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## Women's work after war

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## **Women's Work after War**

### **Upjohn Institute Working Paper 10-169**

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#### **ABSTRACT**

In the more than 30 years following the all-volunteer force (AVF), the proportion of women serving in the military has increased from 1.8 percent just before the AVF to 14.2 percent in 2008. The majority of women do not stay in the military for a 20-year or longer career; like men, most women only serve a few years before transitioning to the civilian workforce. Although the fraction of the military who are women has risen, as has the fraction of veterans who are women, little research informs how female veterans of the AVF fare economically after leaving service, or whether military service benefits minority women who serve in such disproportionate numbers. This paper investigates the civilian employment experiences of female veterans of the AVF using two sources of data. First, population-based data from the American Community Survey are used to evaluate the employment experiences of female veterans. Second, data from an audit study of civilian hiring practices provides additional insight into the experiences of women veterans transitioning from military to civilian work. We find little evidence of a veteran labor market disadvantage, either for white or black women. Both groups exhibit strong patterns of labor force attachment. Only white women show slightly lower rates of employment (among those in the labor force), while black women veterans show consistently advantageous employment profiles. These positive employment outcomes among female veterans at least partly derive from employer preference for hiring veterans over equally qualified nonveteran women.

**JEL Classification Codes:** J01, J24, J70, Z13

**Key Words:** Field Experiments, Veterans, Discrimination, Hiring, Employment

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In the more than 30 years following the all-volunteer force (AVF) the proportion of women serving in the military has increased from 1.8 percent just before the AVF to 14.2 percent in 2008. At the same time, the black women have dramatically increased their representation in the armed forces. Now, more than 33 percent of the women in the military and more than 42 percent of those in the Army are black. Most of these women do not stay in the military for a 20 or more year career; like men, most women only serve a few years before transitioning to the civilian workforce. Although female representation in the ranks of the military has risen and the racial composition of the female military population has grown less demographically representative of the civilian workforce, little research has been done on how the growing numbers of female veterans fare economically after leaving service, or whether the effects of military service differ for minority women.

This paper uses a combination of observational and experimental data to investigate several questions related to the incorporation of female veterans into the civilian labor market. First, we seek to understand whether female veterans and nonveterans exhibit similar rates of labor market participation and employment, and whether these patterns vary by race. Second, we investigate explanations for veteran/nonveteran differences in employment among women by using an audit study of hiring in the civilian labor market. The audit study enhances the study of military service and labor market outcomes in several ways. Prior research has used observational and survey data poorly suited to separate the causal effect of military service per se. Direct observation of employer response to equivalent applicants in the proposed experiment provides explicit causal evidence of differential treatment based on prior military service. The audit study provides a unique contribution to the theoretical literature on the consequences of military service by focusing attention on employers as key actors moderating veterans' transitions from military to

civilian life. Employers are central in most theoretical explanations for differing returns to service, yet prior empirical research focuses on veterans as the unit of observation and analysis.

The paper proceeds by first reviewing previous research on veterans' employment and earnings as key indications of labor market success. We highlight studies focused on women and draw insight from a larger body of research on male veterans where research on female veterans is lacking. We follow with a description of the observational data from the 2005–2007 American Community Survey and follow with a brief description of our experimental procedures. Finally we present the results of the observational and experimental data analyses and discuss the implications of our findings for further research connecting military service and work over the lifecycle.

## **MILITARY SERVICE AND CIVILIAN LABOR MARKET OUTCOMES**

A relatively large body of research has examined the labor market consequences of military service among men. This work has spanned generations, studying veterans of several eras (World War II, the Korean War, the Vietnam War, the Cold War, and the AVF). Much of this work focuses on the earnings of veterans compared with nonveterans, treating earnings as the key indicator of labor market success. This study instead sees employment as the primary indicator of labor market success. Finding the first postmilitary job is perhaps the single largest hurdle facing new veterans and the first postservice civilian job plays a key role in establishing postservice wage levels and future wage trajectories.

Prior research on employment among male veterans suggests they have higher employment rates than their civilian peers and that the veteran advantage is especially high among African Americans. Angrist (1998) used Social Security data linked with military administrative records to study the impact of veteran status on employment and earnings among men. A simple comparison of means suggests veterans had higher employment and earnings, and that most of the documented veteran wage premium stemmed from these employment differences. He employed multiple statistical techniques to control for the selectivity of veterans including regression, matching (of military applicants who did and did not eventually enlist), and an instrumental variables model that capitalized on the misnorming of the military entrance test from 1976. In the years when most men were transitioning between military service and civilian employment, white veterans experienced anywhere from 1 percent lower to 5 percent higher employment rates (depending on the statistical model), while black veterans experienced 5–9 percent higher employment rates over their civilian peers. Thus, black veterans had higher employment rates, net of a host of controls for demographic characteristics and selectivity of military service, while white veterans experienced virtually no difference. Because differences in employment may drive wage differences between veterans and nonveterans, our current research focuses attention on employment and more specifically on the initial job transition between military and civilian employment.

