Leveraging Public Survey Data for Informed Labor Policy

Final Report

June 2024

Authors

Kate Munkacsy and Scott Cody

Submitted to

U.S. Department of Labor
Chief Evaluation Office
200 Constitution Avenue NW
Washington, DC 20210

Submitted by

Westat Insight
1310 North Courthouse Road
Suite 880
Arlington, VA 22201

Disclaimer

This report was prepared for the U.S. Department of Labor (DOL), Chief Evaluation Office (CEO) by Westat Insight and its partners under contract number 1605DC-18-A-0018. The views expressed are those of the authors and should not be attributed to DOL, nor does mention of trade names, commercial products, or organizations imply endorsement of same by the U.S. Government.

Acknowledgments

The report was prepared for the DOL CEO. The authors received invaluable support, guidance, and contributions from Tara Martin and Janet Javar at the CEO. The authors thank Allison Hyra and Breanna Wakar from Westat Insight, who provided constructive feedback throughout the project.

Suggested Citation

Munkacsy, K., & Cody, S. (2024). *Leveraging public survey data for informed labor policy: Final report.* Chief Evaluation Office, U.S. Department of Labor.

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Executive Summary

The Department of Labor (DOL) Chief Evaluation Office (CEO) seeks to highlight examples of analyses that researchers and policymakers can conduct using publicly available population surveys. Such analyses are accessible tools to help policymakers understand the evolving needs of diverse populations and inform where to effectively invest program resources. This report demonstrates the potential of leveraging publicly available survey data to illuminate trends in populations' demographic characteristics over time by focusing on two key populations relevant to many existing labor policies and programs: low-wage workers and unemployed veterans.

Low-wage workers, who benefit from career pathways programs such as the Registered Apprenticeship programs, rely on responsive labor policies and programs to help reposition them from employment in low-earning occupations to occupations with higher earnings. Similarly, unemployed veterans, who benefit from programs under the DOL Veterans' Employment and Training Service, rely on labor policy supports as they seek employment. Examining shifts in the demographics of these key populations may help direct policy attention to subsets of the populations that are underserved. While these two populations serve as helpful examples of potential populations of focus, the survey data and methodology detailed in this report can also be used to examine changes in other specific populations of focus relevant to a variety of labor policies and programs.

A. Key Findings From the Demonstrative Analyses

The study team conducted analyses of changes in the populations of low-wage workers and unemployed veterans using the American Community Survey (ACS) 5-year period data for the 2005–2009 and 2015–2019 periods. The analysis of each population includes a comparison of the overall population's size between the two time periods and comparisons of the distribution of the population across sex, age, race, ethnicity, and English proficiency status over time. The analysis on low-wage workers also considers how the population's distribution across industries has changed, and both analyses consider population changes at the State level.

According to the analysis of low-wage workers in the ACS, the number of low-wage workers in the United States grew from an estimated 47.3 million workers in 2009 to an estimated 50.6 million in 2019. During this period of growth—

- The share of low-wage workers in the total population of workers in the United States remained at about 40 percent.
- The distribution of the low-wage worker population remained largely consistent across demographic characteristics.
  - In both 2009 and 2019, about 54 percent of all low-wage workers identified as female, and about one-quarter of all low-wage workers were aged 18 to 24.
- Some subgroups of the low-wage worker population saw statistically significant changes across the decade.
  - The number of low-wage workers who identified as Asian and the number of low-wage workers who identified as Hispanic or Latino both increased significantly.
- The top 10 industries that employed low-wage workers in 2009 remained the same in 2019.

- Only two States (Nebraska and North Dakota) had statistically significant differences in the estimated percentage of low-wage workers between the 2009 and 2019 periods.

Although this analysis finds that few low-wage worker population characteristics shifted significantly between 2009 and 2019, the overall growth in the number of low-wage workers may suggest that the expansion of programs that support these workers, such as the career pathways programs, may help reach the growing population more effectively.

The 2009 to 2019 ACS data analyzed also captured a statistically significant 38 percent drop in the number of unemployed veterans in the United States, from an estimated 700,000 individuals in 2009 to an estimated 430,000 million in 2019. During this decline—

- The share of unemployed veterans in the population of all unemployed individuals in the United States fell from 7 percent in 2009 to 5 percent in 2019.
- Similarly to the changes estimated for the low-wage worker population, the decrease in the overall number of unemployed veterans did not result in big shifts to the demographic distribution of the population over time.
    - In both time periods, over 85 percent of unemployed veterans identified as male, about 80 percent were aged 25 to 64, more than 90 percent identified as White or Black or African American, and less than 10 percent identified as Hispanic or Latino.
- At the State level, the estimated percentage of unemployed veterans decreased statistically significantly in five States (California, Iowa, Nebraska, New Jersey, and Ohio).

Findings from this analysis, such as the statistically significant decrease in the overall number of unemployed veterans, may spark interest in additional research to identify which existing programs and strategies are most effective in supporting veterans as they seek employment.

Researchers and policymakers may seek to enhance these initial analyses of low-wage workers and unemployed veterans by examining more recently published ACS data, considering additional data from other relevant surveys, and focusing on changes in more specific population characteristics.

B. Call to Action

As the analyses of low-wage workers and unemployed veterans demonstrate, researchers and policymakers can build upon their understanding of key populations by embracing the use of open-source survey data to fill research gaps in decision-making.

