

Solutions for Information Design, LLC



CREC CENTER FOR
REGIONAL ECONOMIC
COMPETITIVENESS



Certifications and Licenses

Attainment and Earnings for the Veteran Workforce

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Report Summary

This report describes veterans' attainment of certifications and licenses, with an emphasis on post-9/11 veterans. Utilizing a new data set derived from the 2016-2018 Current Population Survey (CPS), the Center for Regional Economic Competitiveness (CREC) examined veterans' attainment of certifications and licenses and associated earnings.

We find that veterans have higher levels of certification and licensure than non-veterans. Hispanic Veterans have almost twice the rate of certification or licensure than non-veterans. Veterans with certifications and licenses have higher earnings than veterans without certifications and licenses. These earnings differences are pronounced for veterans with lower levels of education and veterans with more than a bachelor's degree. Among Post-9/11 veterans, the gender wage gap is reduced among those with a certification or license. Similarly, earnings gaps between different races and ethnicities were reduced among Post-9/11 veterans with a certification or license, relative to those without a certification or license. We explore other sources of variation, including industry and occupation as well as the demographic categories of age, sex, race and ethnicity.

This report may provide useful information for veterans and workforce institutions, especially for stakeholders in the Department of Defense (DOD) committed to providing educational and job training opportunities to service members preparing to enter the civilian workforce. Certifications and licenses, and other non-degree credentials, can help to signal veterans' skills, abilities and career goals to employers, help employers recognize those skills and abilities, and help veterans to identify relevant and gainful post-service employment opportunities.

Introduction

With approximately 20 million military veterans in the U.S. population, and with tens of thousands more leaving the military honorably each year, it is important to understand how well veterans are doing in the civilian workforce. The men and women that serve in the military deserve an opportunity to succeed in their post-service civilian careers, and it is important that we seek out ways to ease the transition. Too often, civilian employers are unfamiliar with military training, education and experience so they are not certain how to gauge the relevance or value of the knowledge, skills, and abilities that veterans attain during their military service. This report seeks to help DOD stakeholders strengthen the bridge between military and civilian occupations by identifying the role that certifications and licenses (which are non-degree credentials often specific to vocational tracks) play in veterans' post-military careers and how they impact worker earnings.

In January 2015, the U.S. Bureau of Labor Statistics (BLS) began collecting the first-ever data on the prevalence of certifications and licenses among working age adults in the U.S. population. The data were collected through the Current Population Survey (CPS), a monthly survey of U.S. households conducted by the BLS, using questions added explicitly to assess attainment of certifications and licenses. As defined in the CPS, certifications and licenses represent credentials issued by non-governmental and governmental entities to demonstrate an individual's competency related to a skill or knowledge used in performing specific jobs.¹ BLS has released the data at a national level since April 2016.

In addition, the CPS survey collects information on veteran status. First, interviewers ask whether the individual has ever served on active duty in the U.S. Armed Forces. If the answer is yes, interviewers ask the period of service for which the individual served (e.g., Vietnam-Era, Gulf-War Era or Post-9/11 Era).²

The combination of survey results regarding BLS certification and licensure, veteran status, employment and earnings allows researchers and policymakers to better understand the role of certifications and licenses within veteran populations. Taken together, these data provide information about the prevalence of certifications and licenses among the employed and unemployed veterans, and those insights can be analyzed by demographic characteristics, and by industry and occupation. The data also provide insights about the relative earnings impact that having a certification or license has for veterans, when controlling for other variables such as occupation.

This report seeks to identify the prevalence of certification and license attainment for veterans as well as any associated earnings increases with information available from the CPS. While we know that civilian credentialing is a challenge for service members leaving military service,³ we don't necessarily know where veterans are succeeding or how they compare to the general population in terms of

¹ Bureau of Labor Statistics. (2019). Labor force statistics from the current population survey. Retrieved from <https://www.bls.gov/cps/certifications-and-licenses.htm>

² Bureau of Labor Statistics. (2019). Current population survey questionnaires: Demographic items. Retrieved from <http://www2.census.gov/programs-surveys/cps/techdocs/questionnaires/Demographics.pdf?#>

³ Solid, L. L. C. (2017). The state of credentialing of service members and veterans: challenges, successes, and opportunities. Prepared for Military.com

attaining these credentials. As we explain further below, the data to answer these questions regarding certifications and licenses is only recently available through the CPS.

Past research reveals that certifications and licenses are important credentials for many civilian occupations. According to data from the CPS, a certification or license is held by 19 percent of people in transportation and material transport, 37 percent of people in protective service, 37 percent of people in community and social services, 66 percent of people in legal occupations, and 76 percent of people in healthcare professions.⁴ The difference in average weekly earnings for those with a certification or license (as reported by the CPS) ranges from \$70 to \$744, depending on the occupation.⁵

Using the newly available CPS data for this report, we find these same certifications and licenses can be equally, or even more, impactful for veterans. We find that post-9/11 veterans have a higher rate of certification and license attainment than non-veterans at every age level below age 55. This holds across every racial and ethnic group. Hispanic or Latino post-9/11 veterans (of any race), for example, have attainment rates almost double that of non-veterans (27% versus 14%).

There is also a boost to earnings for veterans with certification or license attainment. For instance, employed post-9/11 veterans with a certification or license earned \$183 more in median weekly earnings relative to those without a certification or license. Among veterans age 25 and over without a baccalaureate degree, those with a certification or license earned an additional \$175 per week than those without a certification or license; non-veterans earned an additional \$63 per week. It is notable that the CPS data tells us whether an individual respondent (veteran or not) has a certification or license; however, it does not tell us where or when those credentials were attained so it is not possible to assess the value of military-related training or any specific certification or license.⁶

Data

Our analysis of certifications and licenses for veterans was developed from the Current Population Survey (CPS) Public Use Microdata (PUMS) files. The CPS is a monthly survey of roughly 60,000 American Households conducted jointly by the U.S. Census Bureau and the Bureau of Labor Statistics (BLS). While most widely known for producing monthly reports on unemployment and labor force participation, the “basic monthly survey” of the CPS includes a wide variety of economic and demographic questions.

In January of 2015, the CPS added two questions. One asked whether the respondent had any active professional certifications or licenses. The second asked whether a governmental body issued any of these licenses. BLS defines a license as a credential authorized by a government licensing agency based

⁴ Bureau of Labor Statistics. (2019). Certification and licensing status of the employed by occupation. Retrieved from <https://www.bls.gov/cps/certifications-and-licenses.htm>

⁵ Bureau of Labor Statistics. (2019). Certification and licensing status of the employed by occupation. Retrieved from <https://www.bls.gov/cps/certifications-and-licenses.htm>

⁶ The only related question in the CPS, not explored in this report, is whether the certification or license is required for the individual’s current job.

on pre-determined criteria that conveys legal authority to work in an occupation. The BLS defines a certification as a credential awarded by a non-governmental body that conveys the knowledge, skills, and abilities to perform a specific job.^{7,8,9}

Specifically, the CPS asks respondents if they “have a currently active professional certification or a state or industry license.”¹⁰ We expect that veterans report military certifications as well as civilian certifications and licenses when they respond “yes” to this question. Due to the nature of the question, it is not possible to fully distinguish license holders in the data. Additionally, it is possible that respondents do not distinguish certifications and licenses from each other. All attainment results reported below are for certifications *or* licenses and do not distinguish between these non-degree credentials.

While primarily used to generate estimates at the national scale, the CPS is designed to be representative at the state level. However, BLS does not publish state-level reports on certifications and licenses because the sample size is deemed insufficient to provide detailed estimates for certain attributes in smaller states. The CREC research team developed estimates for veterans from tabulations of individual (person-level) responses, using the same methodology as BLS but across multiple years of data, adding enough observations to generate a sample size large enough to report state-level results and results for key sub-populations.

