019)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is the natural log of earnings over the last 12 months.

***: Indicates the coefficient is significant at the one percent level.

Unweighted counts: Non-veterans: 567,695; Veterans: 129,273.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 4. Regression Results for White Males 25 to 64 Years of Age (continued)

Participation Equation¹:

Independent Variable	(1) All n = 51,898,161	(2) Non-Veterans n = 41,807,002	(3) Veterans n = 10,091,159
	Coefficient	Coefficient	Coefficient
Constant	-1.5232 *** (0.0037)	-1.3472 *** (0.0040)	-2.5101 *** (0.0103)
Age	0.1363 *** (0.0002)	0.1270 *** (0.0002)	0.1814 *** (0.0004)
Age-squared	-0.0018 *** (0.0000)	-0.0017 *** (0.0000)	-0.0023 *** (0.0000)
Some College	0.2023 *** (0.0005)	0.2204 *** (0.0006)	0.1455 *** (0.0011)
Bachelor's Degree	0.3385 *** (0.0006)	0.3597 *** (0.0007)	0.2428 *** (0.0014)
Advanced Degree	0.4193 *** (0.0008)	0.4346 *** (0.0009)	0.3459 *** (0.0018)
Married	0.3340 *** (0.0005)	0.3456 *** (0.0005)	0.2935 *** (0.0010)
Midwest Region	0.0084 *** (0.0007)	0.0107 *** (0.0007)	-0.0005 (0.0015)
West Region	-0.0289 *** (0.0007)	-0.0268 *** (0.0008)	-0.0295 *** (0.0015)
South Region	0.0118 *** (0.0006)	0.0130 *** (0.0007)	0.0167 *** (0.0014)
Disability Status	-1.1569 *** (0.0006)	-1.1691 *** (0.0007)	-1.1220 *** (0.0011)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is equal to one for employed and zero otherwise.

*** Indicates the coefficient is significant at the one percent level.

Unweighted counts: Non-veterans: 682,726; Veterans: 174,905.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 5. Regression Results for White Females 25 to 64 Years of Age

Earnings Equation¹:

Independent Variable	(1) All n = 36,612,438	(2) Non-Veterans n = 36,046,689	(3) Veterans n = 565,749
	Coefficient	Coefficient	Coefficient
Constant	8.6877 *** (0.0026)	8.6852 *** (0.0026)	8.9227 *** (0.0235)
Veteran Status	0.0352 *** (0.0010)	---	---
Age	0.0602 *** (0.0001)	0.0602 *** (0.0001)	0.0514 *** (0.0010)
Age-squared	-0.0006 *** (0.0000)	-0.0006 *** (0.0000)	-0.0005 *** (0.0000)
Some College	0.1793 *** (0.0003)	0.1800 *** (0.0003)	0.1229 *** (0.0028)
Bachelor's Degree	0.3935 *** (0.0004)	0.3942 *** (0.0004)	0.3247 *** (0.0035)
Advanced Degree	0.5921 *** (0.0005)	0.5921 *** (0.0005)	0.5734 *** (0.0042)
Married	-0.0231 *** (0.0003)	-0.0229 *** (0.0003)	-0.0312 *** (0.0024)
Part-time	-1.0158 *** (0.0003)	-1.0146 *** (0.0003)	-1.1025 *** (0.0028)
Private Sector	0.1397 *** (0.0003)	0.1415 *** (0.0003)	0.0284 *** (0.0021)
Midwest Region	-0.1128 *** (0.0004)	-0.1128 *** (0.0004)	-0.0990 *** (0.0035)
West Region	-0.0129 *** (0.0004)	-0.0131 *** (0.0004)	0.0140 *** (0.0034)
South Region	-0.1400 *** (0.0003)	-0.1403 *** (0.0004)	-0.1047 *** (0.0032)
Management and Professional Occupations	0.2461 *** (0.0003)	0.2451 *** (0.0003)	0.3346 *** (0.0026)
Service Occupations	-0.2845 *** (0.0004)	-0.2870 *** (0.0004)	-0.1063 *** (0.0034)
Other Occupations	-0.1118 *** (0.0005)	-0.1151 *** (0.0006)	0.0649 *** (0.0037)
Disability Status	-0.2663 *** (0.0007)	-0.2657 *** (0.0007)	-0.2744 *** (0.0051)
Sigma (σ_e)	0.7677 *** (0.0001)	0.7677 *** (0.0001)	0.7611 *** (0.0007)
Rho (ρ_{ev})	0.0253 *** (0.0011)	0.0252 *** (0.0012)	0.0093 (0.0093)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is the natural log of earnings over the last 12 months.