In studying the role of school enrollment and military enlistment on the increase in employment with age, Mare, Winship, and Kubitschek (1984) find military veterans faced high rates of joblessness in moving from military service to the civilian labor market. Using probit models predicting the probability of employment among out-of-school men, they find a negative effect of veteran status on employment probability, but that the veteran penalty diminished with

age. They also find that the veteran employment penalty is similar to the employment challenges facing recent school leavers. Their results suggest that in both the school and military transitions to the labor force, there may be a substantial job search before applicants find work. In this project, we focus on how employers evaluate applicants making the transition from military to work compared to a recent college graduate.

Two earlier studies of the employment experiences of Vietnam veterans are noteworthy. In one study, when presented with profiles of two equally qualified fictitious job applicants, one of whom had served in Vietnam, middle managers made lower recommendations to hire the veteran and perceived the veteran applicant to have a higher probability of psychological problems (Bordieri and Drehmer 1984). On the other hand, surveying more than 500 personnel officers, D'Anton (1983) found that Vietnam veteran status increased the acceptability of black male job applicants with combat veterans rated more highly than noncombat veterans, who outranked black nonveterans. However, the opposite pattern was found for white veterans; white combat veterans were rated most negatively, followed by noncombat veterans and finally white nonveterans received the most favorable ratings. These prior studies are limited in that neither observed real hiring practices of these agents when they were unaware they were being observed.

Taken together, these studies suggest that recent veterans are likely to experience difficulty in the civilian labor market. But these studies focus only on men and they apply only to earlier eras where the societal reception of military veterans may have been more unwelcoming. We elaborate and extend this work by looking at female veterans during a time of war fought exclusively with volunteers.

## **EXPLANATIONS FOR VETERANS' LABOR MARKET OUTCOMES**

What explains the employment and earnings differences between veterans and nonveterans, and why does this veteran effect vary by race? The literature on the labor market consequences of military service offers several possible mechanisms by which veteran and nonveteran employment and wage outcomes might differ: 1) the selectivity of those who serve, 2) the loss or gain in human capital from military training and experience, 3) changes in social and cultural capital by the “bridging” environment of the military, and 4) the signaling or screening role of military experience.

### **Selection**

Military enlistment is not a random event, and those who join differ from their nonserving counterparts in numerous ways. Several selection processes are important to note in studying military veterans. Enlistees are highly self-selected. Men who choose military service differ systematically from those who go to work or enroll in college (Kleykamp 2006; Mare and Winship 1984). Enlistees tend to have lower socioeconomic status, non-college-educated parents, lower grades and no college plans (Bachman et al. 2000; Kilburn 1992; Kilburn and Asch 2003; Kilburn and Klerman 1999; Teachman, Call, and Segal 1993a,b). More advantaged individuals likely self-select into other civilian institutions, like college or the skilled labor force.

The military also selects which applicants to accept. Potential enlistees must exceed a set of human capital attributes required by the military to be eligible. Currently more than 90 percent of military enlistees have a high school diploma, and those who hold a GED must meet higher ability standards evaluated by the Armed Forces qualifying Test (AFQT) (Department of Defense

2006). Enlistees must meet a stringent set of moral criteria excluding those with felony convictions without a waiver (Asch et al. 2009). Because of these minimum requirements, military members are positively selected from the general population on characteristics important to employers.

Finally, veterans are individuals who chose to leave military service or were forced to do so by the military. Becoming a veteran also involves a selective process of separation from the military. Expulsion from the military for disciplinary or legal violations, or for failure to maintain military standards of fitness or performance would indicate a negative selection process. Individuals choosing to leave with an honorable discharge may do so either because they expected better opportunities in the civilian labor market (and are likely positively selected on productivity) or because they perceived they would not be promoted in the up-or-out military hierarchy (likely negatively selected on productivity).

### **Changes in Human Capital**

Military service transforms those who serve by increasing human capital endowments through education, training, and work experience. Veterans gain training and skills, which may or may not be directly transferable to the civilian sector (Barley 1998; Goldberg and Warner 1987; Mangum and Ball 1987, 1989). Military service may also facilitate later educational attainment that increases employment probabilities and earnings (Bound and Turner 2002; Fligstein 1976; Little and Fredland 1979). But military service implies a trade-off between military and civilian work experience and further education. Several studies suggest that military training and experience are less valuable than civilian experience or education, and that time spent in the



military is disadvantageous as it implies a loss of civilian work experience (Mangum and Ball 1987, 1989).

### **Changes in Cultural Capital**

In addition to the human capital development from military service, other explanations for veteran/nonveteran differences in employment or earnings reflect more subtle attributes acquired through service (Browning, Lopreato, and Poston 1973; Lopreato and Poston 1977). Evidence of an honorable discharge from the military provides certification that standards of behavior and performance were met during service and the veteran successfully adapted to the disciplined, hierarchical work environment in the military. Employers may perceive veterans as successful, reliable, adaptive employees. They may also be better equipped to succeed in large, bureaucratic firms. But employers may have negative perceptions of the military-specific norms and customs veterans learned while serving. Veterans may comport themselves in a more formal manner than most in the civilian workplace, and may have developed a sense of moral superiority to civilians (Ricks 1998). Military members are more politically conservative on average, and political views may also influence hiring agents against military applicants (Feaver and Kohn 2001).