Hundreds of surveys from the Census Bureau, Bureau of Labor Statistics (BLS), and other Federal agencies make access to nationally representative data on households, individuals, and employers readily available for analysis. The detailed documentation published alongside these public data sources makes these analyses even more accessible. Documentation often includes details about the information captured in surveys, recommendations for how to make comparisons over time, and support for practicing research best practices such as statistical significance testing and calculating measures of precision, as demonstrated in this report. These resources are essential when considering how the population of focus is defined, which characteristics are most valuable to examine, what time periods are most relevant, and, ultimately, which survey may best suit the analysis.

By leveraging the wealth of information in publicly available surveys, researchers and policymakers can gain insights into demographic shifts, identify emerging trends, and tailor interventions to meet the evolving needs of the U.S. workforce.

Section 1. Introduction

Labor policies and programs should be designed to meet the unique needs of their intended populations over time. Insofar as policymakers consider the characteristics of such populations during the initial development of a program, it is important for them to evaluate shifts in the population's composition over time to understand how to maintain the effectiveness of these programs.

Consider, for example, how the age distribution of the U.S. workforce changed between 2009 and 2019. Over this 10-year period, the percentage of the employed population aged 55 and older grew from about 19 percent to nearly 24 percent, and the percentage of the employed population aged 25–54 declined from about 68 percent to 64 percent (U.S. BLS, 2021). Several factors may have influenced this shift in the age distribution of the U.S. workforce, including the overall growth of the population aged 55 and older, improvements in health, and changes in retirement plans (Fry & Braga, 2023). Given the rising proportion of older workers in the labor force, it is important to consider if programs initially designed to meet the needs of younger workers remain as effective.

Researchers and policymakers should examine how programs' intended populations change over time to keep policy initiatives and programs relevant and effective in reaching their intended audiences. While concentrated research and evaluation efforts are essential to the development and maintenance of effective policy initiatives and programs, publicly available data from nationally representative surveys—such as the American Community Survey (ACS) or the Current Population Survey—support quick and accessible analyses of how specific populations change over time across the United States.

To demonstrate potential analyses policymakers can conduct using data from the ACS, this report presents findings on how the composition of two key populations relevant to many labor policies and programs changed over a 10-year period. These two populations are the low-wage workers and the unemployed veterans in the United States.

Note About the Data

The example population analyses presented in this report use ACS 5-year period estimates for the 2005–2009 and 2015–2019 periods, which employ a comparable estimation methodology. More recently available ACS 5-year period estimates, which include data from calendar year 2020, employ a revised estimation methodology to account for the effects of the COVID-19 pandemic on the 2020 data collection process. Please see appendix A for more information on the ACS data and study methodology used to produce the estimates presented in section 2 of this report.

A. Organization of the Report

This report is organized into four sections. Section 2 defines the two key labor policy populations this report explores and presents findings on changes in their characteristics across a 10-year period. Section 3 details other potential population analyses and a selection of publicly available nationally representative surveys that may be useful data sources. Section 4 concludes with a summary of key takeaways from the demonstrative analyses in section 2 and considerations for replicate analyses. Appendix A details the publicly available data and methodology used to conduct the example analyses. Appendixes B and C include detailed data tables on estimates and standard errors, respectively.

Section 2. Demonstrative Analyses

This section presents findings on the changes in population characteristics for two key labor policy populations: low-wage workers and unemployed veterans. The study team selected these populations for this analysis because they are relevant to many labor policies and programs. For example, low-wage workers rely on worker protections and supports through State minimum wage standards and Federal legislation such as the Fair Labor Standards Act,[1] which includes standard requirements for wages, overtime pay, and hours worked. Low-wage workers also benefit from Federal support for career pathways programs such as the Department of Labor's (DOL) Strengthening Community Colleges Training Grants Program, the Workforce Innovation Fund, and Registered Apprenticeship programs. Unemployed veterans can find support through programs under the DOL Veterans' Employment and Training Service, such as the National Veterans' Training Institute and the Transition Assistance Program. For low-wage workers and unemployed veterans, the relevant policies and programs intended to support them should be responsive to their changing needs to remain effective.

This report refers to the analyses of these populations as demonstrative because they can be replicated for other populations affected by labor policies and programs (such as part-time workers or women in traditionally male-dominated occupations). For each of the two key populations, this section defines the population and presents estimates of the overall size of the population. This section also estimates how each population's demographic characteristics—such as sex, race, and ethnicity—and distribution across States have changed over time. The analysis of low-wage workers also considers how the population's distribution across industries has changed. An industry-level analysis is not available for unemployed veterans because the industry-specific information used from the ACS data captures the current industry in which an individual is employed. After each population analysis, the section highlights the potential implications of the estimated population changes on labor policy.

To capture changes over time, these analyses compare population estimates from the 2005–2009 ACS 5-year data and the 2015–2019 ACS 5-year data. The 5-year data combine survey responses collected over a 5-year period and offer increased statistical reliability when examining small subpopulations of the United States (U.S. Census Bureau, 2023). The remainder of this section will refer to estimates from the 2005–2009 data as 2009 period estimates and estimates from the 2015–2019 data as 2019 period estimates.

The analyses this section presents focus on two comparisons: (1) how each key population changed over time, and (2) how the change in the key population compares to the change in a reference population. The reference population for low-wage workers is all workers in the United States, and the reference population for unemployed veterans is all unemployed individuals in the United States. The study team conducted statistical significance tests at the 95 percent confidence level to highlight the most informative comparisons about how the key populations changed over time and how those changes compare to changes in the reference populations. The results of these statistical significance tests are discussed throughout this section and detailed in the tables in appendix B.

