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Christos A. Makridis
National Artificial Intelligence Institute at the Department of Veterans Affairs and Arizona State University

Barry T. Hirsch
Georgia State University and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

The Labor Market Earnings of Veterans: Is Military Experience More or Less Valuable than Civilian Experience?

We assess the labor market experiences of military veterans, focusing on three major outcomes, among others, controlling for a wide array of demographic characteristics and industry and occupational fixed effects. First, we find that male and female veterans receive civilian earnings nearly equivalent to nonveteran men and women. This finding implies that military experience is valued in the labor market similarly to foregone civilian experience. Second, veterans are clustered in occupations with somewhat lower than average employment and real earnings growth, and in metropolitan areas with lower levels and growth of real GDP per capita. Third, veterans experience lower returns to formal educational investments (e.g., college) than do nonveterans. Veterans realize earnings gains from professional licenses, but their returns are lower than for nonveterans. These gains are concentrated among science, technology, engineering, and math (STEM) jobs, suggesting that veterans could help meet the growing demand for tech talent and artificial intelligence skills.

JEL Classification: J3, J4, J44

Keywords: military veterans, earnings levels and dispersion, work experience, licensing, public sector, occupation growth

Corresponding author:
Barry T. Hirsch
Department of Economics
Andrew Young School of Policy Studies
Georgia State University
Atlanta, GA 30302-3992
USA

E-mail: bhirsch@gsu.edu

I. Introduction

There is a large literature measuring differences in civilian earnings between those who are military veterans and nonveterans. Many have focused on periods of conflict -- World War II, the Korean War, and the Vietnam War -- in which a substantial share of those who served did so because of the draft.[1] Several papers have focused on the draft lottery implemented toward the end of the Vietnam War. Shortly following the draft lottery, however, the U.S. moved to an all-volunteer military, which remains today.

The two-sided nature of selection into military service affects our measurement and interpretation of civilian earnings differentials between veterans and nonveterans. In particular, the current all-volunteer military generates lower dispersion in skills than does a military with a widespread draft and required military service. In the left-tail of the "quality" distribution, the military (employer) does not accept recruits with either low ability (test scores), health limitations, or criminal records. High ability young men and women in the right tail of the distribution are less likely to enter the military given that military compensation is lower than they can expect to receive in the civilian labor market.

Given that the military has difficulty attracting enlistees from the far-right tail of the ability distribution, we expect relatively few veterans to have high levels of lifetime wealth. Veteran households between ages 55 and 64 have a $71,860 lower median net worth than their nonveteran counterparts ($160,809 versus $232,669) and that 59% of male veterans between ages 35 and 44 hold credit card debt, compared with 47.7% among nonveterans (Eggleston and Holder, 2017). Moreover, whereas the labor force participation rate is 65.5% for nonveterans as of 2018, it was 49.2% for veterans (U.S. Bureau of Labor Statistics, 2019a).[2]

[1] Angrist (1990) and Angrist, Chen, and Song (2011) provide analysis of veteran/nonveteran earnings differences for those exposed to the draft lottery toward the end of the Vietnam War. Prior analyses on Vietnam-era veterans and nonveterans, as well as for earlier periods, include Villemez and Kasarda (1976), Little and Fredland (1979), De Tray (1982); Berger and Hirsch (1983, 1985), Schwartz (1986), Goldberg and Warner (1987), Mangum and Ball (1989), Angrist and Krueger (1994), and Angrist (1998). Relatively recent analyses include Hirsch and Mehay (2003), Davila and Mora (2012), Card and Cardoso (2012), Faberman and Foster (2013), Routan (2014), and Tan (2020). Some of these analyses can reasonably claim that their earnings gap estimates are causal; most cannot.

[2] Labor force participation rates among veterans in 2018 was 49%, as compared to 66% among nonveterans. This difference reflects the older average age of veterans than nonveterans. Participation rates are roughly equivalent for veterans and nonveterans when compared within narrow age groups (BLS, 2019a, Table 2A).

The primary contribution of this paper is to provide an updated assessment of the civilian labor market experiences of veterans and nonveterans over the past two decades, well after the period of mandatory military service. We document new stylized facts about the increasing exposure of veterans to polarization in the labor market and somewhat lower returns to education than seen for nonveterans. While our results are not fully causal, we control for a wide array of demographic characteristics and industry and occupation fixed effects. We focus on 2005 through 2018, capturing an era with substantial technological change (e.g., Autor and Dorn, 2013; Autor 2019).

The initial focus of the paper is on civilian wage differentials between veterans and nonveterans, conditioned on education and other correlates of productivity. Using the Current Population Survey (CPS), we identify many differences between veterans and nonveterans, but consistently find near-zero estimates of conditional wage differentials, suggesting that time spent in military service provides an increase in civilian productivity nearly equivalent in value to that from civilian work experience. When we use data from the American Community Survey (ACS), however, we find small earnings disadvantages among veterans, although we cannot always reject the null that their earnings are the same. A positive (negative) veteran-nonveteran wage differential would suggest that military experience provides human capital and/or other forms of market productivity that are higher (lower) than are the gains from civilian work experience. Men's and women's veteran status provides a signal to potential employers (Spence 1973). That said, we find variability with respect to race, ethnicity, gender, and job sector (e.g. public versus private employment). Taken as a whole, our conclusion is that the value of military experience is roughly equivalent or slightly below that of civilian experience.[3]

Our analysis uncovers several patterns not previously examined in the research on veterans. We find that veterans are concentrated in occupations with lower real hourly wage and employment growth over the past decade, as well as in metropolitan areas with lower real per

[3] Such a conclusion is not unique to recent years. At least one recent paper examines military service during World War I (Tan 2020) and concludes that there was little evidence of a causal relationship between wartime service and subsequent economic outcomes. That said, a recent paper by Gabriel (2020) finds that World War I veterans observed in Census data from 1930, 1940, and 1950 were employed in occupations that provided higher pay and greater upward mobility than did occupations in which nonveterans were employed. Similar evidence is found for World War II, in which there was nearly universal service among men fit for duty (Angrist and Krueger 1994). Men unable to serve in World War II tended to earn less than did their World War II veteran counterparts.

capita GDP levels and growth. We show that college-going veterans select a different mix of majors than do nonveterans. Moreover, veterans with high levels of educational attainment, either formal (e.g., college) or informal (e.g., certificate/license), exhibit lower returns than their nonveteran counterparts. That said, the returns to receipt of a certificate/license in a STEM-related occupation are positive and economically meaningful for veterans. These results offer an optimistic roadmap for veterans with an interest in the digital economy, especially the emerging labor market for artificial intelligence related skills. Moreover, since the federal government has had a tough time retaining and attracting skilled workers (Makridis, 2021), veterans may have a unique role to play here, particularly with the ease of obtaining additional security clearances.

The structure of the paper is as follows. Section II summarizes our data and sample construction. Section III investigates earnings differences between veterans and nonveterans across various partitions. Section IV focuses on gender-specific evidence on veteran-nonveteran earnings differences. Section V compares results using the American Community Surveys (ACS) with those obtained using the Current Population Surveys (CPS). Section VI documents new evidence of polarization among veterans across occupations and metropolitan areas. Section VII examines veteran-nonveteran differences in the benefits from occupational licensing and certification. Section VIII examines veterans' returns to formal schooling, with the focus on college, college majors, and post-graduate degrees. Section IX explores veterans' employment and earnings in the public sector. Section X concludes.

II. Data and Measurement

Our analysis provides descriptive and regression-based evidence on the relative earnings of veterans and nonveterans. Our primary analysis is based on the monthly Current Population Survey (CPS) Outgoing Rotation Group (ORG) files for the years 2005-2018. The CPS-ORG files provide quarter samples that report weekly earnings and hours worked, in addition to the standard CPS information on demographics, veteran status, household geographic location, industry, occupation, and other measures. We deflate all nominal variables using the personal consumption expenditure index normalized to 2012.