### **Military Service as a Signaling Device**

Another perspective incorporating the aforementioned ideas of the selective and transformative aspects of military service comes from signaling theory (Spence 1973), and suggests veteran status operates as a signal of the potential productivity of an individual by conveying additional information about veteran applicants to employers (Berger and Hirsch 1985; DeTray 1982;

Fredland and Little 1985; Teachman and Call 1996; Teachman and Tedrow 2004; Xie 1992). The signaled information derives partly from the previously described process of self and institutional selection into and out of the military, but it depends heavily on employer understanding of those selection processes and on their perceptions of how military service transforms those who serve. Exactly what information is signaled to most employers is not well-understood, and the signal of prior military service likely contains a great deal of potentially conflicting information.

### **RACE DIFFERENCES IN THE IMPACT OF MILITARY EXPERIENCE**

The meaning of the veteran signal likely varies by race. Blacks and Hispanics have lower high school graduation rates than whites. Black and Hispanic veterans are more positively selected relative to their peers than are whites (Asch et al. 2009). It has been argued that the quality of schooling may be lower for blacks and Hispanics, which may make education a less useful screening of productivity for these groups (Berger and Hirsch 1985). Because of the differences in the distribution of educational attainment and school quality among black, Hispanic, and white men, veteran status may provide more useful information on the productivity of black and Hispanic veterans relative to their nonveteran peers.

Other research indicates that more productive blacks choose to enlist in the military because of discrimination in the civilian labor market that devalues their skills and ability, channeling them into dead end jobs with little opportunity for advancement (Mare and Winship 1984; Moskos and Butler 1996; Segal, Bachman, and Dowdell 1978; Teachman, Call, and Segal 1993a,b). The military is perceived by minorities to be a more egalitarian workplace (Moskos and

Butler 1996; Segal, Bachman, and Dowdell 1978; Segal 1989). Veteran status should therefore operate as a stronger signal of productivity among blacks in particular.

The “bridging hypothesis” suggests that military service functions as a way for those with less advantaged backgrounds to acquire the attributes and attitudes of mainstream society, and to further their socioeconomic attainment (Browning, Lopreato, and Poston 1973; Lopreato and Poston 1977). The hypothesis applies both to racial and ethnic minorities and to whites from economically disadvantaged backgrounds. By exposing these individuals to the disciplined, bureaucratic military environment, military service is expected to provide social and cultural training aiding disadvantaged individuals in successfully working in mainstream (majority) culture. This argument implies that military service provides both occupational training and social and cultural training that may be transferable and valuable in the civilian sector.

Why might military service be perceived as beneficial for racial minorities? Industrial restructuring and the increase in the service sector of the American economy has shifted the kinds of skills and attributes employers seek from job applicants. Included are technical skills like reading, writing, arithmetic, and the use of computers, but also soft skills like motivation, attitude, reliability, and ability to work with others. In fact, it is these soft skills that employers find most important: 74 percent of employers interviewed said they were the most important skills being sought in entry-level job applicants (Holzer 1996; Moss and Tilly 1996, 2001). Because employers view racial and ethnic minorities as lacking these soft skills, black men in particular have faced difficulty finding jobs in the new economy (Pager 2003, 2005; Pager and Quillian 2005). Moss and Tilly (2001) suggest that employers perceive blacks to have a particular lack of skills in communication and motivation. Prior honorable military service from a black

applicant may serve as a signal s/he has the soft skills desired in employees. If employers feel military service does not offer such remedial social training to whites because they already have these skills, then they are not likely to gain advantage in hiring from military experience.

## **PRIOR RESEARCH ON FEMALE VETERANS: EMPIRICAL FINDINGS**

While research specifically investigating the consequences of military service among women is sparse, a few studies have addressed the postservice economic outcomes among female veterans. Using 1990 Census data, Prokos and Padavic (2000) find that female veterans earned less than their nonveterans peers after controlling for demographic and human capital differences. They did find evidence of a veteran premium among older, pre-AVF veterans, suggesting that military service among “trailblazing” women was relatively advantageous at a time when fewer nonveterans were working, particularly in male-dominated occupations.

Cooney et al. (2003) also used 1990 Census data, finding that there was no advantage to military service among black women; they showed similar incomes to their nonveteran peers. White women veterans appeared disadvantaged relative to comparable nonveterans. Cooney et al. conceive of these effects as not a reflection of the effect of military service, but as indications of the different relative opportunity structures for nonserving black and white women. If the civilian opportunities for black women are more limited than those for white women, then black veterans may appear more advantaged relative to nonveterans than white veterans relative to white nonveterans.

Mehay and Hirsch (1996) use a unique dataset to examine the effect of active military service among a group of women reservists. Using these data they are able to better control for the selectivity of female veterans. Women veterans may have some unobserved characteristic that both makes them more likely to be a veteran and to have high earnings—in the absence of military service, these women would still be expected to show higher earnings due to this unmeasured attribute (such a motivation, ability, etc.). Mehay and Hirsch (1996) find a 9 percent wage penalty among all female veterans, with a 12 percent penalty among whites and a 2 percent penalty among black female veterans relative to their nonveterans peers.