In using the survey results from the CPS, we are creating estimates and not precise values. While the sample created by pooling the 2016–2018 survey results creates a large sample by statistical standards, there likely is random error in the sample. Sample size limits are especially salient for data reported for small sub-groups, such as certified or licensed workers in minority populations, the veteran population, and for detailed occupations. The sample size for individual states is much smaller than for the nation. To help mitigate this problem, and smooth over seasonal fluctuations, results are from a three-year average of monthly values. The value for each individual month was determined and then the average was calculated for all thirty-six months.¹¹

The American Community Survey (ACS) administered by the U.S. Census Bureau, and not the CPS, is typically used to describe the veteran population and is the primary data source used by the Department of Veterans Affairs’ National Center for Veterans Analysis and Statistics to analyze the veteran population. Because the ACS does not include data on certification and licensure, we use CPS

⁷ Bureau of Labor Statistics. (2017). Frequently asked questions about data on certifications and licenses. Retrieved from <https://www.bls.gov/cps/certifications-and-licenses-faqs.htm>

⁸ Allard, D.M. (2016). Adding questions on certifications and licenses to the Current Population Survey. *Monthly Labor Review*, U.S. Bureau of Labor Statistics. <https://doi.org/10.21916/mlr.2016.52>.

⁹ U.S. Bureau of Labor Statistics. (2017). What is the difference between a certification and a license? Retrieved from <https://www.bls.gov/cps/certifications-and-licenses-faqs.htm#whatare>

¹⁰ U.C. Census Bureau. Current population survey (CPS) questionnaires: Labor force items. Retrieved from: <http://www2.census.gov/programs-surveys/cps/techdocs/questionnaires/Labor%20Force.pdf?#>

¹¹ This follows the same methodology used by the BLS in reporting U.S. statistics on certifications and licenses for one year.

data throughout this report to remain consistent with the certification and licensure data found in the CPS. Because federal surveys differ in their sample population and sampling methods, results may differ across surveys.

Key Report Definitions

To simplify the language in this report, we refer to the rate at which different populations attain certifications or licenses as the “attainment rate.” To find the attainment rate for various sub-populations, we divide the number of people with a certification or license by the total number of people.

In reporting earnings, we report the earnings of people without a certification or license and then the difference between the earnings of people with and without a certification or license. We find the difference by subtracting the earnings of people without a certification or license from the earnings of people with a certification or license.

It is important for readers to note that the tables and narrative below refer alternately to *employed* populations and to the *labor force*. The labor force includes both employed and unemployed people (or those seeking work that are not currently employed). In general, we examine the *labor force* when discussing the potential labor supply of civilians, including both veterans and non-veterans. However, in certain instances, it makes sense to focus on the *employed* population because it is easier to validate their industry or occupation.

Title	Population Described
Table 1. Selected demographic characteristics for Veterans, Post-9/11 Veterans, and Non-Veterans.	Civilian Non-Institutional Population, 17 Years and over
Table 2. Percent of Veterans, Post 9/11 Veterans and Non-Veterans by Place of Employment	Employed Population, 17 years and over
Table 3. Number and attainment rate (percent with a certification or license) for Veterans, Post-9/11 Veterans and Non-Veterans by selected demographic characteristics.	Labor Force, 17 Years and Over
Table 4. Number and attainment rate (percent with a certification or license) for Veterans, Post-9/11 Veterans and Non-Veterans by highest level of education.	Labor Force, 25 Years and Over
Table 5. Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by selected demographic characteristics.	Full Time Wage and Salary Workers, 17 years and over
Table 6. Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by highest level of education	Full Time Wage and Salary Workers, 25 years and over
Figure 1. Employed Veterans, Post-9/11 Veterans, and Non-Veterans by Age Group.	Employed Population, 17 years and over
Figure 2. Attainment Rate for Veterans, Post-9/11 Veterans, and Non-Veterans by state, 25 years and over.	Labor Force, 25 Years and over
Figure 3. Earnings differences, with and without a certification or a license, Veterans, Post-9/11 Veterans, and Non-Veterans by occupation.	Full Time Wage and Salary Workers, 17 years and over
Figure 4. Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by state, 25 years and over.	Full Time Wage and Salary Workers, 17 years and over

Differences among Veterans, Post-9/11 Veterans and the Non-Veteran Workforce

A challenge in planning for veterans' transition to civilian life is anticipating the size and demographics of the military (and new cohorts of veterans). Veterans from different eras have profoundly different characteristics, and the civilian labor market has changed dramatically as well.^{12,13} Whereas 18 percent of the civilian population had military experience in 1980, only seven percent had military experience in 2016.¹⁴ In 2016, veterans that served during the Gulf War era (1990 to 2001) became the largest population of U.S. veterans, surpassing the number of Vietnam-era veterans.¹⁵

Veterans entering the civilian labor force today are not only from a much different demographic than veterans entering the workforce 30 years ago, they are also entering a much different labor market. In the sections below, we compare veterans that served after September 11th, 2001 ("post-9/11 veterans") with all veterans ("veterans") and with the civilian workforce. The civilian workforce is representative of the civilian labor market—civilians with whom veterans are competing for employment.

This section of the report compares selected demographic variables across veterans, post-9/11 veterans (a sub-population of veterans), and the non-veteran population. Unless otherwise noted, all statistics are from the Current Population Survey (CPS).

Age

Any observations of the entire veteran population ("veterans") will be heavily influenced by older cohorts because they represent such a large share of the total veteran population. Older veterans are much less likely to participate in the labor force, often because they are retired or no longer seeking work for other reasons. Post-9/11 veterans have higher labor force participation rates and tend to include younger service members that more recently entered civilian life. Overall, 65 percent of veterans are over the age of 55, but just two percent of post-9/11 veterans are over the age of 55. Most post-9/11 veterans are in their prime working years between the ages of 25 and 44, and 9 percent are under the age of 24 (See Table 1 for more detail).

Figure 1 compares the age distribution of veterans, post-9/11 veterans and non-veterans that are employed. This figure removes retirees and other veterans that are no longer seeking work as well as veterans that are unemployed. While these employed populations are more comparable, we still see

¹² Parker, K., Cilluffo, A. & Stepler, R. (2017). 6 Facts about the U.S. military and its changing demographics. Retrieved from: <https://www.pewresearch.org/fact-tank/2017/04/13/6-facts-about-the-u-s-military-and-its-changing-demographics/>

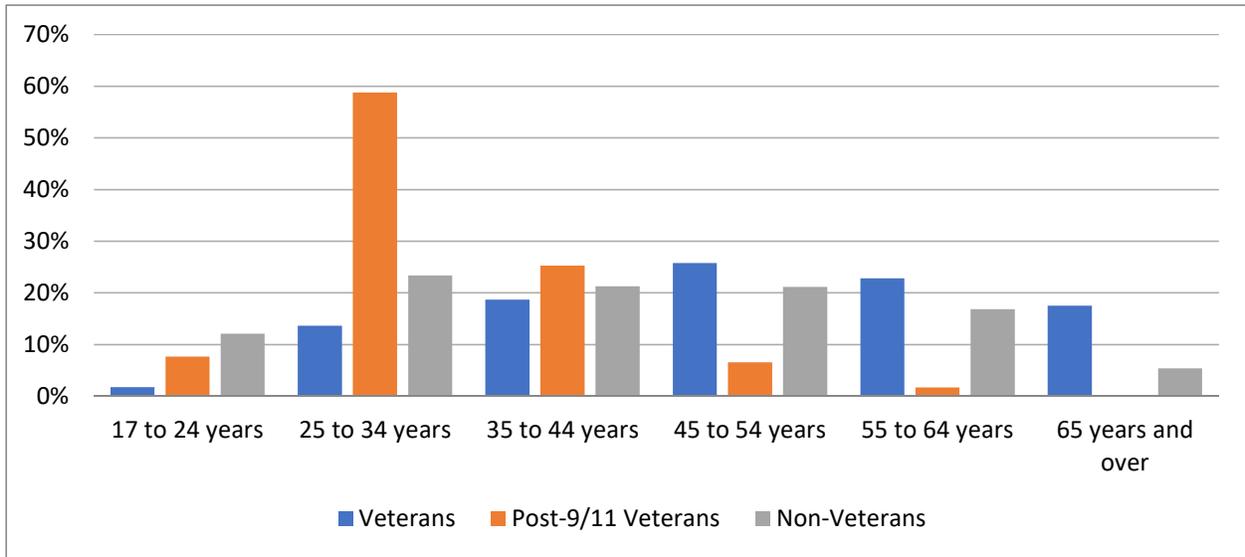
¹³ Bialk, K. (2017). The changing face of America's veteran population. Retrieved from: <https://www.pewresearch.org/fact-tank/2017/11/10/the-changing-face-of-americas-veteran-population/>