[1] The Fair Labor Standards Act is available at https://www.dol.gov/sites/dolgov/files/WHD/publications/WH1318.pdf.

Additional details about the data and methodology used to conduct these analyses and related limitations of the analyses are available in appendix A, and detailed data tables are available in appendixes B and C.

A. Low-Wage Workers

Define the Population of Low-Wage Workers

This analysis adopts the definitions of workers and low-wage workers from Ross and Bateman (2019). Workers are defined as noninstitutionalized individuals aged 18 to 64 who are in the labor force and have worked at some point within the 12-month period before the date on which they were surveyed.[2] Low-wage workers are the subset of workers with an hourly wage[3] less than two-thirds of the median hourly wage for men working full time, year-round.[4] As Ross and Bateman explain, literature on low wages often relies on two-thirds median wages as the defining threshold, and establishing the median wage according to men's earnings acknowledges gender-based disparities in pay.

Estimate the Number of Low-Wage Workers

In the 2009 period, there were an estimated 47.3 million low-wage workers in the United States, about 40 percent of the estimated number of all workers within the period. In the 2019 period, the number of low-wage workers had grown to an estimated 50.6 million workers but remained at about 40 percent of the estimated population of all workers in the United States. Across the two periods, the estimated low-wage worker population was consistently at 40 percent of all workers because both the number of low-wage workers and the number of all workers grew by about 7 percent.

Examine Low-Wage Workers by Demographic Characteristics

As the overall number of low-wage workers in the United States grew, the distribution of their demographic characteristics remained relatively consistent. Figure 1 displays the number of low-wage workers by demographic characteristic in the 2009 and 2019 periods. The characteristics considered in this analysis are sex, age, race, ethnicity, and English proficiency status.

Distribution of low-wage workers by sex remained consistent

In both the 2009 and 2019 periods, over half of all low-wage workers in the United States identified as female. As the number of low-wage workers grew between the two periods, the distribution of low-wage workers between those who identify as female and those who identify as male remained relatively consistent.

[2] In accordance with the methods established in Ross and Bateman (2019), the definition of workers also excludes graduate or professional students, any high school or college students who worked less than 14 weeks in the past 12 months, college students living in dorms, high school students living at home, and self-employed individuals. See Ross and Bateman (2019) for additional details on these exclusions.
[3] This analysis calculated hourly wage equivalent values for individuals earning a salaried income.
[4] To adjust wages for regional economic conditions, this analysis relies on Regional Price Parities from the Bureau of Economic Analysis, available at https://apps.bea.gov/iTable/?reqid=70&step=1&acrdn=8.

An increased number of low-wage workers aged 25 and older led overall growth

The overall distribution of low-wage workers by age remained consistent across the 2009 and 2019 periods, with about one-quarter of low-wage workers aged 18 to 24. While the distribution across ages remained consistent, the estimated growth of the total number of low-wage workers was concentrated in workers aged 25 and older. In particular, the population of low-wage workers aged 45 and older had a statistically significant increase from 13.5 million to 14.7 million individuals (a 9 percent increase) between 2009 and 2019.

Racial distribution of low-wage workers remained consistent over time

The overall distribution of low-wage workers by race remained consistent across the 2009 and 2019 periods, with more than two-thirds of low-wage workers identifying as White. Although the overall distribution remained the same, the number of low-wage workers who identify as Asian and the number of low-wage workers who identify as Native Hawaiian and other Pacific Islander grew statistically significantly between the 2009 and 2019 periods. The largest relative growth by race was the growth of low-wage workers who identify as two or more races (a statistically significant increase from about 0.9 million in 2009 to 1.5 million in 2019). This growth may be inflated by changes to the survey questions related to individuals' racial identity, which occurred in the 2008 ACS.[5] Between the 2007 and 2008 ACS, the presentation of the survey questions on race and ethnicity changed from a grid format to a sequential format. Chestnut (2008) found that different reporting patterns may be associated with these presentation changes.