*** Indicates the coefficient is significant at the one percent level.

Unweighted counts: Non-veterans: 612,589; Veterans: 9,489.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 5. Regression Results for White Females 25 to 64 Years of Age (continued)

Participation Equation¹:

Independent Variable	(1) All n = 53,443,976	(2) Non-Veterans n = 52,635,785	(3) Veterans n = 808,191
	Coefficient	Coefficient	Coefficient
Constant	-1.5639 *** (0.0031)	-1.5560 *** (0.0031)	-2.1060 *** (0.0272)
Age	0.1177 *** (0.0001)	0.1173 *** (0.0001)	0.1492 *** (0.0012)
Age-squared	-0.0014 *** (0.0000)	-0.0014 *** (0.0000)	-0.0018 *** (0.0000)
Some College	0.2650 *** (0.0004)	0.2670 *** (0.0004)	0.1284 *** (0.0039)
Bachelor's Degree	0.2990 *** (0.0005)	0.2990 *** (0.0005)	0.2648 *** (0.0047)
Advanced Degree	0.5054 *** (0.0007)	0.5063 *** (0.0007)	0.4148 *** (0.0058)
Married	-0.3722 *** (0.0004)	-0.3725 *** (0.0004)	-0.3513 *** (0.0032)
Midwest Region	0.0663 *** (0.0006)	0.0675 *** (0.0006)	-0.0373 ** (0.0054)
West Region	-0.0790 *** (0.0006)	-0.0795 *** (0.0006)	-0.0662 *** (0.0053)
South Region	-0.0617 *** (0.0005)	-0.0611 *** (0.0005)	-0.1088 *** (0.0049)
Disability Status	-0.9764 *** (0.0005)	-0.9767 *** (0.0006)	-0.9530 *** (0.0040)

Note: All estimates are weighted and standard errors are in parentheses. Standard errors were calculated from the inverse of the Hessian matrix.

¹ The dependent variable is equal to one for employed and zero otherwise.

*** Indicates the coefficient is significant at the one percent level.

Unweighted counts: Non-veterans: 895,684; Veterans: 13,723.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Table 6. Decomposition of Earnings Differential Between Non-Veterans and Veterans by Race/Sex Group

Group	Earnings Differential (log points)	Contribution Due to			Selectivity Differences (log points/as percentage)
		Human Capital Differences (log points/as percentage)	Labor Market Imperfection Differences (log points/as percentage)		
Black Males¹	0.1447	0.0848 58.60%	0.0578 39.94%	0.0021 1.45%	
Black Females¹	0.2140	0.1324 61.87%	0.0821 38.36%	-0.0005 -0.23%	
White Males²	0.0522	0.0287 54.98%	0.0261 50.00%	-0.0027 -5.17%	
White Females¹	0.1161	0.0809 69.68%	0.0401 34.54%	-0.0049 -4.22%	

¹ The veteran group is the non-discriminatory norm.

² The non-veteran group is the non-discriminatory norm.

Source: 2005 American Community Survey. For more information see <http://www.census.gov/acs/www/Downloads/ACS/accuracy2005.pdf>.

Appendix Table A1. Sample Characteristics of Non-Veterans and Veterans 25 to 64 Years of Age by Race and Sex for the Year 2007