¹⁴ According to the American Community Survey, veterans comprise 7.7 percent of the U.S. population. Retrieved from: <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

¹⁵ U.S. Department of Veteran Affairs: National Center for Veteran Analysis and Statistics. (2019). Veteran Population. Retrieved from https://www.va.gov/vetdata/veteran_population.asp

large differences in the age distribution. Only 6.5 percent of employed post-9/11 veterans are 45 to 54 years old, compared to 25.7 percent of all employed veterans; 58.7 percent of employed post-9/11 veterans are 25 to 34 years old, compared to 13.6 percent of all employed veterans. The post-9/11 veteran population is also younger than the non-veteran population: 98 percent of post-9/11 veterans are 17 to 55, compared to 66 percent of non-veterans.

Figure 1: Percent of employed Veterans, Post-9/11 Veterans, and Non-Veterans in each age group.



Sex, Race and Ethnicity

Comparing the sex, racial and ethnic diversity of the post-9/11 veteran populations with veterans and non-veterans further highlights the differences among these groups. Veterans are 90.3 percent male and 82.8 percent white, while post-9/11 veterans are 81.5 percent male and 77.2 percent white. Hispanics or Latinos (of any race) are 7.1 percent of the veteran population and 14.5 percent of the post-9/11 veteran population — another large difference (See Table 1 for more detail).

Education

The post-9/11 veteran population differs from non-veterans in its higher share of people with some college experience. **This suggests that veterans (especially 9/11 veterans) are a vital source of talent for middle skill jobs that the civilian labor market is sorely lacking.**¹⁶ In spite of their younger age, post-9/11 veterans have attained levels of education equal to or higher than the veteran population, except in attainment of advanced degrees. They similarly outperform the non-veteran population in attaining a high school diploma, some college experience and associate degree completion¹⁷ (See Table 1 for more detail).

¹⁶ Accenture, Burning Glass, & Harvard Business School. (2014). Bridge the gap: Rebuilding America’s middle skills. Retrieved from: <https://www.hbs.edu/competitiveness/documents/bridge-the-gap.pdf>.

¹⁷ The high level of high school completion among veterans is likely due to the requirement that individuals have at least a high school diploma or GED to enlist in the armed forces. See: Department of Defense. (2019). Eligibility

Table 1: Selected demographic characteristics for Veterans, Post-9/11 Veterans, and Non-Veterans.

	Veterans*	Post-9/11 Veterans	Non-Veterans
Population**	20,162,000	2,817,000	226,369,000
% of Population	7.9%	1.1%	88.6%
Age			
17 to 24 years	1.2%	8.5%	12.8%
25 to 54 years	34.3%	89.1%	52.6%
55 years and over	64.5%	2.4%	34.6%
Sex			
Men	90.3%	81.5%	44.5%
Women	9.7%	18.5%	55.5%
Race			
White	82.8%	77.2%	77.7%
Black or African American	12.5%	15.4%	12.6%
Asian	1.7%	2.8%	6.5%
Hispanic or Latino ethnicity***	7.1%	14.5%	16.8%
Education, population 25 years and over			
Less than high school diploma	4.5%	1.4%	11.0%
High school grad., no college	29.0%	24.1%	28.6%
Some college, no degree	22.4%	29.3%	15.7%
Associate degree	12.6%	14.2%	10.0%
Bachelor's degree only	19.2%	20.5%	21.9%
Advanced degree	12.4%	10.5%	12.9%
Employment			
Labor Force Participation	49.8%	81.5%	65.5%
Unemployment Rate	3.8%	5.3%	4.2%
*Includes Pre 9/11 Veterans and Post-9/11 Veterans			
**17 years and over			
***of any race			

Place of Employment

Finally, post-9/11 veterans are employed in the private sector at a lower rate and in government at a higher rate than non-veterans. The federal government seems to be the most frequent employer for veterans, especially post-9/11 veterans (See Table 2 for more detail).

requirements. Retrieved from <https://www.todaymilitary.com/how-to-join/eligibility-requirements#jump-educational-requirements>

This differs widely from the non-veteran population. Only 2.1 percent of the non-veteran population is employed by the federal government, compared to 10.9 percent of veterans and 11.8 percent of post-9/11 veterans. The high concentration of veterans in the Federal Government may be attributed to the types of jobs that veterans are seeking as well as federal hiring practices: veterans seeking employment in the Federal Government benefit from Veterans Preference, a practice among participating agencies wherein qualifying veterans receive preferential scoring when being evaluated for a position.¹⁸ Only three percent of post-9/11 veterans are self-employed; 6.6 percent of non-veteran workers are self-employed and 7.6 percent of veterans. This is expected as younger workers self-employ at a lower rate than older workers.¹⁹

Table 2: Percent of Veterans, Post 9/11 Veterans and Non-Veterans by place of employment.

Place of Employment	Percent of Wage and Salary Workers, Age 17+		
	Veterans*	Post-9/11 Veterans	Non-Veterans
Private industries	76.5%	76.0%	85.9%
Government	23.5%	24.0%	14.1%
Federal	10.9%	11.8%	2.1%
State	5.1%	5.1%	5.0%
Local	7.5%	7.1%	7.1%
Self-employed workers, unincorporated	7.6%	3.0%	6.6%
*Includes Pre 9/11 Veterans and Post-9/11 Veterans			

Attainment of Certifications and Licenses

This section discusses attainment of certifications and licenses across demographic characteristics, industries and occupations. We present results for the general veteran population, post-9/11 veterans and non-veteran workforce, separately. As discussed above, veterans that served after September 11th, 2001, are younger and more diverse across sex, race and ethnicity.

Veterans in general have higher certification and license rates (“attainment rates”) than non-veterans. The post-9/11 group differs only slightly from veterans in certification and license attainment. In general, attainment rates tend to increase with age and education.

Age, Sex, Race, Ethnicity and Education

Female post-9/11 veterans have higher education levels—higher levels of bachelor’s degree and advanced degree attainment—and higher rates of certifications and licensure than men, 31.8% to 26.3% (See Table 3 and Appendix A for more detail). White and non-Asian minority post-9/11 veteran females have similar attainment rates—34 percent and around 32 percent for Black or African American, and

¹⁸ Kness, R. (2019). What veterans need to know about clearance friendly states. Retrieved from: <https://news.clearancejobs.com/2019/03/29/what-veterans-need-to-know-about-veterans-preference-and-veteran-friendly-states/>

¹⁹ Karoly, L.A. & Zissimopoulous, J. (2004). Monthly Labor Review. Retried from: <https://www.bls.gov/opub/mlr/2004/07/art3full.pdf>

Hispanic or Latina women. Asian women post-9/11 veterans have attainment rates greatly above the non-veteran population: 59 percent as compared to 25 percent.²⁰

Post-9/11 veterans have higher levels of certification and license attainment than the non-veteran population within every racial and ethnic group. White post-9/11 veterans have attainment rates at 27 percent, higher than the 25 percent of non-veterans. Asian and Black or African American veterans have attainment rates at 27 and 25 percent—these are within two to six percent of non-veterans of the same race. Hispanic or Latino post-9/11 veterans have attainment rates almost double non-veterans (27% versus 14%).

Table 3: Number and attainment rate (percent with a certification or license) for Veterans, Post-9/11 Veterans and Non-Veterans by selected demographic characteristics.