An increased number of Hispanic or Latino low-wage workers led overall growth

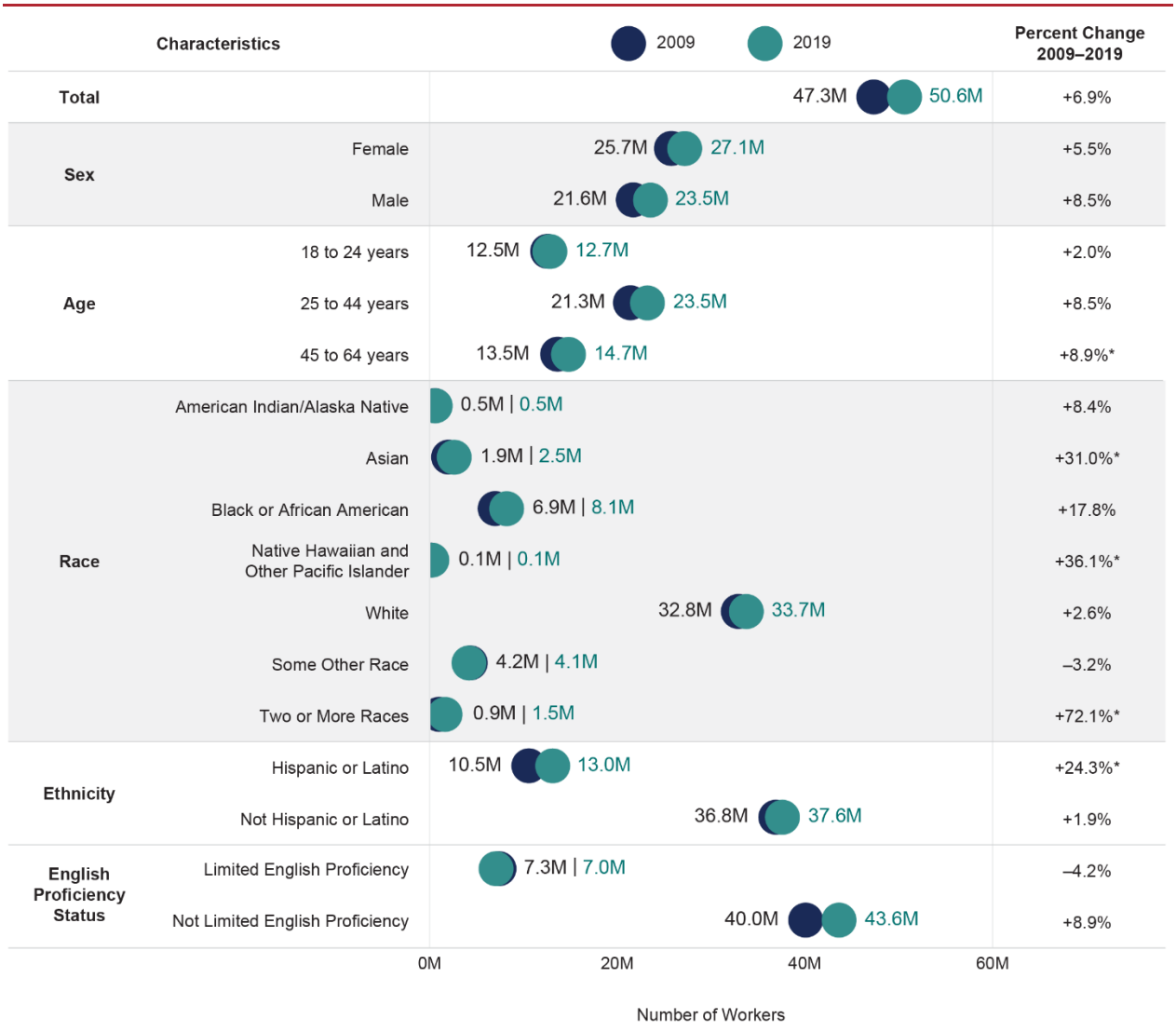
The distribution of low-wage workers by ethnicity changed slightly between the 2009 and 2019 periods, with low-wage workers who identify as Hispanic or Latino representing about a fifth of all low-wage workers in the 2009 period and a little over a quarter in the 2019 period. This shift in the distribution is driven by relatively no change in the number of low-wage workers who identify as not Hispanic or Latino and a statistically significant increase in the number of low-wage workers who identify as Hispanic or Latino. The number of low-wage workers who identify as Hispanic or Latino grew from an estimated 10.5 million workers to 13.0 million workers (a 24 percent increase) between the 2009 and 2019 periods.

[5] The change in individuals who identify as two or more races may reflect changes to the ACS race and Hispanic ethnicity questions in the 2008 survey. Additional details about the 2008 changes are available at https://www.census.gov/library/working-papers/2009/demo/acs08researchnote.html. Specific changes to the survey questions on an individual's race are documented for years 2005 to 2009 at https://www2.census.gov/programs-surveys/acs/methodology/questionnaires/SQuestChanges05to09.pdf.

Distribution of low-wage workers by English proficiency status remained consistent

The distribution of low-wage workers by English proficiency status (limited English proficiency or not limited English proficiency) remained consistent across the 2009 and 2019 periods. In both periods, a little over 10 percent of the low-wage worker population reported limited English proficiency. Changes in the number of low-wage workers by English proficiency status were not statistically significant.