The three prior studies of female veterans focused on earnings, finding that female veterans faced an earnings penalty for their service, net of demographic and other controls. Only women serving before the volunteer force appear to have benefitted from their military service (in terms of earnings). Their findings confirm the racial aspect of the bridging hypothesis, that women of color were less disadvantaged by their service, but the theory does not appear to extend to women as a whole. These studies do not investigate employment specifically, nor are they able to tease out the mechanisms generating low veteran earnings among women. By focusing attention on employment, the current study complements prior work on earnings and by including the experimental component, we can evaluate whether or not military service is a salient indicator to employers in the hiring process.

## **DATA AND METHODS**

This paper employs two sources of data to examine employment patterns among female veterans. First, observational data from the 2005–2007 American Community Survey offers the most up-to-date, nationally representative data with enough observations to measure employment of female veterans and nonveterans. Observed veteran/nonveteran differences in these data may arise from a combination of unobserved individual compositional differences related to employment, from differences in job-seeking patterns between veterans and nonveterans, and from differences in employer preferences for hiring veterans. We focus on the last of these possible mechanisms, and we present data from an experimental, audit study of civilian hiring of veterans relative to equally qualified nonveterans to evaluate whether or not employers exhibit different preferences for hiring veterans. These audit data provide a causal account of the employer “demand-side” behaviors in hiring veterans. We briefly describe our two data sources below.

### **ACS 2005–2007 Data**

Prior descriptive accounts of veteran employment patterns suggest a marked change from prior years (see, for example, BLS 2006); today’s young veterans are facing high unemployment rates compared with their contemporary civilian peers, and compared with veterans in earlier decades (BLS 2006). The 2005–2007 ACS data contain enough observations of female veterans for us to provide basic descriptive statistics on the employment status of veterans in the current labor market. These data also allow us to separate recent veterans (those leaving the service within the past year) from those who have been out of military service for a longer period of time. We also separate veterans into those who served before 9/11 and those who served after, treating that date as the beginning of a wartime service environment. While women are officially barred from

combat occupational specialties in the military, women serving during wartime regularly face danger and many have experienced direct combat.

Analyses are limited to those women at risk of military service in the AVF, which officially began in 1973. By 2005, women younger than 55 would have been eligible to serve in the AVF. We limit the sample further to those women age 35 or younger to concentrate on younger women who have neither established careers in the civilian workforce nor those who retired after spending a career in the military (service members are eligible after serving for 20 years.) We exclude 17 and 18 year olds to ensure that only those eligible to have served a minimum two-year commitment to the military would be included in the analysis.

The sample is further restricted to those not currently serving in the military on active duty or with the National Guard or Reserves. The ACS data are not ideal in isolating these populations; thus we take a conservative approach, eliminating individuals reporting they are currently on active duty, those who have only National Guard or Reserve experience (it is unclear if this implies current or prior experience), those reporting a military industry or occupation, and those reporting armed forces work in the employment status recode variable.

Both the census and ACS data have serious limitations for studying the causes of veteran's employment outcomes. Military service, and thus veteran status, is nonrandomly determined; neither the census nor the ACS data include measures such as AFQT that would help account for the observable selectivity of female veterans. Because nearly all women serving in the AVF have a high school diploma, analysis is limited to those women with a diploma or GED to make the veteran and nonveteran sample less differentially selective on education. Further controls for the selectivity of military service on either observable or unobservable characteristics are not

available. However, by using an experimental approach (described below) we can eliminate the influence of selection and evaluate the causal impact of military experience on the initial stages of hiring. Below we describe the details of our hiring experiment.

### **The Audit Data**

The second source of data in this paper comes from an experimental study of civilian hiring. The experimental data help isolate the causal influence of prior military service on hiring and highlight the key role of employers as gatekeepers of civilian work. If veteran status is a salient signal or marker related to hiring, or wage setting, as prior researchers claim, then employers faced with equally qualified veteran and nonveteran job seekers should exhibit differential treatment of matched veteran and nonveteran job applicants. The audit data can only shed light on employer demand-side influences on observed veteran/nonveteran employment and do not tease out the influence of veterans supply-side behaviors that contribute to net patterns in labor market outcomes. However, these data provide powerful causal evidence for one of several mechanisms offered in prior research.

For the experiment, we sent resumes of fictitious job applicants showing equivalent work experience in response to advertised job openings in the classified ads of large midwestern metropolitan area. These fictitious applicants differed in the presentation of characteristics of interest to the research; in this case, one applicant gained work experience while serving in the military. Specifically, the experimental design matches three applicants, one of whom has recently left the active duty Army, after a period of four years of service as a personnel specialist (equivalent to a human resources clerk). She is matched with two individuals with comparable



civilian work experience as a human resource clerk and in retail sales (the veteran has similar experience before entering the military). One of the nonveterans has a high school diploma, while the other is a recent graduate of a local four-year, noncompetitive college. The veteran applicant is matched with two civilian peers to assess the effect of military service holding education constant and an assessment of the claim that military training may substitute for a college education.