	Veterans*			Post-9/11 Veterans			Non-Veterans		
	Total (000s)	Total (000s)	Attainment Rate **	Total (000s)	Total (000s)	Attainment Rate **	Total (000s)	Total (000s)	Attainment Rate **
Population***	10,048	2,946	29.3%	2,296	625	27.2%	148,345	35,465	23.9%
Age									
17 to 24 years	183	25	13.8%	183	25	13.8%	18,798	1,930	10.3%
25 to 54 years	5,826	1,768	30.4%	2,072	585	28.3%	97,041	24,846	25.6%
55 years and over	4,058	4,039	99.5%	1,487	41	2.8%	72,195	32,507	45.0%
Sex									
Men	8,857	2,549	28.8%	1,921	505	26.3%	75,457	15,765	20.9%
Women	1,190	397	33.4%	376	120	31.8%	72,888	19,700	27.0%
Race									
White	8,077	2,419	29.9%	1,783	489	27.4%	115,368	28,625	24.8%
Black or African American	1,425	369	25.9%	344	86	25.1%	18,439	3,832	20.8%
Asian	202	52	25.6%	64	17	26.8%	9,492	1,989	20.9%
Hispanic or Latino ethnicity****	902	256	28.4%	318	87	27.3%	26,111	3,770	14.4%
*Includes Pre 9/11 Veterans and Post-9/11 Veterans **indicates percentage of population with a certification or license ***Civilian labor force, 17 years and over ****of any race									

We found, like the general population of the U.S., veterans with higher education levels reported higher levels of certification and licensure.²¹ Across all groups, persons with an advanced degree have the highest rate of certification and licensure. Post-9/11 veterans with an associate degree as their highest

²⁰ For this subgroup and other small subgroups, differences could be due to errors stemming from the sample size for that population.

²¹ An exception is that attainment at Associate degree level is usually higher than at Bachelor degree level.

level of education were the group with the second highest rate of certification or licensure (34.4%), followed by individuals with bachelor’s degrees (30.3%).

Table 4: Number and attainment rate (percent with a certification or license) for Veterans, Post-9/11 Veterans and Non-Veterans by highest level of education.

	Veterans*			Post-9/11 Veterans			Non-Veterans		
	Total (000s)	Total (000s)	Attainment Rate **	Total (000s)	Total (000s)	Attainment Rate **	Total (000s)	Total (000s)	Attainment Rate **
Population***	9,864	2,920	29.6%	2,113	601	28.5%	129,547	33,535	25.9%
Less than high school diploma	193	31	16.3%	23	+	+	10,124	791	7.8%
High school grad., no college	2,526	521	20.6%	505	99	19.6%	33,251	4,857	14.6%
Some college, no degree	2,227	591	26.5%	571	144	25.3%	20,216	4,261	21.1%
Associate degree	1,427	487	34.1%	301	104	34.4%	14,068	4,774	33.9%
Bachelor's degree only	2,106	658	31.2%	467	142	30.3%	32,458	9,282	28.6%
Advanced degree	1,385	633	45.7%	246	109	44.4%	19,430	9,570	49.3%
* Includes Pre 9/11 Veterans and Post-9/11 Veterans ** indicates percentage of population with a certification or license *** Civilian labor force, 25 years and over + Sample size too small									

Industry and Occupation

Veteran employment is widely dispersed across major industries and occupations.²² Industries with more than 10 percent of the veteran population include manufacturing, transportation and utilities, professional and business services, education and health services, and public administration. Veterans are over-represented, compared to the non-veteran population, in public administration (15% vs 5%) as well as in transportation and utilities (11% vs 6%), and under-represented in education and health services (13% vs 24%) (See Appendix B for more detail.).²³

²² Industry data shows what types of goods or services are produced by businesses and include all the different types of jobs it takes for this production. Occupation data focuses on the primary job functions. For instance, if a truck driver works for a lumber company, the industry is [forestry and logging](#), but the occupation is [transportation](#). An accountant working for the same lumber company would have an occupation categorized as [business and financial operations](#).

²³ While the data shows that veterans, especially post 9-11 veterans, are filling a different mix of jobs than the broader population, our data cannot explain “Why?” the distribution is different. We can speculate that there are

The prevalence of certification and licensure also varies by industry. For instance, certifications and licenses are most common in the education and health services industry, where 50 percent of veterans reported having a certification or license. Non-veterans had attainment rates of 46 percent. These attainment rates are similar, but in the Information industry, 20 percent of post-9/11 veterans have a certification or license, compared to 10 percent of non-veterans. Post-9/11 veterans also have higher attainment rates in other industries: 6 percent higher in manufacturing, 7 percent in construction, 7 percent in agriculture and related industries, 13 percent in mining, quarrying, and oil and gas extraction, 7 percent in transportation and utilities. There is no industry in which post-9/11 veterans have lower rates of certification and licensure than non-veterans.

Among major occupational groups, veteran employment is most highly concentrated in management, business and financial operations (19% veterans and 14% post-9/11 veterans) and in professional occupations (20% veterans and 20% post-9/11 veterans). The latter group, professional occupations, includes more detailed occupational categories: computer and mathematical occupations (4% of veterans and 5% of post-9/11 veterans), architecture and engineering occupations (4% of veterans and 3% of post-9/11 veterans), and healthcare practitioners and technical occupations (5% of veterans and 5% of post-9/11 veterans).

Post-9/11 veterans are under-represented in professional occupations (20% post-9/11 veterans vs 24% non-veterans) and in management, business, and financial operations (13% post-9/11 veterans vs 17% non-veterans). Post-9/11 veterans are over-represented in protective service occupations (9% post-9/11 veterans vs 2% non-veterans) and installation, maintenance and repair occupations (8% post-9/11 veterans vs 3% non-veterans).

In most of the major occupational groups mentioned above, post-9/11 veterans have similar rates of certification and license attainment as non-veterans. In other occupational groups, veterans have noticeably higher attainment rates than non-veterans. In construction and extraction occupational groups, post-9/11 veterans have a certification and licensure rate of 27 percent, seven percent higher than non-veterans. In healthcare support occupations, the difference was 60 percent to 50 percent; in food preparation and serving occupations 15 percent and eight percent; in building and grounds cleaning and maintenance occupations 18 percent and eight percent; in production occupations 15 percent and 10 percent; and in installation, maintenance and repair occupations 27 percent and 22 percent. (See Appendix B for more detail on major occupational groups; note that detailed occupations are excluded from Appendix B.)

State Variation

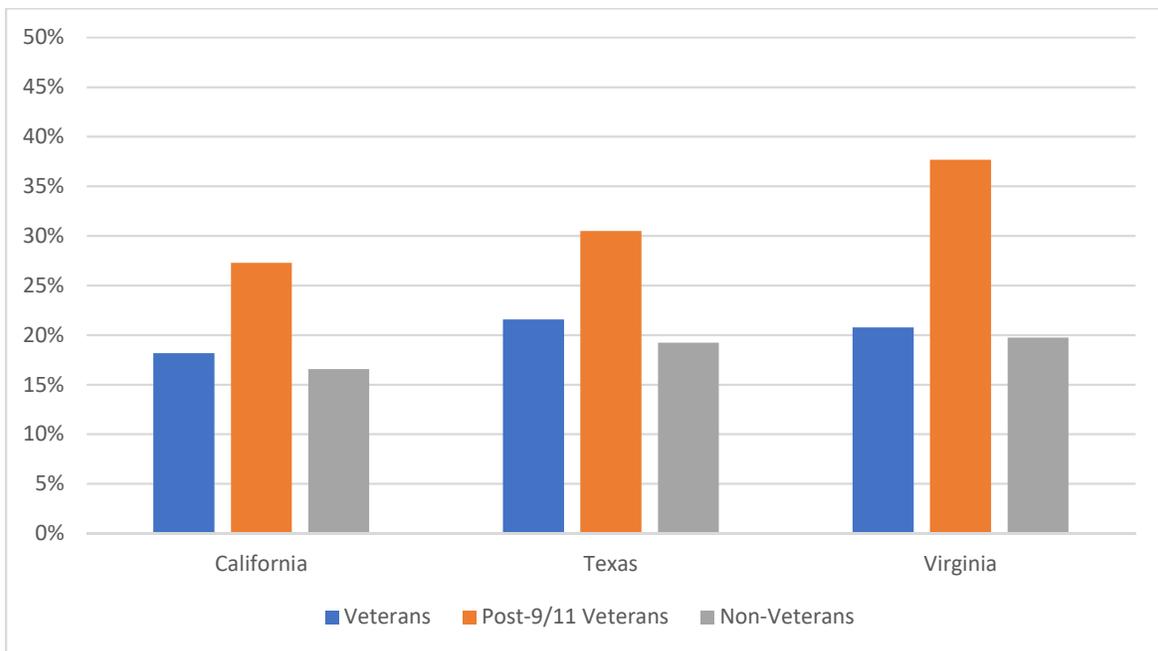
We were interested in investigating differences in certification and license attainment across states. Given different state regulation of licenses and different industry and occupational mixes in these states, we expected to see some interesting variation. States were selected based on the size of their