Figure 1. Characteristics of Low-Wage Workers: 2009–2019



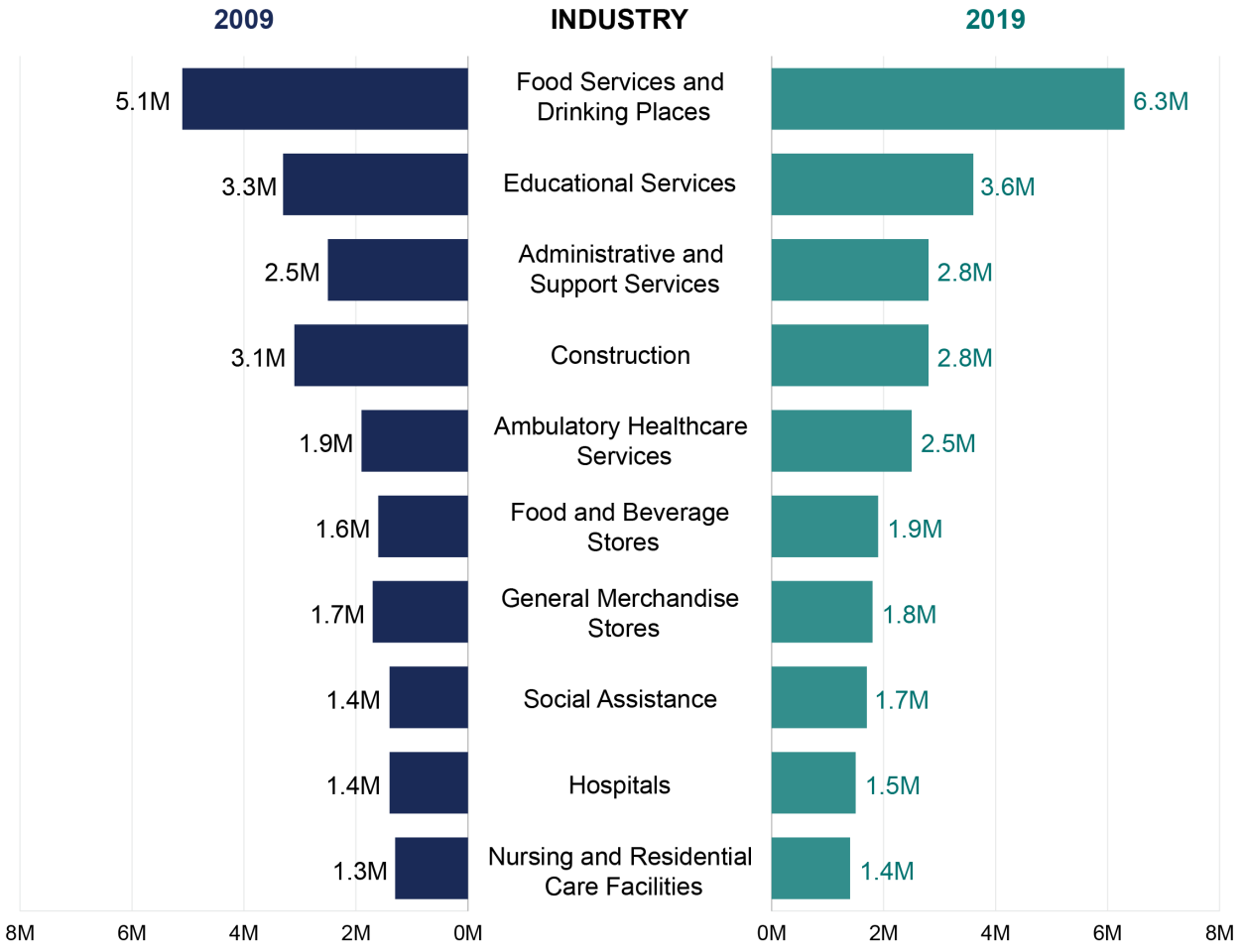
Note: Data for figure 1 are available in table B.1 in appendix B. The change in the number of individuals who identify as two or more races may reflect changes to the ACS race and Hispanic ethnicity questions in the 2008 survey. Additional details about the 2008 changes are available at https://www.census.gov/library/working-papers/2009/demo/acs08researchnote.html.
*Indicates a statistically significant difference at the 95 percent confidence level between the number of low-wage workers in the 2009 period and the number of low-wage workers in the 2019 period.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

To better understand trends in demographic characteristics that may be unique to the population of low-wage workers, this analysis compared low-wage workers to all workers in the United States across the 2009 and 2019 periods. The distributions of low-wage workers closely follow the distributions of all workers across all demographic characteristics, except for sex. More than half of all low-wage workers identify as female in both the 2009 and 2019 periods, while more than half of all workers identify as male in both periods (see table B.1). As the definition of low-wage workers notes, this proportionately higher representation of female-identifying individuals in the low-wage workforce may reflect the fact that historically, on average, women have been paid less than men. For example, in 2021, full-time working women were paid about 84 cents for every dollar paid to men (Women's Bureau, U.S. DOL, 2023). For each characteristic, the difference between the percentage change in the estimated number of low-wage workers and the percentage change in the estimated number of all workers was tested for statistical significance at the 95 percent confidence level, but no statistically significant differences were found.

Examine Low-Wage Workers by Industry

In addition to the demographic characteristics of low-wage workers, this analysis examined in which industries low-wage workers most often work. Between the 2009 and 2019 periods, over half of all low-wage workers were concentrated in the same 10 industries. Figure 2 presents the 10 industries and the number of low-wage workers within each industry in the 2009 and 2019 periods (see table B.2 for additional details).

Figure 2. Top 10 Industries Employing Low-Wage Workers: 2009–2019



Note: Data for figure 2 are available in table B.2 in appendix B.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

The number of low-wage workers in all presented industries, except the construction industry, increased between the 2009 and 2019 periods. However, comparing the percentage change in the number of low-wage workers within each of these 10 industries to the percentage change in the overall number of workers in these industries demonstrates that the growth of the number of low-wage workers followed general trends in growth for the industries. Across all 10 industries, the estimated percentage change in the number of low-wage workers in each industry was not statistically significantly different than the estimated percentage change in the number of all workers in the industry (see table 1).