Characteristic	Black Males		Black Females		White Males		White Females	
	Non-Veterans n = 7,122,779	Veterans n = 1,531,856	Non-Veterans n = 9,707,426	Veterans n = 249,745	Non-Veterans n = 43,688,907	Veterans n = 9,614,265	Non-Veterans n = 53,391,018	Veterans n = 820,462
Mean annual earnings ¹ (in 2007 dollars)	\$40,031 (\$167)	\$44,197 (\$334)	\$33,039 (\$111)	\$39,787 (\$623)	\$66,010 (\$120)	\$59,859 (\$200)	\$39,219 (\$52)	\$42,614 (\$445)
2005 Mean annual earnings from Table 1 (in 2007 dollars) ²	\$40,339 (\$136)	\$44,420 (\$268)	\$32,301 (\$79)	\$38,675 (\$484)	\$65,447 (\$74)	\$59,866 (\$132)	\$38,633 (\$37)	\$42,144 (\$282)
Age (percent)								
25 to 34 years	30.7 (0.12)	11.5 (0.30)	26.5 (0.06)	23.7 (1.09)	24.8 (0.00)	9.0 (0.12)	21.7 (0.00)	19.1 (0.49)
35 to 54 years	55.7 (0.12)	57.9 (0.43)	55.3 (0.06)	65.8 (1.09)	58.3 (0.06)	40.8 (0.12)	54.7 (0.00)	62.2 (0.55)
55 to 64 years	13.6 (0.06)	30.6 (0.36)	18.1 (0.06)	10.5 (0.61)	16.9 (0.06)	50.1 (0.12)	23.7 (0.00)	18.7 (0.30)
Educational Attainment (percent)								
High-school diploma or less	58.6 (0.18)	43.0 (0.49)	47.5 (0.18)	22.1 (0.97)	39.0 (0.06)	36.6 (0.18)	34.8 (0.06)	21.5 (0.36)
Some college or associate's degree	24.9 (0.18)	41.4 (0.42)	32.7 (0.18)	48.2 (1.03)	26.5 (0.06)	37.8 (0.18)	31.7 (0.06)	46.7 (0.49)
Bachelor's degree	11.5 (0.12)	10.6 (0.24)	13.1 (0.12)	19.2 (0.91)	22.2 (0.06)	15.9 (0.12)	21.5 (0.06)	19.7 (0.42)
Advanced degree	5.0 (0.06)	5.0 (0.18)	6.7 (0.06)	10.5 (0.55)	12.4 (0.06)	9.6 (0.06)	12.0 (0.06)	12.1 (0.30)
Marital Status (percent)								
Married	41.4 (0.24)	52.5 (0.49)	34.5 (0.18)	36.9 (0.97)	62.8 (0.12)	69.6 (0.18)	65.0 (0.06)	56.1 (0.49)
Divorced	11.2 (0.12)	20.3 (0.36)	16.5 (0.12)	26.0 (1.03)	12.1 (0.06)	17.2 (0.12)	15.4 (0.06)	24.3 (0.49)
Region (percent)								
Northeast	17.7 (0.06)	10.7 (0.24)	16.9 (0.06)	8.3 (0.61)	20.2 (0.00)	15.9 (0.12)	19.7 (0.00)	12.7 (0.36)
South	55.1 (0.12)	61.5 (0.42)	56.9 (0.06)	68.4 (1.03)	33.4 (0.00)	37.6 (0.12)	34.6 (0.00)	41.4 (0.49)
Midwest	18.2 (0.06)	16.3 (0.30)	18.1 (0.06)	12.9 (0.79)	26.8 (0.00)	25.1 (0.06)	26.2 (0.00)	21.7 (0.36)
West	9.1 (0.06)	11.6 (0.24)	8.2 (0.06)	10.5 (0.73)	19.6 (0.00)	21.4 (0.12)	19.5 (0.00)	24.2 (0.49)
Disabled (percent)	18.3 (0.18)	21.8 (0.30)	18.4 (0.18)	16.6 (0.79)	11.8 (0.06)	18.6 (0.12)	13.6 (0.06)	16.7 (0.42)
Employment (percent)								
Employed	85.3 (0.24)	88.0 (0.42)	67.0 (0.18)	73.6 (0.97)	83.0 (0.06)	74.6 (0.12)	69.5 (0.06)	72.1 (0.49)
Part-time	9.6 (0.18)	7.1 (0.24)	14.5 (0.12)	8.5 (0.67)	6.9 (0.06)	7.9 (0.12)	22.9 (0.06)	16.9 (0.49)
Private sector ³	76.4 (0.24)	64.0 (0.42)	71.4 (0.18)	54.5 (1.21)	72.5 (0.06)	67.7 (0.18)	72.1 (0.06)	66.3 (0.55)
Occupation Group ¹ (percent)								
Management and professional	23.8 (0.18)	24.9 (0.49)	34.2 (0.18)	42.6 (1.21)	39.5 (0.06)	34.4 (0.18)	45.5 (0.06)	47.5 (0.61)
Service	18.6 (0.24)	18.6 (0.42)	26.4 (0.18)	18.2 (0.97)	8.8 (0.06)	11.1 (0.12)	14.3 (0.06)	13.5 (0.49)
Sales and office	17.0 (0.18)	17.5 (0.42)	30.3 (0.18)	30.7 (1.21)	17.5 (0.06)	16.5 (0.18)	34.2 (0.06)	28.7 (0.61)
Other	40.6 (0.24)	39.0 (0.49)	9.1 (0.12)	8.5 (0.67)	34.2 (0.06)	38.0 (0.12)	6.0 (0.00)	9.3 (0.24)

¹ For those individuals employed² In order to compare earnings data between years, the estimates must be adjusted for inflation. The 2005 earnings data shown here for comparison purposes were converted to 2007 inflation-adjusted dollars by the CPI-UR factor 1.0620858.³ Federal surveys now give respondents the option of reporting more than one race. There are two basic ways of defining a race group. A group such as Black may be defined as those who reported Black and no other race (the race-alone or single-race concept) or as those who reported Black regardless of whether they also reported another race (the race-alone-or-in-combination concept). This table shows data using the first approach (race alone). The use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. Information on people who reported more than one race, such as White and American Indian and Alaska Native, or Asian and Black or African American, is available from Census 2000 through the American FactFinder[®]. About 2.5 percent of people reported more than one race in Census 2000.