Additional analyses include use of recent years of the CPS that provide information on the presence of worker licensing and certification. We also conduct additional robustness analyses using the annual American Community Surveys (ACS), which has large sample sizes

and includes information on college majors, information not provided in the CPS. Finally, we also use the Occupational Employment Statistics (OES) from the Bureau of Labor Statistics (BLS). The OES provides precise measures of both employment and earnings growth at the 6-digit occupational level, although we aggregate to the 3-digit level.[4]

Both the CPS and ACS allow us to see whether respondents have served in active duty in the U.S. armed forces. Veterans are not asked whether they were an enlisted member or an officer in the armed forces. Officers account for less than one-sixth of those in the military; hence, our estimates of veteran-nonveteran earnings differentials are heavily weighted toward enlistees. To be an officer, one must have completed a four-year degree and, upon entry into the military, commit to a five-year service period. Given these requirements, restricting the sample to those 26 years old or less can produce a sample entirely of enlisted veterans (we thank a reader for the suggestion). The downside of doing so is that such a sample is rather small and provides information only for earners recently exiting the military. Such a group is weighted disproportionately by veterans currently in school and/or with low earnings unrepresentative of lifetime earnings. As we subsequently note in the paper, veterans tend to have low earnings shortly after leaving the military, while catching up over time. We choose to rely on a broad sample that permits us to identify multiple earnings patterns for veterans and nonveterans.

Our estimates reflect a sample weighted heavily toward veterans who were enlistees, with a much lower weight on those who were officers. Using administrative data on members in the Component Reserves, some of whom are veterans and others not, Hirsch and Mehay (2003, Table 2) provide veteran-nonveteran wage gaps separately for those enlisted and those who were officers. For those enlisted, the veteran-nonveteran wage gap was effectively zero. For officers, the veteran-nonveteran wage gap was positive (about 8 percent).

III. Veteran-Nonveteran Earnings Differentials: Heterogeneity with Respect to Race, Ethnicity, Education, Urban/Rural Residence, and Gender

We begin by estimating earnings regressions for wage and salary workers of the form:

[4] With the exception of the OES data on employment and real wages and the Bureau of Economic Analysis (BEA) data on real per capita GDP, all data files were accessed from the Integrated Public Use Microdata Series (IPUMS) at the Minnesota Population Center.

$$w_{it} = \gamma VET_{it} + \phi D_{it} + \xi(VET_{it} \times D_{it}) + \beta X_{it} + \epsilon_{it} \quad (1)$$

where w denotes the natural log of real hourly wage (deflated to 2012 prices) for individual i in year t. VET denotes an indicator for whether the individual is a veteran. D denotes indicators for whether individuals are part of a given group (e.g., race, ethnicity, rural area), thus providing a compact and convenient way to explore heterogeneity in veteran-nonveteran log earnings differentials with respect to worker demographics and differences in attributes. X denotes a vector of other individual controls. While we also introduce two-digit industry and occupation fixed effects to account for otherwise unmeasured worker/job skills and working conditions, we recognize that there are relevant variables not available. Our goal is to document conditional correlations within comparable jobs. Standard errors are heteroskedasticity-robust.

Our principal results for men are documented in Table 1. As evident in column (1) of the table, the "raw" (i.e., no controls) log hourly earnings gap of 0.123 indicates a 13.1 percent earnings advantage for male veterans relative to nonveterans.[5] This earnings advantage for veterans is driven primarily by the older age of veterans than nonveterans. The analysis provides an assessment of the earnings differentials between today's male veterans and nonveterans, controlling first for detailed demographic and educational characteristics, followed by the introduction of controls for occupation, industry, and time fixed effects.

Although these specifications lack an explicit causal interpretation since we do not account directly for selection into the military, column 2 of Table 1 indicates that veterans earn about 1% (0.013) more than their nonveteran counterparts, conditional on demographics (education, potential experience, race and ethnicity, marital status, and metropolitan size bins). Once we control for occupation, industry, and time fixed effects (column 3), veteran-nonveteran wage differentials are effectively zero (0.002). This implies that veterans tend to be employed in occupations and industries with slightly higher earnings than seen for nonveterans. Although these industries and occupations tend to have somewhat higher earnings, we subsequently show

[5] Throughout the paper we treat the log differential as the percentage differential, albeit one with an intermediate base. The standard conversion from a log differential to an arithmetic percentage is [exp(β)-1]100, where β is the log gap. The 0.123 veteran coefficient implies a 13.1 percent arithmetic differential. Wage gap estimates with controls are far below 0.123; hence there is a minimal difference between the log gaps and the arithmetic percentages.

that occupations and metropolitan areas populated by veterans tend to have had slower *growth* in hourly earnings and employment.

In columns 4 through 7 of Table 1, we examine heterogeneity in veteran wage gaps with respect to education levels, race, ethnicity, and urban/rural residence. In column (4), we find that among those without a B.A./B.S. or above, veterans earn 1.8 percent more than their nonveteran counterparts. Among those with a college degree, however, male veterans earn 3.7 percent less than do nonveterans (i.e., .018 – .055). As will be shown subsequently, we find the same pattern for women veterans. Given the two-sided selection into the military, these results are consistent with expectations. Veterans are underrepresented in both the far left and right tails of the earnings distribution. Conditioned on those with college degrees, veterans are expected to rank below the average for that group. Standard least square results are likely to provide reliable estimates of veteran wage gaps among those near the middle of the earnings distribution; estimates may be less reliable in the lower and higher tails of the distribution.

Our results are comparable in several ways from Card and Cardoso (2012) who use detailed administrative data from Portugal to examine the effects of compulsory military service on wages. Although they find an overall weak relationship between conscription and wages, they provide evidence that conscription had a positive effect on wages among less-educated workers. Consistent with the Portuguese result, we find that less-educated U.S. veterans (e.g., those without college attainment) receive positive returns to military service.

A complementary explanation for veterans' lower-than-average returns from a college degree is that veterans are more likely than nonveterans to have received college degrees from low-quality for-profit colleges. For-profit colleges have actively recruited veterans; they have strong incentives to do so. For-profit colleges depend heavily on federally funded student aid. Under federal law, college revenues from federal monies (mostly student aid) were capped at 90 percent of total revenue. Prior to that federal policy, some of the larger for-profit national chains such as University of Phoenix and Kaplan University received more than 80 percent of their revenues from Title IV student aid. The federal Title IV program limits, however, do not include veteran education benefits toward that 90 percent limit. Hence, for-profit colleges have actively recruited students with military benefits – primarily veterans, service members, and family members of those currently in the military (see Deming et al. 2012; Cellini and Goldin 2014).

There is rather limited evidence on the returns to education among those attending for-profit college. That said, Cellini and Turner (2019) used administrative data from the Department of Education and the Internal Revenue System that enabled them to measure employment and earnings among those who attended for-profit colleges, as compared to matched students attending nonprofit institutions. Their findings were clear-cut. They found that certificate-seeking students at for-profit institutions are less likely to be employed (1.5 percentage points lower). Among those employed, those from for-profit institutions earned about 11 percent less than students who had attended public institutions. Outcomes were particularly poor for students who attended for-profit colleges that were multi-campus chains and those focusing on online courses. They found similar qualitative results for both men and women and for seven of the ten most populated fields of study. Cellini and Turner (2019) did not identify students who were veterans or nonveterans. Given that veterans are disproportionately enrolled at for-profit colleges, their results provide a likely explanation for our observation of lower returns (wage gains) to college degrees for male and female veterans.[6]

Columns (5) and (6) examine veteran earnings differentials with respect to race and ethnicity. African-American veterans receive roughly 2.5% higher earnings than their nonveteran counterparts (conditioned on education, occupation, industry, etc.). Although the difference is modest, it indicates positive selection of black men entering the military, reflected in AFQT scores, absence of a civilian criminal record, and good health. Moreover, employers are likely to view veteran status as a positive signal, a la Spence (1973), with respect to expected productivity and reliability (Spence 1973, Berger and Hirsch 1985). An older literature on African American veterans found larger veteran-nonveteran wage differentials among black men than what we observe with more recent data. Although the positive selection story remains relevant, it has lessened importance over time.[7]

[6] Credentials matter in the larger labor market. Deming et al. (2016) provide results from an experimental study in which fictitious resumes were sent to real vacancy postings. Among their findings were that applicants listing business degrees from for-profit colleges had substantially lower callback than from applicants from nonselective public institutions. An exception was that in health jobs, for-profit credentials coupled with a government occupational license did not have a negative signal.

[7] Our analysis focuses exclusively on those employed. There have been considerable reductions in labor force participation and high rates of institutionalized black males (Hirsch and Winters 2014; Bayer and Charles, 2018). If one were to account for African Americans out of the labor force and institutionalized (i.e. zero earners), we would see a larger left tail with respect to skill, thus observing even stronger positive selection by the military.