Table 1. Percentage Change in the Number of Low-Wage Workers Within the Top 10 Industries Employing Low-Wage Workers: 2009–2019

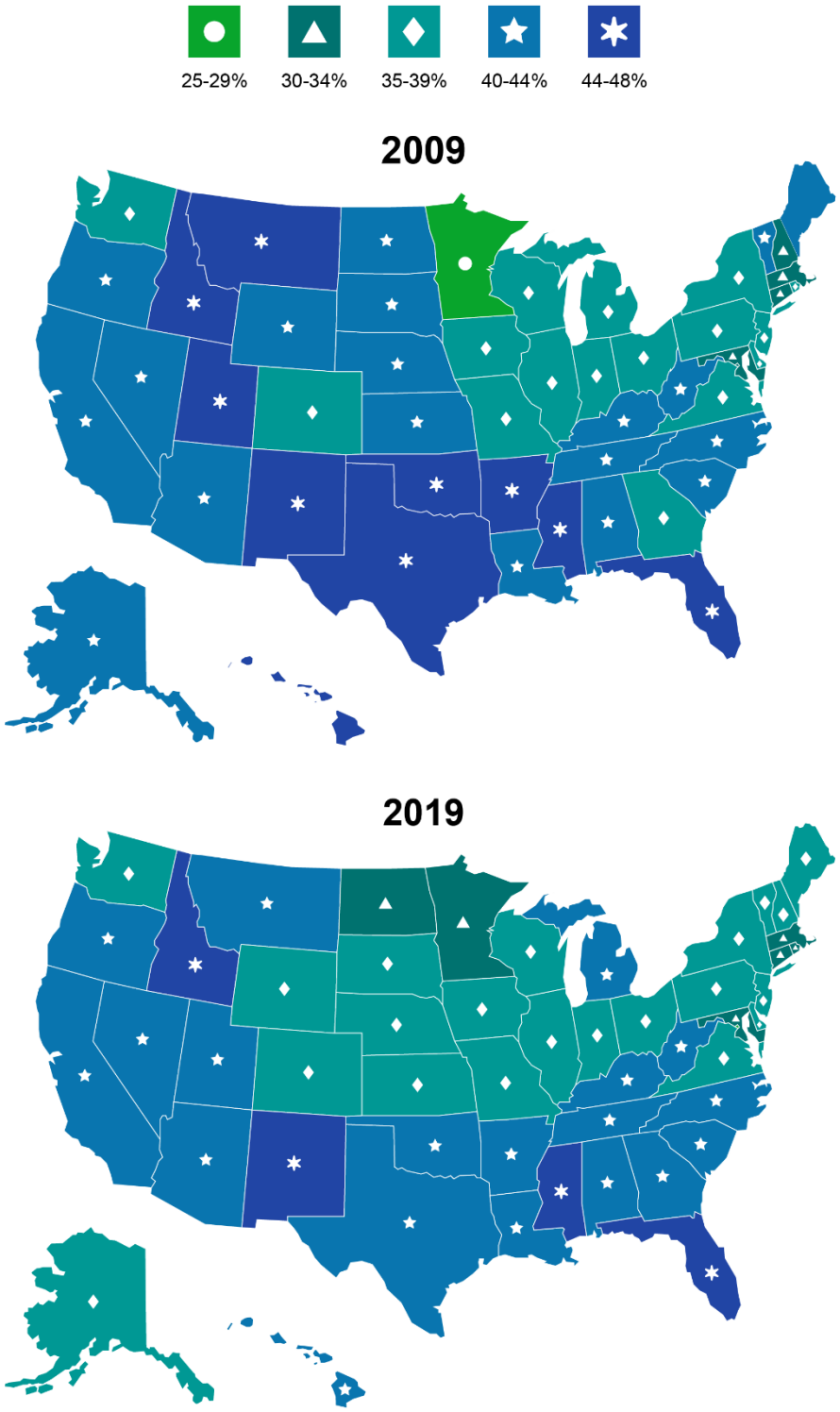
Industry	Percentage Change in Population of Low-Wage Workers, 2009–2019	Percentage Change in Population of All Workers, 2009–2019
Food services and drinking places	+23	+26
Educational services	+11	+11
Administrative and support services	+13	+14
Construction	-10	-5
Ambulatory healthcare services	+27	+26
Food and beverage stores	+17	+13
General merchandise stores	+3	+2
Social assistance	+18	+17
Hospitals	+6	+16
Nursing and residential care facilities	+10	+13

Note: The difference in the percentage change for low-wage workers and the percentage change for all workers was tested for statistical significance at the 95 percent confidence level, but no statistically significant differences were found.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Examine Low-Wage Workers by State

The percentage of low-wage workers varied across States and over time (see figure 3 and table 2). While about 40 percent of all workers were low-wage workers at the national level in the 2009 period, at the State level, the percentages ranged from 30 percent in Massachusetts to 48 percent in Montana. In the 2019 period, as the national percentage remained at 40 percent, the State-level percentages of low-wage workers ranged from 25 percent in the District of Columbia to 48 percent in Florida. The difference in the estimated percentage of low-wage workers between the 2009 and 2019 periods was statistically significant for only two States (Nebraska and North Dakota), suggesting that most States did not see meaningful changes in the relative number of low-wage workers across the periods.

Figure 3. Percentage of Low-Wage Workers by State: 2009–2019



Note: Data for figure 3 are available in table 2.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table 2. Percentage of Low-Wage Workers by State: 2009–2019

State	Percentage of Low-Wage Workers, 2009	Percentage of Low-Wage Workers, 2019	Percentage Point Difference 2009–2019
Total	**40**	**40**	**0**
Alabama	43	41	-2
Alaska	40	36	-4
Arizona	44	43	-1
Arkansas	46	44	-2
California	41	43	2
Colorado	38	37	-1
Connecticut	32	31	-1
Delaware	36	37	1
District of Columbia	33	25	-8
Florida	45	48	3
Georgia	39	42	3
Hawaii	45	42	-3
Idaho	47	45	-2
Illinois	38	38	0
Indiana	39	39	0
Iowa	39	36	-3
Kansas	41	39	-2
Kentucky	42	41	-1
Louisiana	44	43	-1
Maine	42	38	-4
Maryland	33	33	0
Massachusetts	30	31	1
Michigan	38	40	2
Minnesota	34	32	-2
Mississippi	46	45	-1
Missouri	40	40	0
Montana	48	42	-6
Nebraska	43	38	-5*
Nevada	40	43	3
New Hampshire	34	35	1
New Jersey	35	37	2
New Mexico	48	46	-2
New York	39	38	-1
North Carolina	41	41	0
North Dakota	44	32	-12*
Ohio	38	37	-1
Oklahoma	45	43	-2
Oregon	42	42	0