Applicant work histories and personal characteristics are chosen to represent the factors of interest to the study (military experience, race/ethnicity, sex, and education). Veteran status is indicated by a work history with a sequence of typical jobs in the Army and by an indicator on the resume of an honorable discharge from service after four years (a typical service obligation). Veteran resumes explicitly indicate a period of service in Iraq. Veteran applicants present a high school diploma and some college credits, as well as specific military vocational training relevant to their specialty (for example a six-week course on the military personnel system for an individual who worked as a personnel clerk in the military). Because a typical veteran serving four years would have been promoted at least once into a job with more responsibility, civilian resumes reflect a similar pattern of increased responsibility within a single occupation.

By matching applicants on observable characteristics such as work experience, age, and by allocating socioeconomically and racially similar neighborhoods of current residence and high school, the experiment isolates differences in treatment to employer evaluation of that which does differ across applicants, namely prior military service. Fictitious identities are created for each applicant in a testing team, including name, phone number (linked only to a voicemail box), email address, and postal address. The choice of name is vital in that the race is conveyed to

employers based solely on the use of a racially distinct name. Bertrand and Mullainathan (2004) establish the salience of racially distinctive names in hiring, although Fryer and Levitt (2004) criticize the study on the basis that racially distinctive names also convey information about class background. Their critique is less consequential for the proposed design, because there is not a direct test of the influence of applicant race on hiring. Primary interest is on the within-race treatment of veterans, with tests evaluating whether the veteran/nonveteran difference is greater among blacks or whites. The names and visual layout (font and formatting) of each resume are varied to control for any employer preference for resume layout or name.

Evidence of differential treatment of military and civilian applicants comes from measuring whether employers call back applicants with military experience (to researcher-maintained voicemail accounts) more or less often than their civilian matched peers. Differences in callback rates between veterans and nonveterans indicate differential treatment at the initial stages of hiring only. While measuring callbacks is not the same as measuring actual employment offers, the interview decision screens out the vast majority of applicants early on and operates as a gateway to employment. Prior research suggests that the interview stage is when the most discriminatory behavior in hiring occurs (Mincy 1993). In a study of age discrimination, 76 percent of the differential treatment overall occurred at the callback stage (Bendick, Brown, and Wall 1999). Results may thus understate the extent of differential treatment if differential treatment is cumulative over the application to offer process (Mincy 1993). Each “tester” is allocated a separate voicemail box with a similar outgoing message recorded on each. Similarly, email accounts are established for each race-resume type cell to monitor any emailed responses to the resumes.

## RESULTS

### **Census and ACS data: Thick Description**

Tables 1 and 2 report key descriptive statistics of interest for female veterans and nonveterans for black and white women from the 2005–2007 ACS data. Primary interest centers on measures of labor market participation, employment-population ratios, and employment rates among those in the labor force. We also are interested in measuring the extent to which veterans gain footholds in the civilian labor market through public sector employment, where they have an explicit hiring preference. We also report key demographic measures of interest including measures of age, experience, education, marital status, and childbearing. Given the demands of a military job, many women delay marriage and childbearing while in service, and in fact they may seek to leave the military in order to marry and have children.

In Table 1 we separate veterans into two groups: those reporting active duty military service in the past year and those reporting their service ended more than a year ago. We expect that the first group should be those in the immediate months after separation from service who likely face the most difficulty transitioning from military to civilian work. In Table 2 we separate veterans into those serving since 9/11 and those serving before 9/11, only to evaluate whether the experiences of veterans serving during wartime differ from those serving in earlier eras.

Table 1 suggests the most recent veterans have the highest rates of labor force participation, the highest employment-population ratios, the highest rates of employment among those in the labor force, and extremely high rates of public sector employment (among those working). Fully 60 percent of white recent veterans and nearly 70 percent of recent black veterans report working

in the public sector, compared with 18 percent and 27 percent of white and black veterans who have spent more than a year as veterans. Sample sizes are small and we do not hold great confidence in these estimates, but they are suggestive and merit further inquiry. Comparing nonveterans and more established veterans, there is no indication of a systematic labor market disadvantage among white or black female veterans, except that more established white veterans appear to have lower employment (higher unemployment) than nonveterans. These veterans do show public sector employment rates roughly twice those of nonveterans; more than one quarter of the black female veterans working report doing so in the public sector as do nearly one-fifth of white female veterans.

Given the suspiciously high rates of public sector employment among the most recent veterans in Table 1, we instead compare veterans who served before and since 9/11. Table 2 reports these figures and shows similar results. Veterans serving since 9/11 show the highest labor force participation rates, the highest employment-population ratios, higher rates of employment than nonveterans and again, very high rates of public sector employment. White veterans serving since 9/11 are an exception, showing lower employment (high unemployment) than nonveterans or earlier serving veterans. This result does not hold among black veterans. More than a third of white and nearly half of black recent veterans report public sector employment.

In both Tables 1 and 2, there are clear differences in age and potential experience and differences in educational attainment across the veterans and nonveteran groups. Further research will employ regression analysis to control for these compositional differences to see if the observed labor market differences stem from these demographic variations. But these two tables

suggest there are little to no disadvantages associated with military service among women in terms of employment. The high rates of public sector employment among veterans make it clear that regressions of earnings and wages of veterans must account for employment sector. The descriptive results do leave open the possibility that white veterans may face some difficulty in employment, but the differences from nonveterans are not large. However, we cannot tell from these observational data alone whether observed patterns of employment stem from compositional differences on either observable demographic and human capital indicators, or from unobservable differences between the veterans and nonveteran groups. Further, employment differences may result from different job search strategies between veteran and nonveteran women. They may also result from differences in employer preference for female veterans in hiring. To evaluate this last mechanism we turn to the results of the experimental hiring study.