Positive selection also applies to Hispanic veterans. We find a substantial veteran wage advantage on the order of 10 percent (0.098), four times the size of the veteran-nonveteran wage differential among black men. The large veteran wage differential for male Hispanics is likely a combination of both strong skills among Hispanic veterans and relatively weak skills among many Hispanic nonveterans. The latter group is likely to include those with poor English skills and/or absence of legal residence (non-citizens must be legal immigrants to enlist in the military). All Hispanic veterans must be either U.S. citizens or documented; a substantive share of nonveteran Hispanics are not documented and face substantial employment barriers in the labor market. Hispanics not documented are less likely to be fluent in English and may lack other skills valued in U.S. labor markets. In short, veteran status appears to function as a high-valued credential for Hispanics. Moreover, the U.S. Hispanic population is disproportionately concentrated in the south and southwest (in particular, Texas and California), as are U.S. military bases. It is possible that employers in these markets place particularly high value on employees' military experience, especially so if they conduct government contracting.[8]

Young men and women growing up in non-urban rather than urban areas are more likely to enlist in the military. Using CPS data, we can identify households residing in metro areas of roughly 100,000 and above (roughly 70% of the CPS samples). As is widely recognized, earnings rise substantially with respect to labor market size, although urban areas have become much more polarized (Autor, 2019). In column (7) of Table 1, we compare veteran-nonveteran earnings differentials in non-urban areas to those in metro areas. We had no prior expectation regarding this relationship. Veteran-nonveteran wage differentials, however, are found to be about 3 percent (-0.028) lower in non-urban than urban areas. A plausible explanation is that there are relatively large shares of veterans residing in non-urban labor markets, possibly

[8] As seen above, we infer that there is positive selection into the military for both black and Hispanic veterans. In a recent paper from Hamermesh et al. (forthcoming) using time-use data (i.e., the ATUS), the authors measure racial and ethnic differences in "non-work" time during paid time work hours. Both black and Hispanic workers are found to have somewhat higher levels of "non-work" during paid work hours. These differences in "non-work" time on the job explain a relatively small share of the overall racial and Hispanic wage gaps. The authors note, however, that among male veterans, there were no difference in "nonwork" hours between black veterans and white workers, nor any differences in nonwork among Hispanic veterans and white workers in the ATUS samples. In short, the racial and ethnic differences in "nonwork" found by the authors is fully driven by nonveterans. Time-use evidence in this study reinforces our conclusion that there is positive selection into the military among black and Hispanic men.

mitigating their value at the margin.[9] Alternatively, the veteran signal to employers may be less important in small markets where personal information on job candidates' strengths and weaknesses are more readily available or known.

Our primary results include the entire 2005-2018 period. An obvious question is whether veteran-nonveteran wage gaps have varied much over time. Given the similarity of our general results to a much earlier literature, our expectation is that changes over time have been modest. When we examine veteran wage gaps across three sub-periods, 2005-2009, 2010-2013, and 2014-2018, we find similar veteran wage gaps. For example, for specification (2) for males the veteran coefficients varied between 0.013 and 0.026. For specifications (3) through (7), veteran coefficients for each of the three time periods were near zero for all specifications.

Our analysis clearly shows that on average, male veterans receive civilian earnings highly similar to the earnings of nonveterans. It does not follow, however, that armed service personnel leaving the military immediately receive civilian earnings equivalent to what they would receive had they not served in the military and, instead, built up civilian work experience. A RAND study from Martorell et al. (2013) examined administration data from the Army that followed veterans after they left the military. As one might expect, they find a substantial dip in earnings when they first separate from the military, but the veterans on balance did as well or better than those without military experience. Such a pattern is not unique to a single place or time. Berger and Hirsch (1983) concluded that Vietnam-era veterans initially suffered earnings penalties after leaving the military, but subsequently caught up. A more recent paper by Angrist et al. (2011), using administrative data that followed Vietnam-era veterans, confirms this result. Nor is such a pattern specific to U.S. veterans. Card and Cardoso (2012) find that veterans in Portugal briefly face low civilian earnings when they first leave the military, but quickly catch up and/or overtake the earnings of nonveterans. We are reluctant to conclude that this is a universal result. Recent evidence from Bingley et al. (2020), who exploit random assignment in the Danish draft lottery, find a negative effect of peacetime military service on earnings arising from disruptions in educational investments and resulting careers.

[9] The share of veterans in rural areas is higher than in CPS-designated metro areas. Likewise, controlling for standard demographics, we find that male veterans are 6.4 percentage points less likely to live in metro areas with over 1 million people than their nonveteran male counterparts.

IV. Do Veteran-Nonveteran Earning Gaps Differ for Women and Men?

Previous analyses of labor market earnings of veterans have focused almost exclusively on men. Enlistment of women into the military has increased substantially over time, but there has been limited study of female veterans in the economics literature. A comparison of the earnings of female veterans relative to nonveterans is of some importance given the substantive share of women in the military. As of 2019, women made up roughly 20 percent of the Air Force and Navy, 15 percent of the Army, and 9 percent of the Marine Corps (Dever, 2019). We provide analysis of female as well as male veterans. We find modest differences between male and female veteran outcomes in civilian labor markets, but the general patterns seen for men and women are broadly similar.

Given the increase of women in the military over time, in Table 2 we examine veteran wage gap estimates for women over the same 2005-2018 period seen for men in Table 1 (the layout is identical to that seen for men). We do not have strong priors that civilian earnings among women veterans differ substantially from those of female nonveterans. As seen previously for men, wage gaps between veterans and nonveterans are rather small, implying that veterans' time in the military is valued similarly to the equivalent time spent in the civilian labor market. Prior evidence in Mehay and Hirsch (1996, Appendix) shows that among early cohorts of women in the military (those born prior to about 1950), female veterans had civilian earnings that exceeded those among female nonveterans. Among cohorts born after 1950, however, female veterans and nonveterans tended to have similar wages.[10]

Based on those earlier findings, our expectation is that veteran wage gaps for female veterans are close to zero, just as we have seen for men. Table 2 provides estimates of veteran-nonveteran log earnings differentials for women, with the structure identical to our previous table for male veterans. The raw veteran-nonveteran log earnings gap for women (column 1) is 14 percent (0.143), similar to that seen for men (0.123). Focusing on column 2 of Table 2, the earnings regression with individual controls but not occupation and industry fixed effects, we

[10] Mehay and Hirsch (1996, Appendix) provide supplementary analysis of female veterans using the 1989-1993 CPS. For birth cohorts of women between 1955 and 1973, they find wage ratios of female veterans to nonveterans to be very close to 1.0. For much earlier cohorts of women, the civilian earnings of female veterans substantially exceeded the earnings of nonveteran women, but the differences were fully accounted for by standard worker attributes (schooling, age, etc.).

find a 4½ percent (0.044) earnings advantage for female veterans. Once one controls for occupation and industry fixed effects (column 3), the veteran effect is effectively zero. As found previously for men, college-educated female veterans earn less than do college-educated nonveterans (specification 4). Hispanic female veterans earn roughly 6 percent (0.063) more than Hispanic nonveterans, the same qualitative pattern found for men (see the previous discussion), albeit smaller in magnitude for women. No wage difference (0.001) is found for similar black female veterans and nonveterans. Female veterans in rural (non-metro) areas earn slightly less (-0.012) than female nonveterans, the same pattern found previously among men.

V. Veteran-Nonveteran Earnings Gaps from the American Community Surveys (ACS)

We next compare veteran-nonveteran earnings differentials from the CPS with those from the annual American Community Survey (ACS) over the same years. The ACS has the advantage of larger sample sizes, providing greater variation and external validity; see, for example, the U.S. Congressional Budget Office (2017) for its relative advantages. The CPS measures usual weekly earnings and usual weekly hours worked on the current primary job, whereas the ACS only provides annual earnings in the prior 12 months, as well as their occupation and industry. Because the ACS includes weeks worked during the previous year and hours worked per week, we can control for both as a proxy for the intensive margin.

In the left-side of Table 3 (columns 1-7), we report regression results from the ACS for male veterans and nonveterans, structured similarly to those seen using the CPS. But there are differences. The dependent variable using the ACS is the log of annual earnings, in contrast to the CPS measure of hourly earnings on the primary job at the time of the monthly surveys.