Note: All estimates are weighted and standard errors are in parentheses.

Source: 2005 and 2007 American Community Survey.

Appendix Table A2. Mean Sample Characteristics Used in Decomposing the Annual Earnings Differential¹

Independent Variable	Black Males		Black Females		White Males		White Females	
	Non-Veterans n = 4,374,667	Veterans n = 1,071,980	Non-Veterans n = 6,163,385	Veterans n = 179,620	Non-Veterans n = 34,975,956	Veterans n = 7,578,440	Non-Veterans n = 52,635,785	Veterans n = 808,191
Natural Log of Annual Earnings	10.2378 (0.8878)	10.3826 (0.8206)	10.0110 (0.9254)	10.2250 (0.9177)	10.6769 (0.8751)	10.6247 (0.8561)	10.1444 (0.9656)	10.2606 (0.9409)
Age	40.7 (0.05)	45.8 (0.09)	41.7 (0.04)	41.4 (0.19)	42.2 (0.01)	49.6 (0.03)	43.7 (0.01)	43.9 (0.10)
Age-squared	1756.9 (4.02)	2194.2 (8.01)	1844.5 (3.31)	1788.1 (16.13)	1882.2 (1.14)	2558.8 (2.62)	2020.4 (1.16)	2020.0 (8.60)
Some College	29.0 (0.24)	43.8 (0.46)	36.4 (0.18)	51.0 (1.11)	27.6 (0.06)	38.5 (0.13)	33.2 (0.06)	45.5 (0.51)
Bachelor's Degree	14.7 (0.17)	13.5 (0.31)	15.3 (0.14)	19.6 (0.88)	23.8 (0.06)	17.1 (0.10)	22.8 (0.05)	21.3 (0.42)
Advanced Degree	6.8 (0.12)	5.9 (0.22)	8.1 (0.10)	10.3 (0.67)	13.5 (0.04)	10.7 (0.08)	13.4 (0.04)	12.9 (0.34)
Married	52.4 (0.24)	61.2 (0.45)	38.1 (0.18)	39.3 (1.08)	68.6 (0.06)	74.6 (0.12)	64.6 (0.06)	55.4 (0.51)
Part-time	9.2 (0.14)	8.0 (0.25)	15.6 (0.14)	11.8 (0.71)	6.6 (0.03)	7.8 (0.07)	23.4 (0.05)	16.7 (0.38)
Private Sector	70.2 (0.22)	58.4 (0.45)	60.7 (0.19)	46.9 (1.10)	67.3 (0.06)	63.5 (0.13)	60.0 (0.06)	55.4 (0.51)
Midwest Region	17.1 (0.18)	15.4 (0.33)	17.5 (0.14)	12.4 (0.73)	27.1 (0.06)	25.0 (0.12)	27.4 (0.06)	21.8 (0.42)
West Region	8.6 (0.13)	12.8 (0.31)	7.9 (0.10)	10.3 (0.67)	19.3 (0.06)	21.0 (0.11)	19.0 (0.05)	23.8 (0.44)
South Region	55.8 (0.24)	61.9 (0.45)	56.9 (0.19)	68.6 (1.03)	32.9 (0.06)	37.7 (0.13)	33.0 (0.06)	40.5 (0.50)
Management and Professional Occupations	22.8 (0.20)	24.4 (0.40)	33.4 (0.18)	41.7 (1.09)	39.1 (0.06)	33.6 (0.13)	44.5 (0.06)	46.1 (0.51)
Service Occupations	18.8 (0.19)	19.7 (0.37)	26.2 (0.17)	15.3 (0.80)	8.3 (0.04)	10.7 (0.08)	14.2 (0.04)	12.8 (0.34)
Other Occupations	41.5 (0.24)	38.3 (0.45)	9.5 (0.11)	9.6 (0.65)	34.8 (0.06)	38.7 (0.13)	6.3 (0.03)	10.5 (0.47)
Disability	6.8 (0.12)	8.7 (0.26)	8.2 (0.10)	10.4 (0.67)	6.3 (0.03)	9.9 (0.08)	6.7 (0.03)	9.3 (0.31)

Note: All estimates are weighted and standard errors are in parentheses.

¹ The mean sample characteristics shown are only for those with positive annual earnings.

Unweighted counts: Black Males: Non-veterans: 43,469, Veterans: 11,737; Black Females: Non-veterans: 68,842, Veterans: 2,043; White Males: Non-veterans: 567,695, Veterans: 129,273; White Females: Non-veterans: 895,684, Veterans: 13,723.

Source: 2005 American Community Survey.