### **Audit Results**

Figure 1 presents the weekly count of job ads identified by the research team for testing. The count reflects all advertisements (not a sample) for positions that do not require certification, college education, licensing, or any other formal credential or skill made explicit in the job ad. The ad also must provide a fax number where resumes can be sent in response. We conducted tests over the periods June–August, and November–March. The decline in the employment situation in the current labor market is evident, with the count of relevant ads dropping from a high of nearly 80 per week down to less than 5 per week by the end of the study period. Thus, our study reflects the treatment of veterans in the hiring process under increasingly difficult hiring conditions.

Analysis of the audit data is relatively straightforward, focusing on the percent of resumes generating a callback from an employer, by test condition (military, high school, or college graduate). Tests were conducted for both white and black “teams.” Figure 2 reflects the callback rates for each condition, by race. The white team tested 306 employers, while the black team tested 294 employers (differences owing to random variation in invalid fax numbers across the ads, which were randomly assigned to race teams). Among the white team, 7.4 percent of the military resumes elicited a callback, whereas only 4.8 percent of the high school graduate and 3.4 percent of the college graduate resumes (with equivalent work experience) received callbacks. Results among the black team were much the same, with 7.5 percent of the military resumes garnering a callback compared with 5.6 percent of the high school graduate and 4.0 percent of the college graduate resumes eliciting an employer response.

Our experiment uses matched triplets, thus the Cochran’s Q statistic (the extension of the McNemar test to n-tuples) tests for equal treatment across the three matched conditions. In both the black and white team data, the Cochran’s Q rejects the null hypothesis of equal treatment across the three conditions ( $Q_{black}$  test:  $p < 0.0001$ ,  $Q_{white}$  test:  $p < 0.0001$ ). Given overall evidence of unequal treatment, interest lies in whether each pairwise contrast shows evidence of equal or unequal treatment. Figure 2 suggests a hierarchy of employer preference for female job seekers, with military veterans at the top, high school graduates following, and recent college graduates at the bottom. Pairwise contrasts suggest only the Military-college contrast is statistically significant at traditional levels ( $p < 0.05$ ) for both the black and white teams.

We also use a logistic regression model to assess whether or not a submitted resume elicited a callback, including dummy variables for test condition while controlling for the order in which

each condition was sent (i.e., was the military, high school, or college resume sent first) and a linear time trend as predictors. We include date to capture the secular decline in job prospects that may influence employer selectivity in calling back applicants. Following Pager, Western, and Bonaikowski (2009), who extend the results from Ghosh et al. (2000), we use a random effects model specification with an employer random effect, which “allows information about all three testers to contribute to inference about a contrast between any two” (p.14). The random effect model extends work on matched pairs to use within-triplet comparisons to account for the correlation between observations in the matched triplet.<sup>1</sup>

Table 3 summarizes the regression results. For both the black and white teams, the veteran-college graduate contrast is statistically significant, but neither the veteran-high school, nor the high school-college contrast is significant at traditional levels. The finding that employers are *least* likely to callback the college graduate is surprising. Both the veteran and the high school graduate present evidence of some college credits, and all show functionally equivalent work experience, job stability patterns, and tenures in all jobs reflected on the resumes. We attribute this result to employers possibly evaluating these applicants as overqualified, or not being seriously interested in the position. Because we eliminated ads that *required* a college degree, our typical job may not appeal to many college graduates, and employers may be suspicious of such applicants. Even if there were slight differences in the format of the college resume that did not appeal to employers, we would not expect such presentational matters to present such large effects on callbacks.

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<sup>1</sup> Similar results are obtained if we use a simple logistic regression model, adjusting the standard errors for clustering within employers using the Huber-White Sandwich estimator in the Stata software package.

While not reaching traditional significance, the negative coefficients on the time measure show declining callback rates over time, and the larger negative estimate for the black team is consistent with research claiming minorities suffer first in an economic downturn. An earlier audit study of male veterans in New York suggested race differences in employer treatment of veterans (Kleykamp 2009); however, the results of the current experiment with female applicants in a different metropolitan location do not suggest significant race differences in overall callbacks or in the effect of military service.

## **DISCUSSION**

Although prior research on female veterans finds a veteran *disadvantage* in earnings, and recent descriptive reports find high rates of unemployment among recent veterans, our study results find that women veterans show mostly equal or better labor market outcomes than their nonserving peers. Importantly we find no evidence of employer discrimination against veterans in hiring, rather that employers show a marked preference for female veterans over civilian peers. Our results hold for both white and black women. Our research results confirm the extension of the “bridging hypothesis” to women, and not just racial or ethnic minorities.

Given that both the observational data and the experimental data reflect female veterans as having equal or better employment prospects and outcomes than their nonserving peers, further research is warranted to uncover the reasons for this advantage. Observational data on women are not well-suited to inform this question. Better would be employer-based surveys to capture



dimensions of employer hiring and pay decision making, but unfortunately, available data on employers do not address questions about military service or veterans in the workplace.