Overall, the ACS results tend to provide similar, but somewhat lower (more negative) veteran-nonveteran earnings differentials than does the CPS. This is not surprising given differences in the earnings measures (hourly for the CPS and annual for the ACS). As seen in the CPS, there is a substantial raw earnings advantage for male veterans of 12 percent (0.123), as compared to the smaller 7 percent (0.073) annual earnings advantage of male veterans in the ACS. Both these "raw" veteran-nonveteran earnings measures drop sharply once individual controls are included (most notably years of potential experience, highly correlated with age), from 12 percent to 1½ percent with individual controls in the CPS. The comparable ACS comparison for annual earnings is a decline from the raw 7 percent veteran advantage (column 1)

to a minus 2 percent (-0.017) with controls (column 2). We have also found that controlling for the intensive margin, such as part versus full time work, explains meaningful variation in earnings between veterans and nonveterans and reduces the differences.

As previously reported using the CPS, we found that the earnings boost from a college degree among veterans is lower than for nonveterans. The ACS result is qualitatively similar but shows a larger veteran disadvantage. Both the CPS and ACS show that veteran-nonveteran earnings differentials are higher for African American than for white workers. Likewise, the veteran advantage among Hispanic (relative to white) men is substantial, 9 percent higher in the CPS and 8 percent using the ACS.

The right-hand side of Table 3 (columns 8-14) provides ACS veteran-nonveteran estimates for women. Focusing on raw veteran-nonveteran gaps based on hourly earnings in the CPS, we find a 14 percent (0.143) veteran log wage advantage. As expected, using the ACS we observe a larger 22 percent (0.217) veteran log annual earnings gap. Once we add controls for demographics (including schooling and potential experience), as well as occupation and industry fixed effects, we find that female veteran-nonveteran earnings gap using the ACS are effectively zero. This pattern is identical to what we found previously using the CPS.

A minor issue in our analysis is the presence of imputed earners in both the CPS and ACS, which causes a slight attenuation of the veteran-nonveteran earnings gap estimates (Hirsch and Schumacher 2004; Bollinger and Hirsch 2006). Nonrespondents are assigned so-called allocated (i.e., imputed) earnings from a respondent who has attributes "similar" to the nonrespondent. In both the CPS and ACS, veteran status is not an attribute included in the imputation procedure. As a result, among the subset of imputed earner observations (i.e., nonrespondents), minimal earnings differences between veteran and nonveterans are reported. In work not shown, we estimated earnings differentials using respondent-only samples, as well as full samples including both respondents and nonrespondents. We find differences in the veteran coefficients between the two samples in the third decimal place, approximately a 0.002 attenuation. In short, veteran-nonveteran wage differences reported in our tables are slightly smaller (in absolute value) due to inclusion of imputed earners.[11]

[11] The CPS earnings files from IPUMS do not include allocation (imputation) flags for the early years in our sample.

VI. Do Veterans Take Jobs with Faster or Slower Growth in Earnings and Employment?

As seen in our wage analyses, veteran-nonveteran wage gaps are close to zero, and possibly negative if we defer to results from the larger sample in the ACS. Motivated by the evidence showing that many veterans do not earn as much as nonveterans in civilian labor markets, we investigate their employment choices and job matches with respect to occupation and location. Specifically, we examine the correlation between the shares in veteran status and the growth rate of occupational employment and real hourly wages between 2002 and 2018, as well as the correlation with real per capita GDP levels and its growth rate, to understand whether the patterns of polarization seen in the overall labor market also apply to veterans.[12]

We conclude that the answer to this question is yes. Veterans are clustered in occupations with lower employment and real wage growth, as well as in metropolitan areas with lower per capita GDP and lower per capita GDP growth. Not only is this finding novel, it is also important for two reasons. First, given the substantial investments in veterans during their service period, the finding that veterans often enter lower-growth occupations following their service suggests that military investments are not as effective as they otherwise might be. Given that personnel payments and benefits account for 39% of the total $686 billion military budget as of 2020, there are potential areas for efficiency gains.[13] Second, if armed service members are facing an increasingly tough transition into the civilian sector, attracting capable and interested individuals will become more difficult. Difficulty in attracting individuals into the armed services could have substantive implications for national security and readiness.

Veterans are employed in occupations that have had lower than average growth in both employment and earnings between 2004 and 2018. Much of the productivity growth since the 1960s has been concentrated in occupations with high levels of information technology (IT) intensity (Gallipoli and Makridis 2018). The young men and women who enter the military disproportionately tend to have aptitude and skills that are broadly average, with relatively few individuals in the extreme left and right tails of the economy-wide skill distribution. Employment

[12] Our results are robust to the base year we use, but we choose to use 2002 as our starting point since it is after the technology boom and bust and before the run-up to the sub-prime mortgage crisis.

[13] https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/FY20_Green_Book.pdf

and wage growth over time, particularly during the 1990s, has been weakest in the middle of the occupational skill distribution. More specifically, technological change has decreased demand for jobs (occupations) that have tasks that are routinizable and programmable. (e.g., Autor 2019, Autor et al. 2003, Acemoglu & Autor 2012). These labor market changes have disproportionately harmed veterans. Similar economy-wide changes have occurred in other developed countries; the average across European Union (EU) countries exhibits occupational hollowing that is highly similar to that seen in the U.S. (Goos et al., 2009).[14]

To confirm this pattern, we examine veteran employment shares among occupations and labor markets. In Panel A of Figure 1, we show the relationship between the share of veterans employed in 3-digit occupations, averaged over the 2010-2017 ACS, and the annual real hourly wage growth of these occupations between the periods 2002-03 and 2017-18 from the Occupational Employment Statistics (OES). Panel B of Figure 1 shows the relationship between the veteran shares (as above) and the OES annual average employment growth rates in 3-digit occupations (aggregated from 4-digit data and weighted by employment) over the same period. The data on employment and wages by occupation is from the Occupational Employment Statistics (OES) for the years 2002-2018. The simple correlations of veteran shares with respect to both occupation wage growth and employment growth are -0.12.

In Figure 2, we provide a similar analysis to that of Figure 1, but now we correlate veteran shares within U.S. labor markets (i.e., metro areas) with respect to metro-level GDP per capita averages for 2002-2017 (panel A), as well as GDP per capita growth (Panel B).[15] The simple correlations of veteran shares with respect to MSA real GDP per capita is -0.46; the correlation of veteran shares and MSA real GDP per capita growth is -0.37. These correlations with respect to metro area GDP levels and growth are substantially stronger than seen previously with respect to occupation wage and employment growth.

VII. Do Veterans Benefit from Occupational Licensing and Certification?

[14] The military has been concerned that many of its soldiers are not well prepared to transition to IT and other rapidly growing civilian occupations. They have supported recent studies guiding veterans toward civilian occupations that utilize and require job skills similar to their military occupations (see Wenger et al., 2017).

[15] We would use 2018 data on real per capita GDP to match our real wage and employment data, but it is not available at the time of our release of this paper.

There exists a substantial recent literature documenting the increased earnings associated with occupational licensing (e.g., Gittleman et al., 2018). We explore whether veterans realize gains in earnings from occupational licensing and certification that are similar to earnings gains seen in the overall labor market. Beginning in 2015, the CPS added questions asking employed workers (and those previously employed) if they have an occupational license or certification. In our January 2015 through June 2019 CPS monthly wage and salary sample, roughly a quarter (24.4%) of all wage and salary workers have an active professional certification or license. A subset of licensed workers report whether they have a government-issued certification or license and whether certification is required for their job. We focus on the broader sample to ensure that we have enough power for these comparisons, given that veterans are already a small share of the overall population.

As seen in column 4 of Table 4, we find that the earnings bump associated with licensing is lower for male veterans than for nonveterans. The average nonveteran male receives weekly earnings approximately 8-9 percent (0.085) higher than do similar workers absent the license, conditioned on detailed industries and occupations. The average male veteran, however, receives a 0.070 licensing bump, 0.015 lower than seen for male nonveterans.[16]

An identical analysis for women (Table 5) shows that female nonveterans with licenses receive weekly earnings 8 percent (0.081) higher than do nonveteran women without licenses. Female veterans with a license, however, receive weekly earnings only 6 percent (0.081-0.022 = 0.59) higher than the earnings of female veterans without a professional license.