some sectors – like the federal government – where veterans are over-represented for reasons such as a preference by veterans for public service, an established veterans preference for federal employment job

population and their veteran population. We examined trends across California, Texas and Virginia (shown below) as well as across North Carolina, Missouri and Washington State. Unfortunately, the sample sizes were too small to provide consistent results in detailed categories of education, race and ethnicity.

Below we report attainment rates for veterans, post-9/11 veterans and non-veterans across the three states with the largest sample sizes: California, Texas and Virginia. The differences among these groups are similar across the states, with post-9/11 veterans achieving higher attainment rates than non-veterans and veterans, especially in Virginia.

Figure 2: Attainment Rate for Veterans, Post-9/11 Veterans, and Non-Veterans by selected states, 25 years and over.



Associated Earnings

This section documents the differences in earnings across populations with and without a certification or license. We calculate and compare differences in median weekly earnings for the veteran, post-9/11 veteran and non-veteran populations. Table 5 shows earnings by demographic characteristics. Table 6 shows earnings by education level. Tables for earnings by industry and occupation can be found in Appendix B.

Age

Post-9/11 veterans and non-veterans with a certification or license earn more on average than those without. This difference in earnings increases with age. The impact of certification and licensure on earnings is apparent among post-9/11 veteran workers ages 25 to 54 (\$170 difference on average), with

post-9/11 veteran workers between the ages of 17 and 25 only experiencing a pay boost of \$36 with a certification or license. Among workers age 25 and over with below a baccalaureate degree, certification and licensure was associated with increased median weekly earnings in excess of \$175, an impact larger than that experienced by the non-veteran population with a certification or license.

With a certification or license, post-9/11 veterans are earning more or similar amounts as non-veterans, despite having a younger population (66 percent of post-9/11 veterans are under the age of 35, compared to 34% of non-veterans). Employed post-9/11 veterans with a certification or license had a \$183 increase in their median weekly earnings relative to those without a certification or licenses—20 percent more (\$1,015 and \$832 median weekly earnings). The highest weekly median earnings (\$1,809) were earned by older post-9/11 veterans with a certification and license.

Sex

Examining median weekly earnings by gender, certification and licensure reduced the wage gap between male and female post-9/11 veterans by 58%, from \$128 to \$60. Without a certification or license, male post-9/11 veterans earned \$128 more in weekly median earnings than their female counterparts, a gap reduced to \$60 when comparing men and women with a certification and license. Female post-9/11 veteran median weekly earnings increased by 29%, or \$250, to \$979 with a certification or license; the earnings of male post-9/11 veterans were higher by 19%, or \$182.²⁴

Race and ethnicity

Earnings also vary by race and ethnicity. Minority post-9/11 veterans with a certification or license have higher median weekly earnings than their counterparts without a certification or license by more than \$300. Post-9/11 veteran Black or African American and Hispanic or Latino workers with a certification or license have higher median weekly earnings by at least \$300 above their counterparts without a certification or license.

Education

The impact of certification and licensure on earnings depends on the attainer's education level. Post-9/11 veterans with an advanced degree and a certification or license had the largest difference in earnings than their peers without a certification or license, \$265. Post-9/11 veterans with a high school diploma or equivalent, some college and no degree, or an associate degree all earned more than their peers by more than \$150. While non-veterans with less than a bachelor's degree and a certification or license similarly earned more than their peers, the difference is smaller. (See Table 6.)

²⁴ While the difference in median weekly earnings between men and women was reduced when both had certifications or licenses, the same is not true among non-veterans. In contrast, the earnings disparity among non-veterans increased by 20 percent with the attainment of industry certification or licensure, except for non-veterans aged 55 or over. It is unclear if there is a relationship, but certification and licensure was also associated with increased labor force participation among women by 20%. Further details by sex are included in Appendix A.

Table 5: Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by selected demographic characteristics.

	Veterans*		Post-9/11 Veterans		Non-Veterans	
	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification
Age						
17 to 24 years	\$639	\$36	\$639	\$36	\$507	\$103
25 to 54 years	\$985	\$175	\$854	\$170	\$819	\$240
55 years and over	\$1,004	\$200	\$1,128	\$681	\$878	\$311
Sex						
Men	\$1,008	\$170	\$857	\$182	\$865	\$317
Women	\$798	\$259	\$729	\$250	\$702	\$265
Race						
White	\$1,011	\$177	\$843	\$189	\$802	\$281
Black or African American	\$851	\$204	\$750	\$338	\$636	\$180
Asian	\$1,136	\$612	\$1,118	\$341	\$1,004	\$255
Hispanic or Latino ethnicity**	\$924	\$251	\$771	\$434	\$616	\$254
* Includes Pre 9/11 Veterans and Post-9/11 Veterans						
**Of any race						

Table 6: Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by highest level of education

	Veterans*		Post-9/11 Veterans		Non-Veterans	
	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification
Total, 25 years and over	\$980	\$180	\$832	\$183	\$784	\$270
Less than high school diploma	\$637	\$282	\$561	+	\$515	\$115
High school grad., no college	\$852	\$156	\$741	\$182	\$685	\$108
Some college, no degree	\$901	\$94	\$750	\$176	\$754	\$63
Associate degree	\$925	\$162	\$806	\$157	\$796	\$96

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Bachelor's degree only	\$1,315	-\$8	\$1,129	\$99	\$1,160	\$21
Advanced degree	\$1,587	\$104	\$1,462	\$265	\$1,487	-\$47
* Includes Pre 9/11 Veterans and Post-9/11 Veterans						

Occupation

In some occupational groups—like professional and related occupations—post-9/11 veterans are under-represented in comparison to non-veterans—while they are over-represented in others like maintenance and repair occupations. As post-9/11 veterans are filling a different mix of jobs than non-veterans, earnings differences emerge between the groups especially among individuals with a certification or license. For example, median weekly earnings in transportation and material moving occupations for post-9/11 veterans without a certification or license (\$652) was only \$28 more per week than non-veterans. This gap grew to \$199 with a certification or license.

For those without a certification or license, post-9/11 veterans reported the highest median weekly earnings (\$1,380) in computer and mathematical occupations, though less than non-veterans working in the same occupations (\$1,478). Life, physical and social science occupations were the second highest earning occupations for post-9/11 veterans, and they earned an additional \$131 per week compared to non-veteran populations. (Figure 3 and Appendix B report trends for major occupational groups. Detailed occupations are excluded.)