To fill this void, we are conducting employer interviews to better understand how military experience is evaluated by hiring agents, and what kinds of experiences employers have working with and hiring military veterans. We think this rich source of qualitative data will fill the gaps and greatly improve theorizing about the labor market consequences of military service by gathering evidence from those who are the gatekeepers to the civilian labor market.

Future research should also more thoroughly investigate how military women manage family formation goals, military work, and decisions to leave the military for the civilian labor force. More broadly, future research that systematically captures data on those leaving the military, beyond simple exit surveys, would aid tremendously in generating a comprehensive portrait of the process of transition from military to civilian life.

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**Table 1: Descriptive Results from 2005-2007 ACS**

	Nonveteran		Veteran less than 1yr		Veteran 1yr or longer	
	<i>White</i>	<i>Black</i>	<i>White</i>	<i>Black</i>	<i>White</i>	<i>Black</i>
% in labor force	77.0	78.9	86.3	91.7	77.0	81.7
Employment-population ratio (%)	72.5	68.4	81.6	83.3	71.5	72.1
Employment rate (among LF)	94.2	86.7	94.5	90.9	92.8	88.2
% in public sector	12.9	14.8	60.8	66.9	18.8	26.9
Age	26.9	26.9	25.5	26.1	29.5	29.6
Potential experience	6.9	7.5	5.9	6.8	9.7	10.0
Number of children	0.8	1.0	0.6	0.8	1.1	1.1
% with child <6 years old	31.0	31.6	28.1	35.9	40.0	36.6
% living in the South	33.8	57.3	42.0	67.8	42.9	70.0
HS/GED	25.8	37.9	26.0	30.2	23.3	24.8
Some college	42.2	43.8	54.9	57.5	55.6	57.9
BA	24.0	13.8	13.1	9.7	16.4	12.9
MA or higher	8.0	4.5	6.0	2.6	4.7	4.4
Married	43.3	20.7	43.8	32.9	56.1	35.2
Divorced, widowed, separated	8.0	8.5	12.2	14.2	20.6	21.7
Never married	48.7	70.8	44.0	52.9	23.3	43.1
Unweighted N	524,525	79,664	1,029	416	4,923	1,356

NOTE: Sample includes only female high school graduates, age 19–35, not currently in military or NG/Reserves.

Source: U.S. Census Bureau, 2005-2007 American Community Survey PUMS (Bureau of the Census 2010).

**Table 2: Descriptive Results from 2005–2007 ACS**

	Nonveteran		Veteran: served after 9/11		Veteran: served before 9/11	
	<i>White</i>	<i>Black</i>	<i>White</i>	<i>Black</i>	<i>White</i>	<i>Black</i>
% in labor force	77.0	78.9	81.5	87.1	76.4	81.2
Employment-population ratio	72.5	68.4	75.2	76.7	71.9	73.2
Employment rate (among LF)	94.2	86.7	92.3	88.0	94.1	90.1
% in public sector	12.9	14.8	35.4	44.6	20.4	30.6
Age	26.9	26.9	26.3	26.7	31.0	31.0
Potential experience	6.9	7.5	6.6	7.3	11.2	11.3
Number of children	0.8	1.0	0.7	0.9	1.3	1.2
% with child <6 years old	31.0	31.6	34.0	37.3	41.3	35.5
% living in the South	33.8	57.3	41.2	68.2	44.2	70.8
HS/GED	25.8	37.9	24.7	29.2	23.0	22.7
Some college	42.2	43.8	56.3	56.9	54.7	58.9
BA	24.0	13.8	13.7	11.4	17.6	12.8
MA or higher	8.0	4.5	5.2	2.4	4.7	5.6
Married	43.3	20.7	46.8	32.1	60.3	37.4
Divorced, widowed, separated	8.0	8.5	15.2	16.8	22.6	23.1
Never married	48.7	70.8	38.0	51.1	17.1	39.5
Unweighted N	524,525	79,664	2,778	908	3,174	864