In Figure 3, we examine log wage earning returns with respect to licensing for veterans and nonveterans, estimated separately by broad occupation groups (our sample includes both women and men). The regressions include the standard set of demographic controls. Overall, there is minimal evidence for a higher earnings advantage from licensing for veterans as compared to nonveterans. For most of the occupational categories, there is little difference in returns to licensing for veterans relative to nonveterans. The one clear exception, however, is the broad category of math/computer science/engineering and other professional occupations where we see licensed veteran workers with a 10 percent earnings advantage relative to licensed

[16] As seen in column 2 of both Tables 4 and 5 (as compared to columns 3 and 4), the estimated earnings licensing advantage is more than 2 percentage points higher absent controls for detailed industry and occupation.

nonveterans. This could capture the fact that the sciences have an overall higher earnings premium and more efficient means for assessing competency in skills (Kirkeboen et al., 2016).

In summary, the returns to licensing are roughly similar with respect to both gender and veteran status. That said, we systematically find slightly lower returns to licensing for veterans versus nonveterans, and lower licensing returns for women as compared to men (see Tables 4 and 5). We previously showed that veterans tend to be employed in occupations that have had below average growth in both employment and wages. The lower returns to licensing among veterans than among nonveterans are due in part to the differences in occupational mix, as can be seen by the decline in the licensing coefficient following inclusion of occupation and industry fixed effects in specifications (3) and (4) of Tables 4 and 5**.**

We find these results particularly relevant for the ongoing debate about occupational licensing reform and inquiry into approaches for better transitioning of veterans into the civilian sector. For example, our evidence is consistent with the view that occupational licensing aids veterans to a lesser extent than for nonveterans, perhaps because states have their own licensing requirements. Veterans and their spouses are likely to relocate across states during and following active-duty service (Steinhauer, 2020). Moreover, our results offer optimism for veterans who are interested in STEM jobs, particularly since many are remote in the post-pandemic economy. The federal government has had a tough time retaining and attracting talent (Makridis, 2021), especially in STEM jobs and the emerging demand for artificial intelligence. Another reason that veterans may also be uniquely suited for these jobs is that they will have an easier time obtaining security clearances having already served in the military, reducing the time it takes to onboard and work either with federal agencies from the private sector or in them as a civilian.

VIII. Veteran and Nonveteran Returns to College Majors

The occupational mix among college-educated veterans (and nonveterans) is determined in part by their choice of college majors. Using the 2009-2017 ACS, we compile college majors for veterans and nonveterans, collapsing what are detailed majors into 9 broad categories, plus a small "Other" category. A detailed list of majors for each of the broad categories is shown in the *Notes* to Figure 4. The compiled results as shown in Figure 4 display the shares of majors for veterans (shown with red bars) and shares for nonveterans (blue bars). As seen in the figure, the overall patterns of college majors are roughly similar for veterans and nonveterans, with business

majors and social science majors being the two largest categories of study for both groups. Areas of study in which veterans are more heavily represented are engineering/computer science, business, the social sciences, and an industrial category (the latter including services in construction, electrical, mechanical, natural resources services).

To see how labor market returns to college majors differ for veterans and nonveterans, we examine results from three earnings regressions using the ACS, shown in Table 6. These regressions provide estimates of earnings by college major for veterans and nonveterans. The earnings regression shown in column (1) includes no controls, apart from the college majors by veteran status. Our preferred earnings regression is shown in column (2); it includes a detailed set of individual controls, but not detailed occupation and year fixed effects.

A third regression, shown in column three, includes the full set of occupation and year fixed effects. We place less weight on the results from column (3) than on results from column (2). We downplay the results in column (3) because detailed occupation and industry fixed effects absorb much of the skill and (to a lesser extent) working conditions that determine earnings. Inclusion of detailed occupation and industry (i.e., job effects) biases returns to schooling and other forms of experience (including time in the military). Column 3 in Table 6 shows coefficients that are systematically attenuated, relative to those in column (2).

The nine college major coefficients shown in Table 6 measure the relative returns to each major among nonveterans, as compared to nonveteran returns in the omitted social science major. We find nonveteran returns to the education, humanities, industrial/production, and "other" (non-designated) degrees are lower than nonveteran returns from social science degrees. Likewise, the returns to nonveterans for communications, engineering/computer science, the sciences, medicine, and business law majors exceed those of the social sciences.

Our primary focus is on how college returns differ between veterans and nonveterans for alternative majors. These estimates are shown by the interaction terms of veteran status with respect to the different college majors. Focusing on column (2), the veteran coefficient is -0.014, indicating that veterans realize earnings roughly 1.4 percent lower than do nonveterans among those whose college major was in the social sciences (i.e., the omitted group of college majors). Most of the coefficients interacting veteran status and a college major/field are negative, indicating lower returns for veterans than for nonveterans in these fields. Particularly large are

the negative coefficients for veteran returns on business/law and education. Working in the opposite direction, veterans receive higher returns than do nonveterans in four general fields of study – the sciences, industrial/production, medicine, and engineering/computer science.

IX. Veteran Hiring in the Public Sector

Veterans are disproportionately employed in public sector jobs. This is not surprising. As discussed previously, veterans are underrepresented in the lower and upper tails of the ability distribution, while overrepresented toward the middle of the distribution. Veterans' skills and experiences often match up well with public sector jobs, be they police, firefighters, paramedics, nurses, postal workers, or teachers. In addition, there exist veteran preferences in hiring for most federal jobs (including the U.S. Postal Service). Applicants are rated and ranked by agencies. For veterans who have an honorable or general discharge, they are typically awarded additional rating "points" in the ranking of applicants for a given federal position.

Veteran hiring preferences are not restricted to federal jobs. Most state and local governments also adopt veteran hiring preferences (Lewis et al., 2014). Given that jobs in the federal government are a small share of all public sector jobs, most public sector workers are employed by state and local governments rather than the federal government. Public sector veterans are disproportionately employed in state and local government jobs, particularly so in male-dominated occupations such as police and firefighters (Lewis et al., 2014).[17]

Our 2005-2018 CPS sample of wage and salary workers confirms the disproportionate presence of veterans in public sector jobs. We find 23.4 percent of our male veteran sample employed in the public sector, as compared to only 12.7 percent among male nonveterans. Women are disproportionately employed in the public sector. Among our female sample, 31.5 percent are public sector workers, as compared to 19.1 percent among nonveterans.

Given that the public sector is more highly unionized than is the private sector, it follows that veterans are more likely than are nonveterans to be union members.[18] Among all men

[17] Based on calculations from the 2018 CPS, 48.8% of public workers are local government workers, 33.6% state workers, 14.6% non-postal federal, and 3.0% postal service. These public workers account for 15.1% of all wage and salary workers.

[18] Based on the CPS, 33.9 percent of public sector workers were union members in 2018, as compared to 6.4 percent in the private sector (BLS, 2019, Table 3). Roughly half of all union members are public sector workers.

(women) in 2018, 11.1 (9.9) percent were union members (BLS, 2019, Table 1). We calculate that among veterans in 2018, 17.5% of men were union members, while 14.7% of women were union members.

We showed earlier that veterans are employed in occupations with lower average growth in employment and earnings. These patterns are reinforced by the concentration of veterans in the public sector. The share of public sector jobs and wage growth in the public sector have declined relative to the private sector. Based on CPS data for 2005 and 2018, public sector employment grew by only 3.6 percent over these years, as compared to 12.8 percent in the private sector and 11.3 percent for all wage and salary workers. Real hourly wage growth in the public sector over 2005-2018 period grew by 19.0 percent, as compared to 26.6 percent for the private sector (Hirsch and Macpherson, 2019, Table 2a).

X. Conclusion

Our analysis provides new evidence on the civilian earnings of military veterans, both men and women, over the 2005 to 2018 period, based primarily on evidence from the monthly Current Population Surveys (CPS) and the annual American Community Surveys (ACS). For both men and women, we find civilian earnings of veterans roughly the same as the earnings of similar nonveterans. The finding of a near-zero earnings gap has an intuitive interpretation.

While time served in military service decreases time spent in civilian life (e.g., school and civilian work experience), absence of a systematic earnings gap between veterans and nonveterans implies that time spent in the military contributes to subsequent civilian earnings roughly the same as does time spent in the civilian sector. Broadly similar results occur for both male and female veterans. Selection into the military subsequently leads to a civilian labor force that has a substantial number of veterans, few of whom have extremely low skills, criminal records, or poor health due to earlier selection by the military.[19] Because earnings are relatively compressed in the military, high skilled young men and women with high civilian earnings potential are less likely to enter the military.