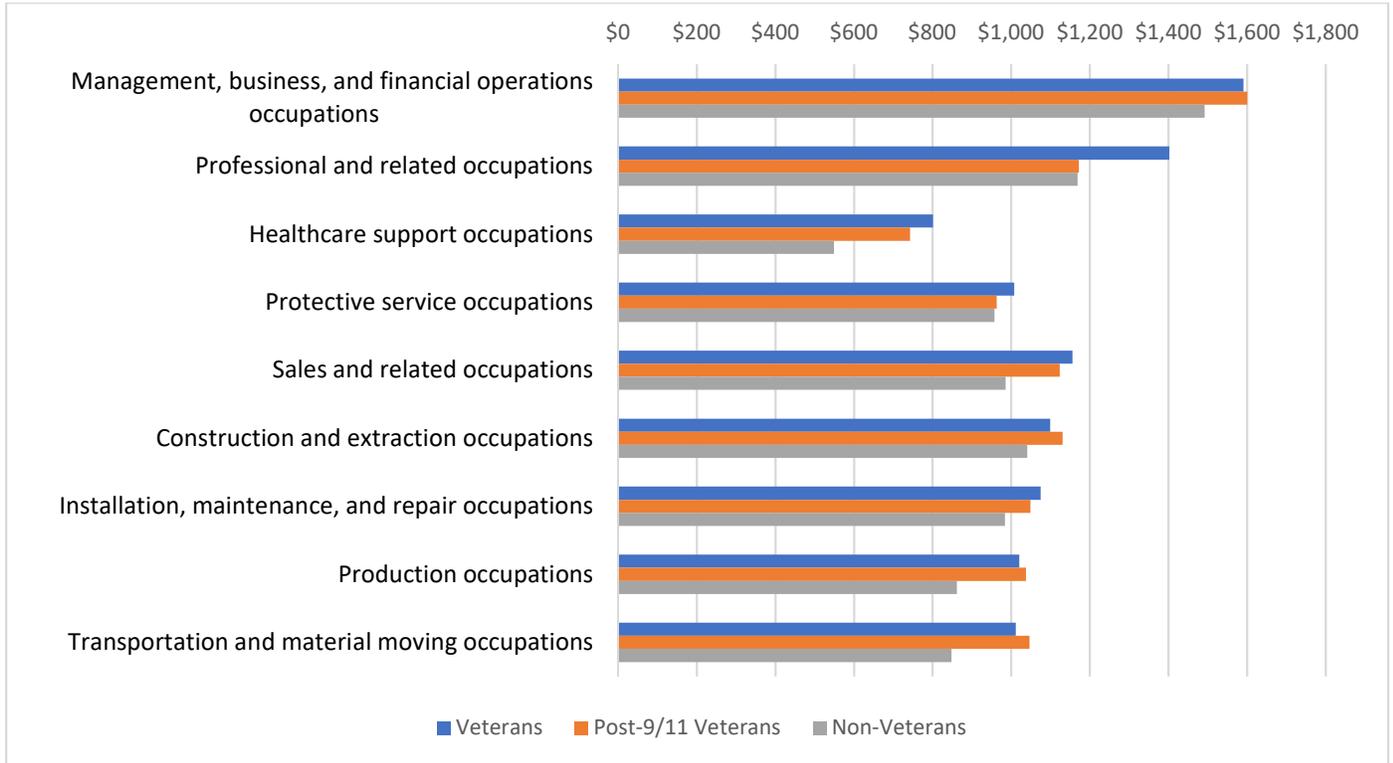
Obtaining a certification or license appeared to benefit post-9/11 veterans more than non-veterans. Post-9/11 veterans with a certification or license reported the highest weekly median earnings in management (\$1,670) and architecture and engineering (\$1,600) occupations and the lowest weekly median earnings in service occupations (\$838). For non-veterans with a certification or license, the highest and lowest earning occupations are legal occupations (\$1,798) and food preparation and serving related occupations (\$531), respectively.

Post-9/11 veterans experienced earnings boosts from certification and licensure across all occupations, except among education, training, and library occupations. Post-9/11 veterans and non-veterans may not experience similar returns on certification and licensure within the same occupation for many reasons, including differing distributions of education levels within those occupations. There are other variables at play as well. Consider protective services occupations. Veterans may have more obvious in-demand skills relevant to protective services’ occupations, and in these occupations, non-veterans experience an earnings boost from certification and licensure roughly double that of post-9/11 veterans, and their earnings with certification and licensure are nearly identical.

In management, business and financial operations occupations, however, post-9/11 veterans with a certification or license reported an earnings boost (\$426) nearly double that of non-veterans (\$236) with a certification or license. Both post-9/11 veterans and non-veterans experienced similarly large earnings

boosts from certification and licensure in sales and related occupations (\$273 vs \$258), production occupations (\$221 vs \$192), and construction and extraction occupations (\$305 vs \$289).

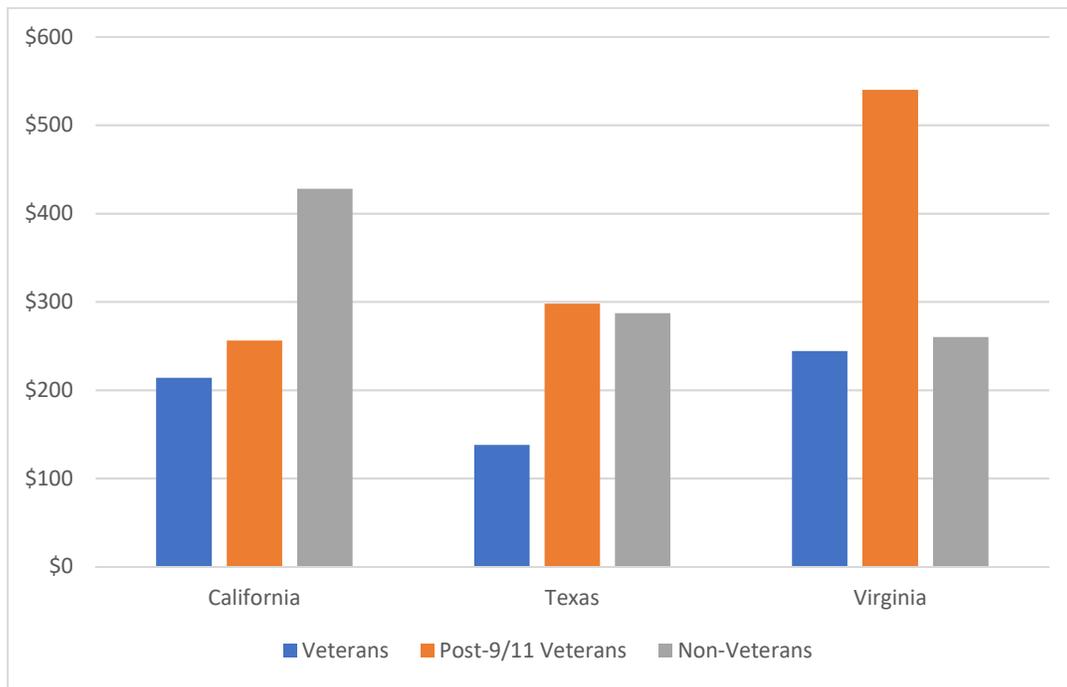
Figure 3: Weekly Median Earnings, with a certification or a license, Veterans, Post-9/11 Veterans, and Non-Veterans by major occupational groups.



State Variation

As explained in the attainment section above, we are interested in state variation given different state regulations for licenses and different concentrations of industries and occupations in each state. Below we report earnings increases associated with certification and licensure for veterans, post-9/11 veterans and non-veterans across the three states with the largest sample sizes: California, Texas and Virginia. The differences among these groups are different across the states, with post-9/11 veterans showing higher earnings differences than non-veterans and veterans.

Figure 4: Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by selected states, 25 years and over



Conclusion

Veterans entering the civilian labor force today represent not only a much different demographic than veterans entering the workforce 30 years ago, but they also are competing at earlier stages in their career against a tighter labor market that is seeking talent to fill available skilled jobs. In particular, the post-9/11 veteran population differs from non-veterans in its higher share of people with some college experience. **This suggests that veterans are a vital source of talent for middle skill jobs that the civilian labor market is sorely lacking.**²⁵ For these types of jobs, certifications and licenses can make an individual more competitive in the labor market, improve their employments prospects, and increase overall earnings. With few exceptions, the results from our analysis suggest that veterans attaining credentials and licenses experience positive benefits in terms of employability and average weekly earnings.