State	Percentage of Low-Wage Workers, 2009	Percentage of Low-Wage Workers, 2019	Percentage Point Difference 2009–2019
Pennsylvania	38	37	-1
Rhode Island	35	34	-1
South Carolina	42	43	1
South Dakota	44	39	-5
Tennessee	42	42	0
Texas	46	44	-2
Utah	46	42	-4
Vermont	41	37	-4
Virginia	36	36	0
Washington	37	36	-1
West Virginia	43	41	-2
Wisconsin	37	35	-2
Wyoming	43	36	-7

*Indicates a statistically significant difference at the 95 percent confidence level between the percentage of low-wage workers in the 2009 period and the percentage of low-wage workers in the 2019 period.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Key Takeaways and Policy Relevance

Between the 2009 and 2019 periods, the number of low-wage workers grew from an estimated 47.3 million workers to an estimated 50.6 million workers. When examining this growth in the estimated number of low-wage workers, the study team found—

- Consistent distributions of low-wage workers by sex, age, race, and English proficiency status across the 2009 and 2019 periods
  - More than half of all low-wage workers identified as female
  - About one-quarter of all low-wage workers were aged 18 to 24
  - More than two-thirds of all low-wage workers identified as White
  - More than one-tenth of all low-wage workers reported limited English proficiency
- A slight shift in the distribution of low-wage workers by ethnicity across the periods
  - The share of all low-wage workers who identify as Hispanic or Latino grew from about one-fifth to a quarter
- No change in the top 10 industries that employed over half of all low-wage workers
  - Across all 10 industries, the estimated percentage change in the number of low-wage workers was not statistically significantly different than the estimated percentage change in the number of all workers between the 2009 and 2019 periods
- Statistically significant differences in the estimated percentage of low-wage workers between the 2009 and 2019 periods for only two States: Nebraska and North Dakota

- While the national percentage of low-wage workers was about 40 percent in both the 2009 and 2019 periods, the State-level percentages ranged from 30 to 48 percent in 2009 and from 25 to 48 percent in 2019

Although this analysis estimates few to no shifts in the composition and distribution of the low-wage workforce between the 2009 and 2019 periods, the growth in the number of low-wage workers may suggest that policies and programs such as career pathways programs should adjust to allow for more participants. The estimated consistency in the top industries employing low-wage workers may also suggest that programs and standards specific to supporting those industries are essential for helping people move out of low-wage work.

B. Unemployed Veterans

Define the Population of Unemployed Veterans

For this analysis, unemployed individuals are defined as individuals who self-reported their unemployment status[6] at the time of the survey. Unemployed veterans are defined as individuals who reported being unemployed at the time of the survey and served on Active Duty for the military in the past but are no longer on Active Duty.

Estimate the Number of Unemployed Veterans

In the 2009 period, the population of unemployed veterans was an estimated 700,000 individuals, about 6 percent of the veteran labor force and about 7 percent of the estimated population of all unemployed individuals within the period. In the 2019 period, the number of unemployed veterans experienced a statistically significant drop to an estimated 430,000 individuals, about 4 percent of the veteran labor force and about 5 percent of the estimated population of all unemployed individuals in the United States within the period. While the number of all unemployed individuals in the Nation saw a statistically significant drop of about 19 percent between the two periods, the number of unemployed veterans decreased statistically significantly by about 38 percent. The difference between the percentage decrease in the number of all unemployed individuals and the nearly double percentage decrease in the number of unemployed veterans is statistically significant.

Examine Unemployed Veterans by Demographic Characteristics

As the overall number of unemployed veterans in the United States fell, the demographic characteristics of unemployed veterans remained relatively consistent. Figure 4 displays the number of unemployed veterans by demographic characteristic in the 2009 and 2019 periods. As in the low-wage worker analysis, the characteristics considered in this analysis include sex, age, race, ethnicity, and English proficiency status.

[6] In the ACS, survey respondents who self-report that they are currently employed or seeking employment are considered part of the labor force. Of that group, those who report that they are seeking employment are considered unemployed.

Distribution of unemployed veterans by sex remained consistent

In both the 2009 and 2019 periods, the distribution of unemployed veterans by sex remained relatively consistent, with more than 85 percent of all unemployed veterans in the United States identifying as male. Therefore, the overall drop in the number of unemployed veterans between the two periods was primarily concentrated in a relatively large—though not statistically significant—drop in the number of unemployed veterans who identify as male (from about 628,000 in 2009 to about 373,000 in 2019).

Number of unemployed veterans decreased significantly across all age levels

In both the 2009 and 2019 periods, the distribution of unemployed veterans by age was consistent, with about 80 percent of all unemployed veterans falling between the ages of 25 and 64. While the overall age distribution stayed consistent and all age groups saw statistically significant decreases across the periods, the number of unemployed veterans aged 45 to 64 dropped the most drastically.