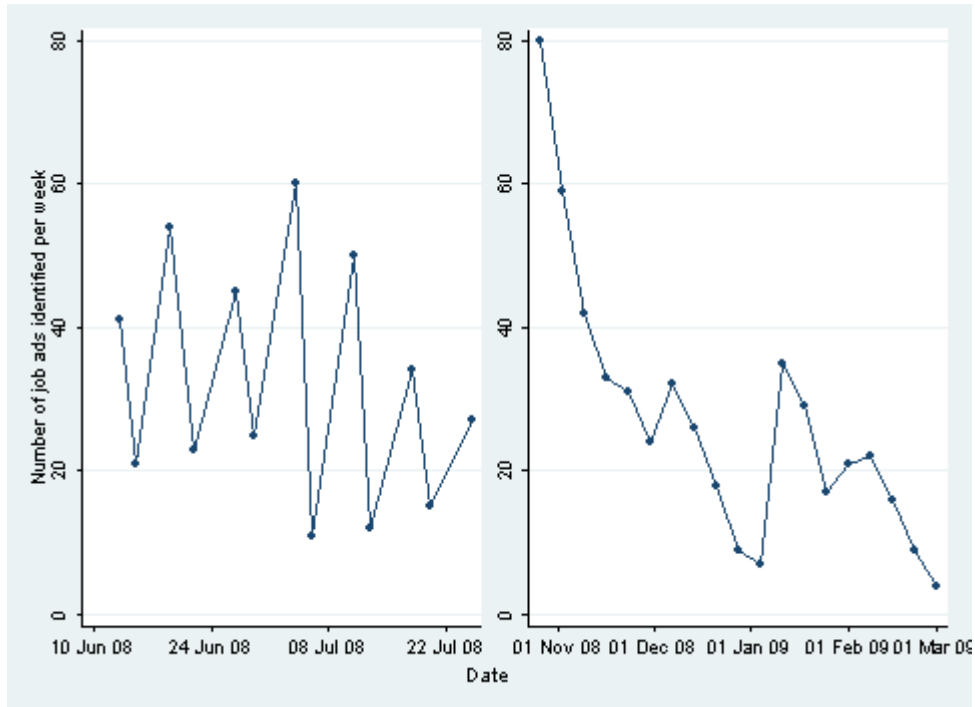
NOTE: Sample includes only female high school graduates, age 19–35, not currently in military or NG/Reserves.

Source: U.S. Census Bureau, 2005-2007 American Community Survey PUMS (Bureau of the Census 2010)..

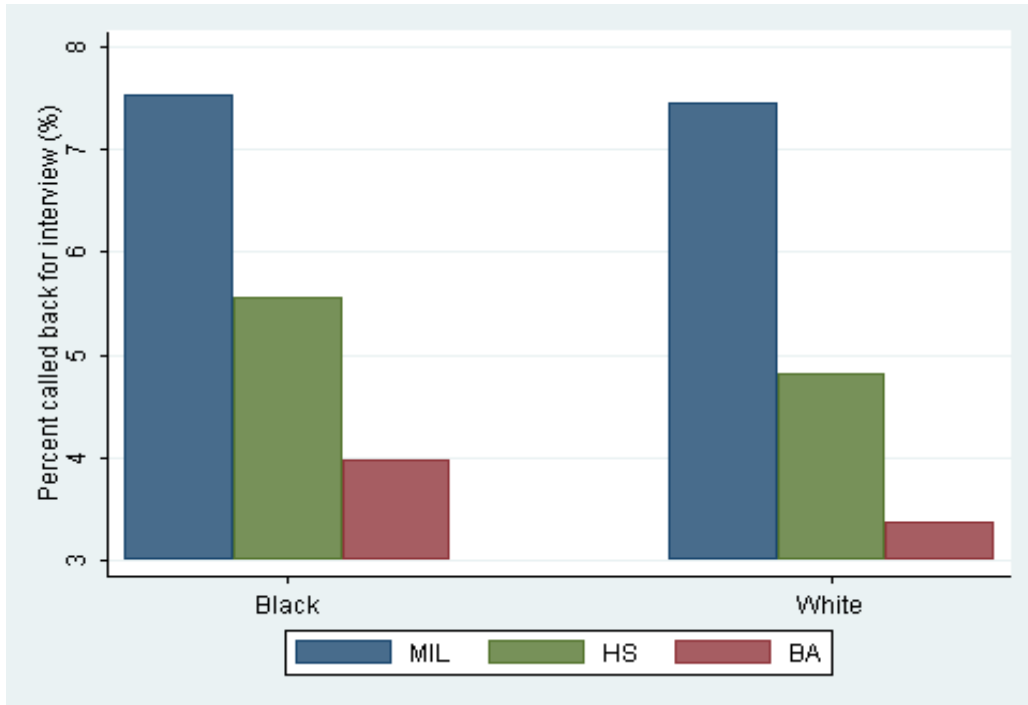
**Table 3: Random Effects Model of Callback for Black and White Tests**

	<i>White</i>		<i>Black</i>	
	Coefficient		Coefficient	
	Std. Err.		Std. Err.	
College graduate	-1.444	*	-1.266	*
	-0.575		-0.546	
HS graduate	-0.75		-0.611	
	-0.512		-0.502	
Sent 2nd	0.008		0.803	
	-0.401		-0.543	
Sent 3rd	-0.284		0.45	
	-0.544		-0.545	
Date	-0.004		-0.008	†
	-0.004		-0.005	
Intercept	59.601		141.95	†
	-76.383		-83.19	
$\ln(\sigma_v^2)$	2.154	**	2.68	**
	-0.312		-0.2	
$\sigma_v$	2.935	**	3.819	**
	-0.458		-0.381	
$\rho$	0.723	**	0.816	**
	-0.062		-0.03	
N	918		882	
Log-likelihood	-156.929		-143.652	
$\chi^2_{(5)}$	9.044		10.226	

NOTE: Reference is veteran, sent 1<sup>st</sup>. †p<0.10, \*p<0.05, \*\*p<0.01.



**Figure 1: Number of Job Ads Identified for Testing (by week)**



**Figure 2: Callback Rates of Veterans, and Nonveteran High School and College Graduates, by Race**