This report describes veterans’ attainment of certifications and licenses, with an emphasis on post-9/11 veterans. Utilizing a new data set derived from the 2016-2018 Current Population Survey (CPS), the Center for Regional Economic Competitiveness (CREC) examined veterans’ attainment of certifications and licenses and associated earnings. We find that veterans have higher levels of certification and licensure than non-veterans. Veterans with certifications and licenses have higher earnings than

²⁵ Accenture, Burning Glass & Harvard Business School. (2014). Bridge the gap: Rebuilding America's middle skills. Retrieved from <https://www.hbs.edu/competitiveness/Documents/bridge-the-gap.pdf>.

veterans without certifications and licenses. These earnings differences are pronounced for veterans with lower levels of education and veterans with more than a bachelor's degree. We explore other sources of variation, including industry and occupation as well as the demographic categories of age, sex, race and ethnicity. Like the general population of the U.S., veterans with higher education levels reported higher levels of certification and licensure. Veteran populations with higher average earnings, full-time employment and labor force participation also reported having more certifications or licenses. This held across persons of similar age, sex, race, and educational attainment, though the magnitude of the difference in earnings and employment rates varied.

Post-9/11 veterans reported higher levels of certification and licensure attainment than the general veteran population for those whose highest level of education was high school, some college, associate degree and bachelor's degree. At the bachelor's degree level, 28.9 percent of male post-9/11 veterans and 37.2 percent of female post-9/11 veterans hold a certification or license.

Earnings differences between employed veterans with and without a certification or license ranged from \$36 for veterans ages 17 to 24 years to \$200 for veterans over the age of 55. Post-9/11 veterans earned less than the general veteran population and that is likely because those employed are younger and at earlier stages in their careers.²⁶

Males and Whites are over-represented in the veteran population relative to the civilian population—veterans are 92 percent male and 83 percent white, while post-9/11 veterans are 82 percent male and 77 percent white. Among veterans, women had higher rates of certification or licensure than men, across all racial and ethnic groups. Despite higher attainment of certifications and licenses, female veterans earn less than similarly educated men, a trend that holds across the civilian population as well. However, female veterans appear to benefit more from obtaining a certification or license. Female veterans with a certification or license reported earning \$259 more than female veterans without a certification or license. We compared these results to results for male veterans. Male veterans reported earning \$170 more than male veterans without a certification or license. This suggests that, for the small population of female veterans, certifications or licenses have helped to pave a path to economic success—and more so than for male veterans.²⁷

Employed veterans of all racial and ethnic backgrounds appeared to benefit from obtaining a certification or license, although the benefits that post-9/11 veterans experienced were more like those experienced by the non-veteran population. Among post-9/11 veterans, White veterans with a certification or license reported earning about \$189 more than their counterparts without a certification or license. Post-9/11 Black or African American veterans with a certification or license reported earning \$338 more than those without a certification or license. Asian post-9/11 veterans reported earning

²⁶ Most post-9/11 veterans are in their prime working age—89 percent are ages 25 to 54. Thirty-four percent of all veterans are ages 25 to 54.

²⁷ The same comparison for post-9/11 veterans is in Appendix A. Post-9/11 males with a certification or license reported earning \$182 more per week than males without a certification or license; post-9/11 women earned \$250 more per week. Comparing women and men without a certification or license, the difference in earnings was \$128 weekly; the difference was \$60 weekly when comparing women and men with a certification or license.

around \$341 more than their counterparts without a certification or license. Hispanic or Latino veterans attain much higher rates of certification and licensure than Hispanic non-veterans, and it seems to make a particularly critical difference in these veterans' earning potential. Hispanic or Latino post-9/11 veterans with a certification or license reported earning \$434 more weekly than their counterparts without a certification or license.

With nearly 20 million military veterans in the U.S. population, and with tens of thousands more completing their military service each year, it is important to understand the impact veterans have on the civilian workforce and their outcomes. This report provides new and useful information for veterans and workforce institutions alike, especially for stakeholders in the Department of Defense committed to providing educational and job training opportunities to service members preparing to enter the civilian workforce. Certifications and licenses, and other non-degree credentials, can help to signal veterans' skills, abilities and career goals to employers, help employers recognize those skills and abilities, and help veterans to identify relevant and gainful post-service employment opportunities. The findings from this report contribute to a growing base of knowledge regarding the credentials, economic sectors, industries, and occupations that can yield the highest returns for veterans in their non-military careers. The findings from this report also help build a more solid foundation of knowledge for the consideration of targeted workforce development strategies and support programs serving the veteran population.

Appendix A: Selected Demographics Detail

Table 7: Attainment rate (percent with a certification or license) for Veterans, Post-9/11 Veterans and Non-Veterans by age.

	Veterans*	Post-9/11 Veterans	Non-Veterans
17 to 24 years	13.6%	13.6%	10.7%
25 to 34 years	27.1%	26.9%	23.5%
35 to 44 years	32.0%	32.3%	27.5%
45 to 54 years	31.6%	30.6%	27.3%
55 to 64 years	28.6%	34.3%	26.9%
65 years and over	29.1%	22.2%	27.4%
*Includes Pre 9/11 Veterans and Post-9/11 Veterans			

Table 8: Attainment rate (percent with a certification or license) for Veterans by highest level of education and sex.

	Men	Women
Total, 25 Years and over	29.3%	34.5%
Less than a high school diploma	16.6%	+
High school graduates, no college	20.9%	17.9%
Some college, no degree	27.2%	23.9%
Associate degree	33.7%	37.3%
Bachelor's degree only	30.7%	36.2%
Advanced degree	45.2%	52.7%
+indicates suppressed/undisclosed values		

Table 9: Selected Labor Force Outcomes, with and without a certification or license, for Post-9/11 Veterans by sex.

	With a Certification or License		Without a Certification or License	
	Men	Women	Men	Women
Labor Force Participation, 17 Years and over	92.58%	86.99%	80.84%	66.83%
Unemployment Rate	3.70%	4.75%	5.75%	5.70%
Median Weekly Earnings, All Full Time Employees	\$1,039	\$979	\$857	\$729
Difference in men and women's earnings	\$60		\$128	

Table 10: Attainment rate (percent with a certification or license) for Veterans, Post-9/11 Veterans and Non-Veterans by selected demographic characteristics.

	Veterans*		Post-9/11 Veterans		Non-Veterans	
	Men	Women	Men	Women	Men	Women
All, 17 Years and over	29.1%	33.9%	26.8%	33.0%	21.4%	27.6%
By Age						
17 to 24 years	14.3%	20.3%	14.3%	20.3%	8.6%	12.9%
25 to 54 years	30.1%	34.2%	27.7%	33.3%	22.2%	30.2%
55 years and over	28.4%	34.4%	30.4%	62.9%	26.0%	28.0%
By Race/Ethnicity						
White	29.8%	34.5%	27.1%	32.6%	22.3%	28.4%
Black or African American	25.0%	31.7%	22.9%	32.6%	17.3%	25.0%
Asian	25.2%	33.0%	24.4%	58.8%	17.9%	25.0%
Hispanic or Latino Ethnicity**	28.0%	31.7%	26.2%	31.0%	12.6%	17.5%
By Educational Attainment						
Total, 25 Years and over	29.9%	34.5%	28.9%	34.7%	26.3%	29.6%
Less than a high school diploma	16.7%	+	+	+	+	+
High school graduates, no college	20.8%	18.2%	20.1%	25.6%	14.9%	13.9%
Some college, no degree	27.3%	24.0%	26.1%	24.3%	21.5%	21.2%
Associate's degree	34.0%	37.4%	33.5%	38.7%	29.8%	37.6%
Bachelor's degree only	30.6%	36.1%	28.9%	37.2%	24.4%	33.1%
Advanced degree	44.8%	52.4%	43.7%	44.8%	43.1%	55.3%
*Includes Pre 9/11 Veterans and Post-9/11 Veterans **Persons whose ethnicity is identified as Hispanic or Latino may be of any race +indicates suppressed/undisclosed values						

Appendix B: Percent of Veterans by Industry and Occupation Detail

Table 11: Percent of Veterans, Post-9/11 Veterans, Non-Veterans by major industry sector.