Given the military selection process, it is not surprising that we see military veterans overrepresented in middle-class jobs, while underrepresented in both the lower and higher tails of the wage distribution. Veterans are less likely to have professional licenses than do nonveterans,

[19] The obvious exception are military veterans injured either in combat or in other on-the-job military activities.

and their returns to licensing are below those for nonveterans. Veterans are more likely to live outside of larger metropolitan areas, thus receiving earnings lower than seen in large urban areas. Because military veterans are highly represented in middle-class jobs, they have been disproportionately exposed to the hollowing out of many middle-class jobs, due in large part to technological change.

Veterans have disproportionately entered occupations having lower than average growth in both employment and earnings. Given these negative forces affecting veterans' earnings, the approximate equivalence of veteran and nonveteran earnings could be considered a pleasant surprise. We cannot predict how future labor market forces will shape the relative earnings of veterans and nonveterans. It is important, however, that we do not ignore future patterns of earnings and employment among those who have served in the military.

Although not a major focus of the paper, our results may help guide policy. The combination of deteriorating outcomes for veterans and low returns to educational investments point toward the importance of helping service members transition more effectively into the private sector. To do so, veterans increasingly will need to acquire the skills and/or formal or informal credentials that enable them to obtain attractive jobs aligned with their skills and interests. Policy barriers, however, such as state-specific occupational licensing requirements, can erect barriers that make transitions difficult. Not all veterans are provided with information about their post-service labor market opportunities in advance, making last-minute efforts too-little too-late. Applications of artificial intelligence (AI) to individual military experience records and stated preferences may provide personalized feedback that translates into improved matches in the labor market. Such endeavors might also provide smoother income streams, as well as steering veterans toward meaningful work that mitigates the risks of mental health problems among veterans (Zivin et al., 2011).

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Table 1: Male Hourly Earnings Differences Among Veterans and Nonveterans, by Group

	log(Hourly Real Earnings)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
College Degree		.740***	.540***	.545***	.539***	.538***	.540***	.534***	.539***
		[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]
Postgraduate Degree		.957***	.700***	.706***	.700***	.699***	.700***	.695***	.700***
		[.003]	[.003]	[.003]	[.003]	[.003]	[.003]	[.003]	[.003]
Is Black		-.213***	-.154***	-.154***	-.157***	-.154***	-.154***	-.154***	-.155***
		[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]
Is Hispanic		-.153***	-.117***	-.116***	-.117***	-.122***	-.116***	-.112***	-.117***
		[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]
Rural Area							-.136***		
							[.002]		
Union Coverage								.134***	
								[.002]	
Public Employee									.012***
									[.003]
Is a Veteran	.123***	.013***	.002	.018***	-.001	-.005***	.007***	-.001	-.005**
	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]
× Has College Degree				-.055***					
				[.004]					
× Is Black					.024***				
					[.005]				
× Is Hispanic						.098***			
						[.007]			
× Rural Area							-.028***		
							[.004]		
× Union Coverage								.016***	
								[.004]	
× Public Employee									.031***
									[.004]
R-squared	.00	.35	.42	.42	.42	.42	.42	.43	.42
Sample Size	1151288	1151288	1151288	1151288	1151288	1151288	1151288	1151288	1151288
Individual Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes.–Sources: Monthly Current Population Survey, 2005-2018. The table reports, restricted to males only, the coefficients associated with regressions of logged hourly earnings (deflating nominal weakly earnings using the personal consumption expenditure index with 2012 as a base year) on an indicator for veteran status and various interaction effects, controlling for a quadratic in potential experience (age net of years of schooling minus 5), education fixed effects (high school degree, some college, associates, college, and postgraduate, normalized to less than a high school degree), race (white & hispanic, black, normalized to white & non-hispanic), married, family size, and fixed effects on metropolitan size (over 5 million, 2.49-4.9 million, 1-2.49 million, 500,000-999,999, 249,999-499,999, 100,000-249,999, normalized to a non-metro area). Public employees are those working in the federal, state, or local government. The sample is restricted to males, specifically those who are employed and not in full-time school. Standard errors are heteroskedasticity-robust and observations are weighted using `earnwt`.

Table 2: Robustness in the Current Population Survey Using Female Hourly Earnings

	log(Hourly Real Earnings)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
College Degree		.722***	.471***	.472***	.471***	.471***	.471***	.469***	.471***
		[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]
Postgraduate Degree		.946***	.660***	.661***	.660***	.660***	.660***	.653***	.659***
		[.003]	[.003]	[.003]	[.003]	[.003]	[.003]	[.003]	[.003]
Is Black		-.103***	-.082***	-.082***	-.082***	-.082***	-.082***	-.083***	-.083***
		[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]
Is Hispanic		-.103***	-.068***	-.068***	-.068***	-.069***	-.068***	-.067***	-.068***
		[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]	[.002]
Rural Area							-.166***		
							[.002]		
Union Coverage								.110***	
								[.002]	
Public Employee									.025***
									[.002]
Is a Veteran	.143***	.044***	.004	.017***	.004	-.000	.007	.003	-.008
	[.006]	[.005]	[.005]	[.005]	[.005]	[.005]	[.005]	[.005]	[.006]
× Has College Degree				-.033***					
				[.010]					
× Is Black					.001				
					[.011]				
× Is Hispanic						.063***			
						[.019]			
× Rural Area							-.012		
							[.010]		
× Union Coverage								.008	
								[.013]	
× Public Employee									.039***
									[.010]
R-squared	.00	.32	.41	.41	.41	.41	.41	.41	.41
Sample Size	1106956	1106956	1106956	1106956	1106956	1106956	1106956	1106956	1106956
Individual Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes.–Sources: Monthly Current Population Survey, 2005-2018. The table reports, restricted to females only, the coefficients associated with regressions of logged hourly earnings (deflating nominal weakly earnings using the personal consumption expenditure index with 2012 as a base year) on an indicator for veteran status and various interaction effects, controlling for a quadratic in potential experience (age net of years of schooling minus 5), education fixed effects (high school degree, some college, associates, college, and postgraduate, normalized to less than a high school degree), race (white & hispanic, black, normalized to white & non-hispanic), married, family size, and fixed effects on metropolitan size (over 5 million, 2.49-4.9 million, 1-2.49 million, 500,000-999,999, 249,999-499,999, 100,000-249,999, normalized to a non-metro area). Public employees are those working in the federal, state, or local government. The sample is restricted to males, specifically those who are employed and not in full-time school. Standard errors are heteroskedasticity-robust and observations are weighted using `earnwt`.

Table 3: Robustness Using the American Community Survey for Annual Earnings Differences

	log(Annual Real Earnings)													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Is a Veteran	.073***	-.017***	-.046***	-.028***	-.005***	-.031***	-.032***	.217***	.090***	-.003	-.016***	.006**	-.018***	-.018***
	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.003]	[.003]	[.003]	[.002]	[.003]	[.002]	[.002]
× Has College Degree					-.079***							-.059***		
					[.002]							[.005]		
× Is Black						.033***							.011*	
						[.003]							[.006]	
× Is Hispanic							.082***							.044***
							[.004]							[.011]
log(Hours Worked per Week)				.863***	.862***	.863***	.863***				.929***	.929***	.929***	.929***
				[.002]	[.002]	[.002]	[.002]				[.001]	[.001]	[.001]	[.001]
14-26 Weeks Last Year				.851***	.851***	.851***	.851***				.875***	.875***	.875***	.875***
				[.004]	[.004]	[.004]	[.004]				[.004]	[.004]	[.004]	[.004]
27-39 Weeks Last Year				1.299***	1.299***	1.299***	1.299***				1.356***	1.356***	1.356***	1.356***
				[.004]	[.004]	[.004]	[.004]				[.004]	[.004]	[.004]	[.004]
40-47 Weeks Last Year				1.605***	1.605***	1.605***	1.605***				1.643***	1.643***	1.643***	1.643***
				[.004]	[.004]	[.004]	[.004]				[.003]	[.003]	[.003]	[.003]
48-49 Weeks Last Year				1.771***	1.770***	1.770***	1.771***				1.761***	1.761***	1.761***	1.761***
				[.004]	[.004]	[.004]	[.004]				[.004]	[.004]	[.004]	[.004]
50-52 Weeks Last Year				1.867***	1.867***	1.867***	1.867***				1.870***	1.870***	1.870***	1.870***
				[.004]	[.004]	[.004]	[.004]				[.003]	[.003]	[.003]	[.003]
R-squared	.00	.29	.39	.61	.61	.61	.61	.00	.20	.33	.66	.66	.66	.66
Sample Size	8419665	8419665	7768583	7768583	7768583	7768583	7768583	7591941	7591941	7004913	7004913	7004913	7004913	7004913
Individual Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation FE	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Time FE	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Sample	Male	Male	Male	Male	Male	Male	Male	Female	Female	Female	Female	Female	Female	Female

Notes.–Sources: American Community Survey, 2005-2018. The table reports, separately by gender, the coefficients associated with regressions of logged annual earnings (deflating nominal weakly earnings using the personal consumption expenditure index with 2012 as a base year) on an indicator for veteran status, controlling for a quadratic in potential experience (age net of years of schooling minus 5), education fixed effects (high school degree, some college, associates, college, and postgraduate, normalized to less than a high school degree), race (white & hispanic, black, normalized to white & non-hispanic), and a married indicator. The sample is restricted to those who are employed and not in full-time school. Standard errors are heteroskedasticity-robust and observations are weighted using `perwt`.