	Veterans*	Post-9/11 Veterans	Non-Veterans
Agriculture and related industries	0.8%	0.6%	1.1%
Mining, quarrying, and oil and gas extraction	0.9%	1.2%	0.6%
Construction	7.6%	8.0%	7.0%
Manufacturing	14.5%	12.3%	12.1%
Wholesale trade	2.9%	2.9%	2.8%
Retail trade	7.8%	8.6%	9.0%
Transportation and utilities	10.7%	9.0%	5.7%
Information	2.2%	2.2%	2.1%
Financial activities	5.3%	5.2%	7.9%
Professional and business services	12.6%	12.9%	12.3%
Education and health services	13.4%	12.2%	23.8%
Leisure and hospitality	3.3%	4.5%	6.3%
Other services	3.2%	3.7%	4.0%
Public administration	14.8%	16.7%	5.3%
*Includes Pre 9/11 Veterans and Post-9/11 Veterans			

Table 12: Percent of Veterans, Post 9/11 Veterans, Non-Veterans by occupation.

	Veterans*	Post-9/11 Veterans	Non-Veterans
Management, business, and financial operations occupations	19.2%	13.6%	16.5%
Professional and related occupations	20.2%	19.9%	23.6%
Healthcare support occupations	0.9%	1.3%	2.4%
Protective service occupations	6.7%	9.4%	1.8%
Food preparation and serving related occupations	1.8%	3.2%	5.4%
Building and grounds cleaning and maintenance occupations	3.0%	2.1%	3.8%
Personal care and service occupations	1.6%	2.3%	3.9%
Sales and related occupations	8.6%	8.2%	10.2%
Office and administrative support occupations	8.0%	9.4%	11.8%
Farming, fishing, and forestry occupations	0.5%	0.4%	0.7%
Construction and extraction occupations	5.9%	6.4%	5.2%
Installation, maintenance, and repair occupations	7.2%	8.4%	3.0%
Production occupations	6.4%	6.7%	5.5%
Transportation and material moving occupations	10.1%	8.5%	6.0%
*Includes Pre 9/11 Veterans and Post-9/11 Veterans			

Table 13: Attainment rates for Veterans, Post-9/11 Veterans, Non-Veterans by major industry sector.

	Veterans*	Post-9/11 Veterans	Non-Veterans
Agriculture and related industries	17.60%	19.70%	12.30%
Mining, quarrying, and oil and gas extraction	26.40%	33.60%	20.40%
Construction	32.20%	27.10%	20.70%
Manufacturing	15.10%	16.20%	10.10%
Wholesale trade	15.50%	11.70%	11.20%
Retail trade	12.80%	11.70%	10.00%
Transportation and utilities	33.90%	28.40%	21.10%
Information	17.20%	20.20%	9.90%
Financial activities	41.90%	35.60%	31.60%
Professional and business services	30.70%	26.80%	20.80%
Education and health services	49.90%	50.10%	46.20%
Leisure and hospitality	19.80%	18.50%	9.90%
Other services	28.00%	31.70%	26.80%
Public administration	34.20%	34.60%	31.00%
*Includes Pre 9/11 and Post-9/11 Veterans			

Table 14: Attainment rates for Veterans, Post-9/11 Veterans, Non-Veterans by occupation.

	Veterans	Post 9/11 Veterans	Non-Veterans
Management, business, and financial operations occupations	25.7%	23.7%	22.3%
Professional and related occupations	45.5%	43.4%	46.2%
Healthcare support occupations	57.3%	59.4%	49.6%
Protective service occupations	40.7%	39.7%	37.0%
Food preparation and serving related occupations	16.0%	15.1%	7.8%
Building and grounds cleaning and maintenance occupations	15.4%	17.6%	7.5%
Personal care and service occupations	34.4%	37.7%	31.0%
Sales and related occupations	20.9%	15.5%	15.6%
Office and administrative support occupations	12.4%	11.8%	9.3%
Farming, fishing, and forestry occupations	17.8%	+	8.8%
Construction and extraction occupations	31.6%	25.5%	18.0%
Installation, maintenance, and repair occupations	28.4%	26.9%	22.2%
Production occupations	15.3%	15.9%	9.8%
Transportation and material moving occupations	31.6%	25.3%	19.3%
*Includes Pre 9/11 Veterans and Post 9/11 Veterans +indicates suppressed/undisclosed values			

Appendix C. Occupations and Earnings Detail

Table 15: Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by occupation.

	Veterans*		Post-9/11 Veterans		Non-Veterans	
	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification
Management, business, and financial operations occupations	\$1,478	\$113	\$1,175	\$426	\$1,256	\$236
Professional and related occupations	\$1,312	\$90	\$1,144	\$28	\$1,127	\$42
Healthcare support occupations	\$604	\$197	+	+	\$526	\$23
Protective service occupations	\$877	\$131	\$874	\$89	\$745	\$213
Food preparation and serving related occupations	\$560	\$170	\$521	+	\$467	\$64
Building and grounds cleaning and maintenance occupations	\$674	\$82	\$654	+	\$516	\$125
Personal care and service occupations	\$595	\$124	\$491	+	\$501	\$64
Sales and related occupations	\$899	\$257	\$851	\$273	\$728	\$258
Office and administrative support occupations	\$795	\$94	\$653	\$245	\$688	\$68
Farming, fishing, and forestry occupations	\$615	+	+	+	\$536	\$168
Construction and extraction occupations	\$935	\$164	\$826	\$305	\$752	\$289
Installation, maintenance, and repair occupations	\$991	\$84	\$890	\$159	\$841	\$143
Production occupations	\$865	\$156	\$817	\$221	\$670	\$192
Transportation and material moving occupations	\$746	\$266	\$652	\$395	\$624	\$224
*Includes Pre 9/11 Veterans and Post-9/11 Veterans						

Appendix D. Industry and Earnings Detail

Table 16: Earnings differences, with and without a certification or a license, for Veterans, Post-9/11 Veterans, and Non-Veterans by industry.

	Veterans*		Post-9/11 Veterans		Non-Veterans	
	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification	Earnings without certification	Difference in earnings with and without certification
Agriculture and related industries	\$797	\$143	\$836	+	\$601	\$226
Mining, quarrying, and oil and gas extraction	\$1,384	\$126	\$1,377	+	\$1,227	\$178
Construction	\$1,012	\$125	\$936	\$70	\$828	\$304
Manufacturing	\$1,034	\$151	\$911	\$284	\$893	\$238
Wholesale trade	\$1,051	\$228	\$1,006	+	\$919	\$145
Retail trade	\$780	\$100	\$682	\$219	\$682	\$211
Transportation and utilities	\$984	\$138	\$927	\$242	\$877	\$175
Information	\$1,257	\$157	\$1,228	+	\$1,174	\$227
Financial activities	\$1,090	\$289	\$986	\$666	\$983	\$280
Professional and business services	\$1,173	\$186	\$969	\$297	\$1,030	\$340
Education and health services	\$919	\$260	\$892	\$110	\$773	\$289
Leisure and hospitality	\$727	\$59	\$604	\$60	\$591	\$155
Other services	\$825	\$57	\$815	\$85	\$726	\$35
Public administration	\$1,171	\$99	\$1,042	\$166	\$975	\$208
*Includes Pre 9/11 Veterans and Post-9/11 Veterans						

Figure 5: Weekly Median Earnings with a certification or a license for Veterans, Post-9/11 Veterans, and Non-Veterans by industry.