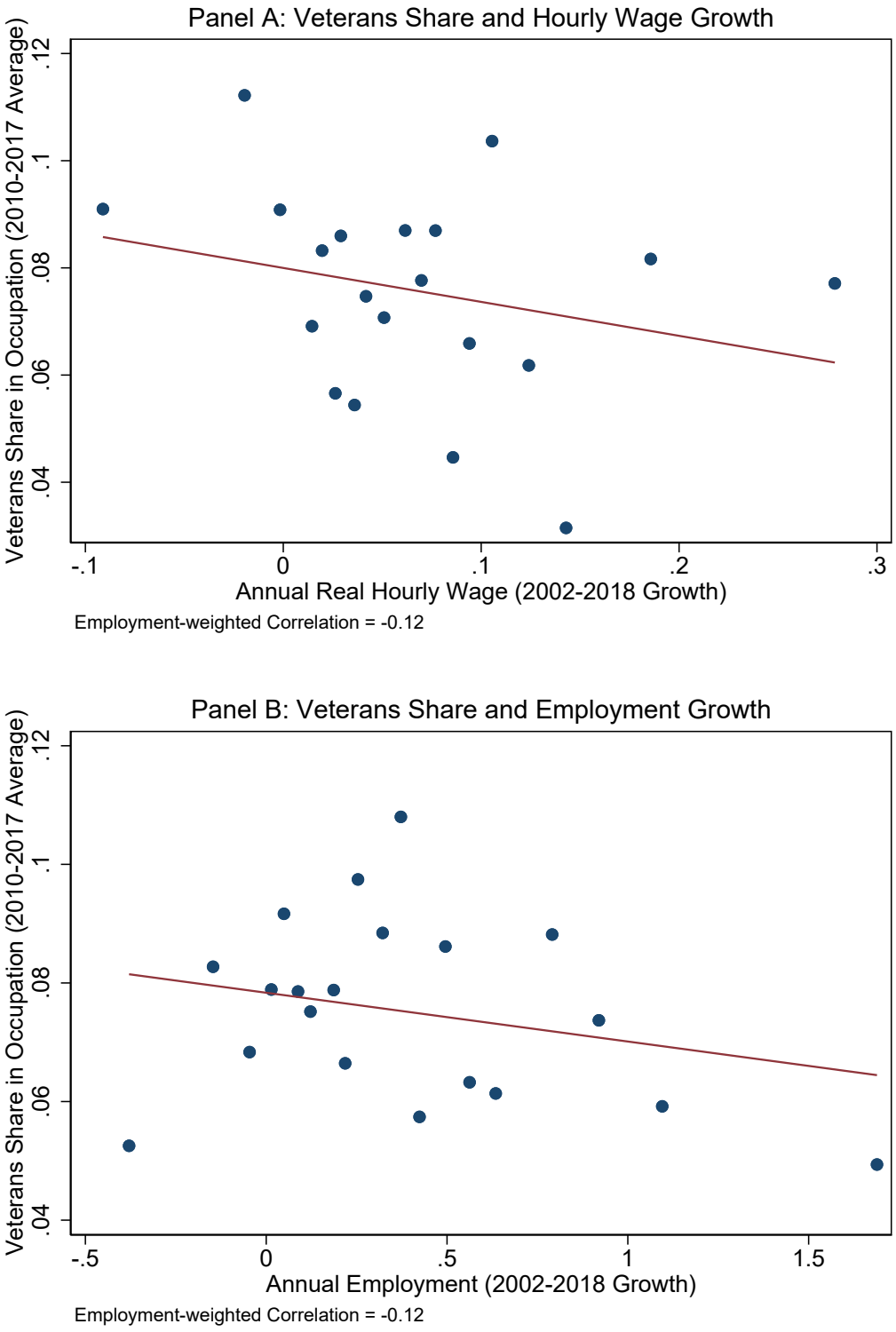

Figure 1: Earnings and Employment Growth Across Occupations

Notes.–Sources: American Community Survey, 2010-2017, Occupational Employment Statistics, 2002-2018. The figure plots the share of veterans at a four-digit SOC level from 2010-2017 with the growth in employment and real hourly wages (deflated with 2012 prices from the personal consumption expenditure index) between the 2002-03 and 2017-18 averages. Observations are weighted by employment in the four-digit occupational cell.

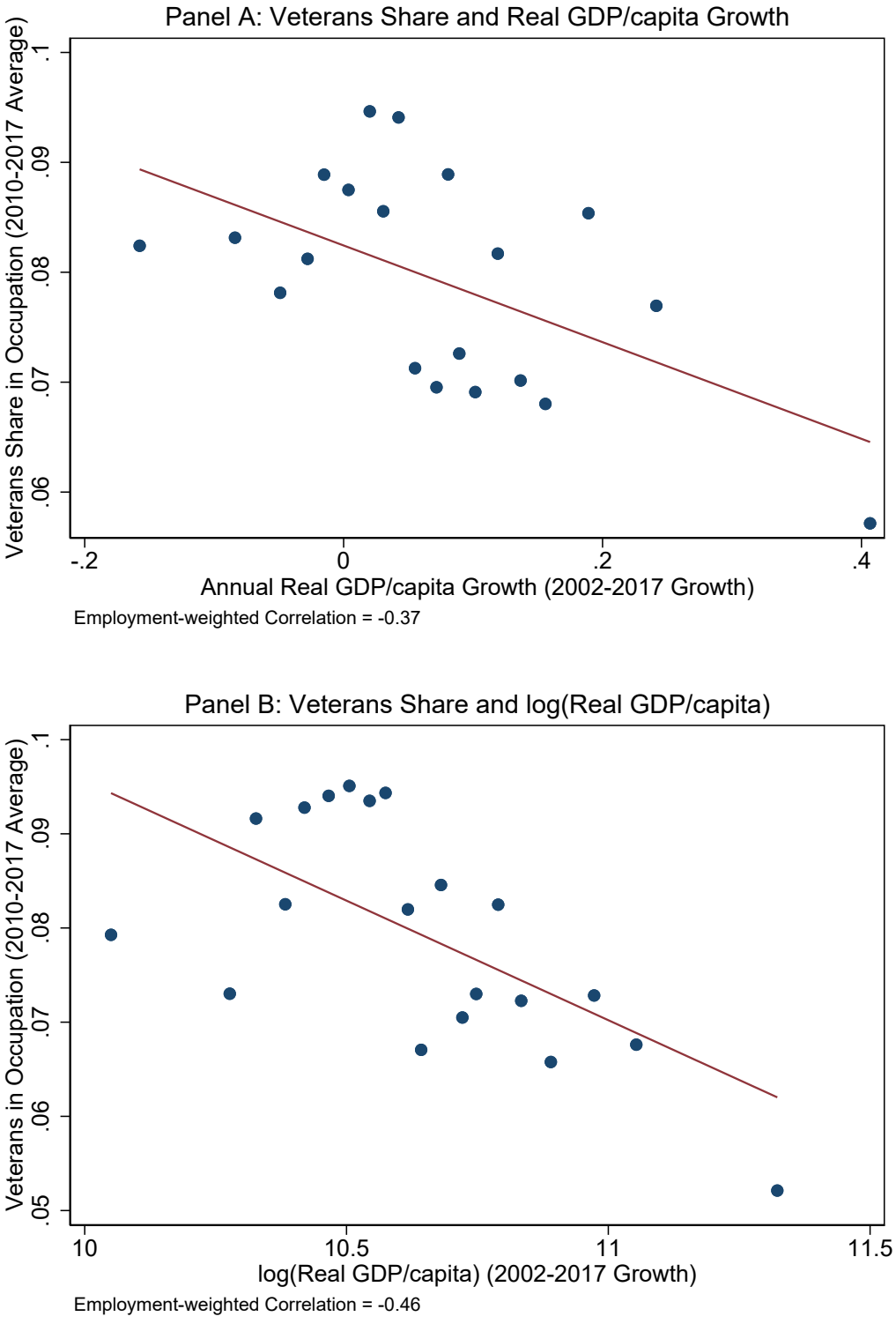

Figure 2: Real GDP and Veterans Incidence Across Metropolitan Areas

Notes.–Sources: American Community Survey, 2010-2017, Bureau of Economic Analysis, 2002-2018. The figure plots the share of veterans at a four-digit SOC level from 2010-2017 with logged real (in 2012 prices) GDP per capita 2017-18 average and its growth between the 2002-03 and 2017-18 averages. Observations are weighted by the number of respondents from the ACS in a given metropolitan area.

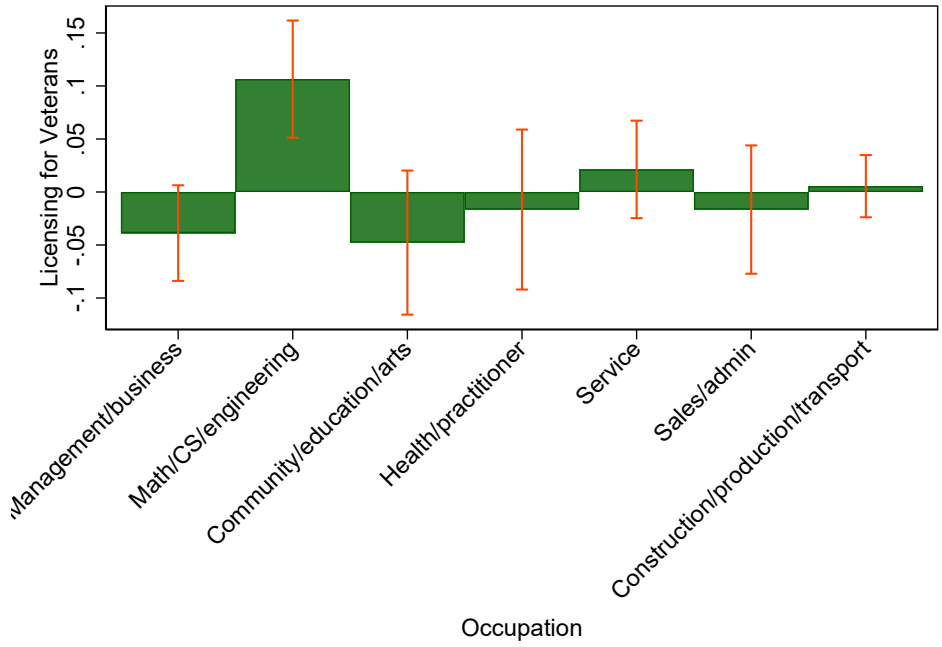

Figure 3: Heterogeneity in Earnings Among Veterans With versus Without Certifications/Licenses

Notes.–Sources: CPS Monthly, 2015-2019. The figure reports the coefficients associated with regressions of logged earnings on an indicator for whether the individual is a veteran, an indicator for whether the individual has a professional license (excluding business), and the interaction, conditional on controls, separately for major occupational groups.

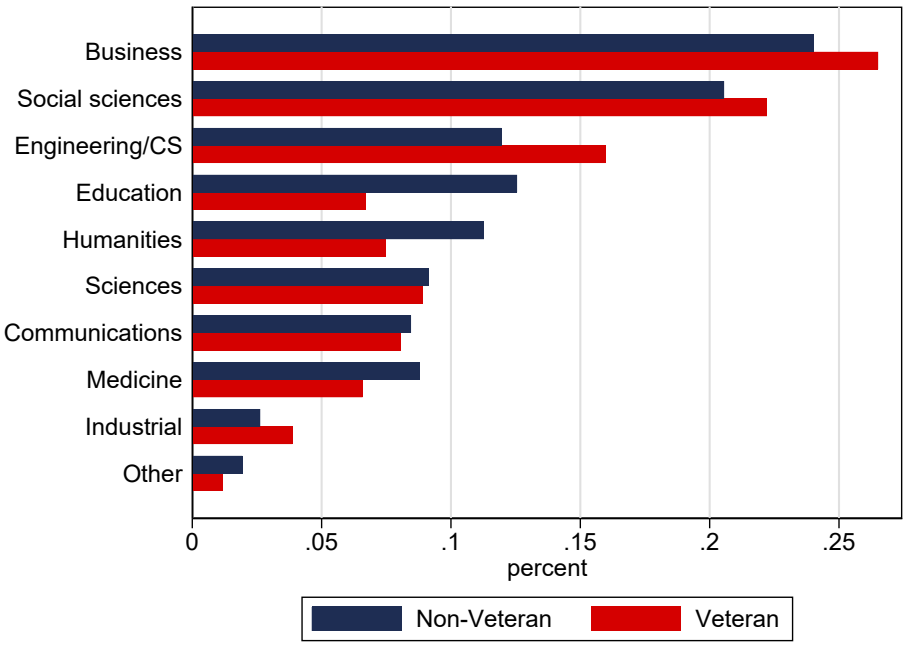

Figure 4: Distribution of College Degrees for Veterans and Nonveterans

Notes.–Sources: ACS, 2009-2017. The figure plots the share of individuals with different types of college degrees.

Table 6: Labor Market Returns to Different College Degrees, Veterans and Nonveterans

	log(Annual Earnings)		
	(1)	(2)	(3)
Communications	.098***	.125***	.019***
	[.002]	[.002]	[.002]
Engineering/CS	.423***	.265***	.105***
	[.002]	[.002]	[.002]
Education	-.267***	-.227***	-.067***
	[.002]	[.002]	[.002]
Humanities	-.179***	-.145***	-.065***
	[.002]	[.002]	[.002]
Sciences	.289***	.134***	.025***
	[.003]	[.002]	[.002]
Industrial/Production	.042***	-.024***	-.016***
	[.004]	[.003]	[.003]
Other	-.079***	-.069***	-.023***
	[.004]	[.004]	[.004]
Medicine	.093***	.184***	.047***
	[.002]	[.002]	[.003]
Business/Law	.153***	.156***	.059***
	[.002]	[.002]	[.002]
Veteran	.135***	-.018***	-.035***
	[.005]	[.005]	[.005]
× Communications	.013	-.034***	-.017**
	[.010]	[.009]	[.008]
× Engineering/CS	-.135***	-.012	.015**
	[.008]	[.008]	[.007]
× Education	-.064***	-.058***	-.068***
	[.011]	[.010]	[.010]
× Humanities	-.000	-.009	.010
	[.010]	[.010]	[.009]
× Sciences	.036***	.106***	.047***
	[.010]	[.010]	[.009]
× Industrial/Production	-.007	.055***	.043***
	[.013]	[.013]	[.011]
× Other	-.045*	-.003	-.015
	[.023]	[.023]	[.021]
× Medicine	.046***	.028***	.021**
	[.011]	[.010]	[.009]
× Business/Law	-.129***	-.083***	-.040***
	[.007]	[.007]	[.006]
R-squared	.04	.19	.35
Sample Size	4192985	4192985	4192985
Individual Controls	No	Yes	Yes
Occupation FE	No	No	Yes
Year FE	No	No	Yes

Notes.–Sources: American Community Survey, 2009-2017. The table reports the coefficients associated with regressions of logged annual earnings (deflated with the 2012 personal consumption expenditure deflator) on an indicator for being a veteran, an indicator for whether the individual has undergraduate college degree d (where d denotes the columns), and their interaction, conditional on controls. These controls include: a quadratic of age, marital status, race (white, black, asian), years of schooling, and four-digit occupational and year fixed effects. Standard errors are heteroskedasticity-robust and observations are weighted by the sample weights.