Racial distribution of unemployed veterans remained consistent over time

The distribution of unemployed veterans across racial identities indicates that the majority of unemployed veterans identify as Black or African American, or White in both the 2009 and 2019 periods. While the overall distribution by race remained consistent, the number of individuals in these two racial groups, in addition to unemployed veterans who identify as some other race not specified, saw statistically significant drops across the periods.

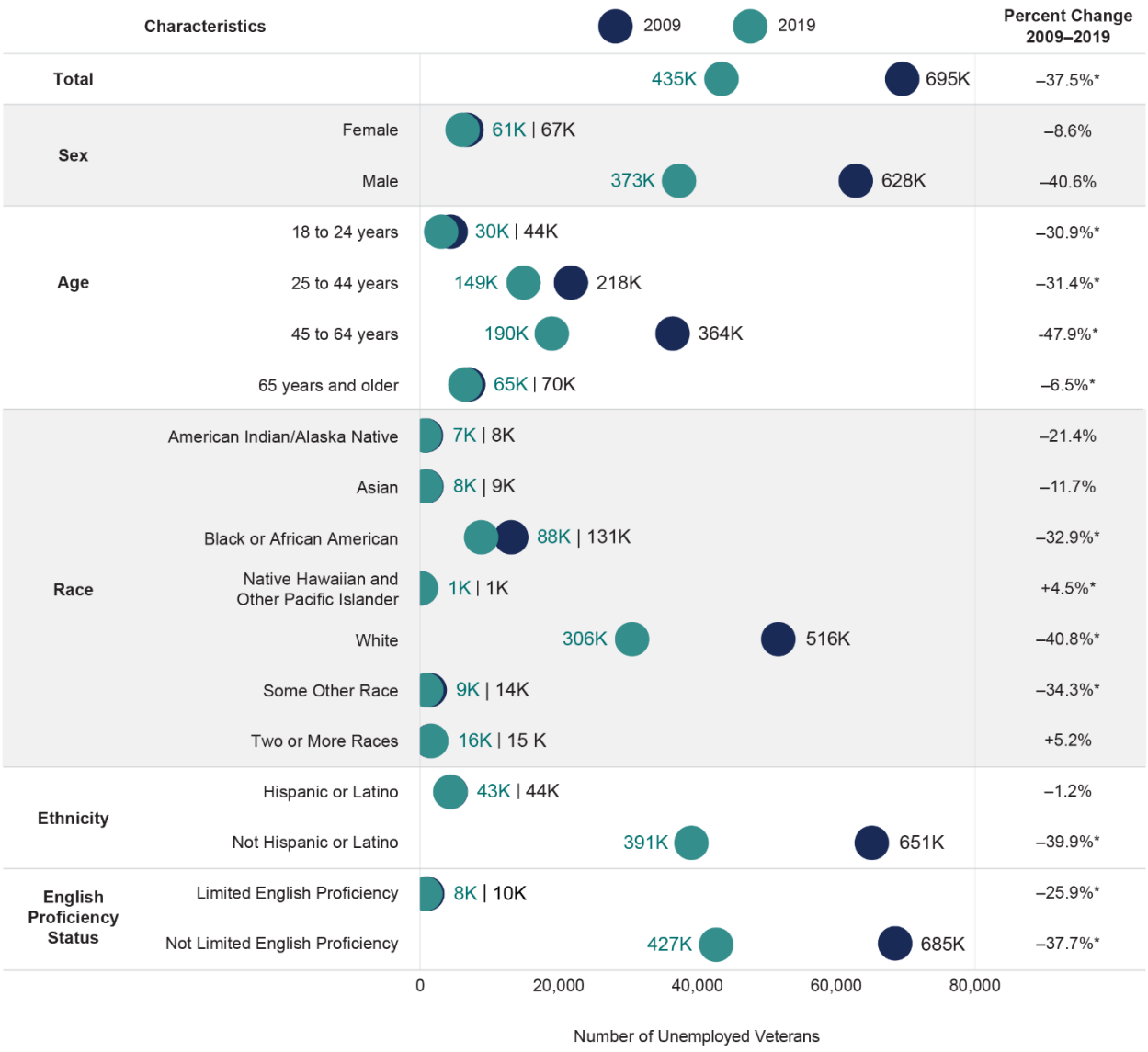
Number of unemployed veterans who identify as not Hispanic or Latino dropped significantly

Across periods, less than 10 percent of unemployed veterans identified as Hispanic or Latino. While the distribution of unemployed veterans remained consistent over time, nearly all of the decrease in the total number of unemployed veterans (a decrease of about 260,000 individuals) occurred in the statistically significant decrease in the number of unemployed veterans who identify as not Hispanic or Latino (a decrease of about 258,000 individuals).

Number of unemployed veterans with limited English proficiency remained low over time

Across periods, a small minority (between 1 and 2 percent) of all unemployed veterans reported limited English proficiency. Both the number of unemployed veterans who reported limited English proficiency and the number of unemployed veterans who did not report limited English proficiency decreased statistically significantly between the 2009 and 2019 periods.

Figure 4. Characteristics of Unemployed Veterans: 2009–2019



Note: Data for figure 4 are available in table B.4 in appendix B. The change in the number of individuals who identify as two or more races may reflect changes to the ACS race and Hispanic ethnicity questions in the 2008 survey. Additional details about the 2008 changes are available at https://www.census.gov/library/working-papers/2009/demo/acs08researchnote.html.
*Indicates a statistically significant difference at the 95 percent confidence level between the number of unemployed veterans in the 2009 period and the number of all unemployed individuals in the 2019 period.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

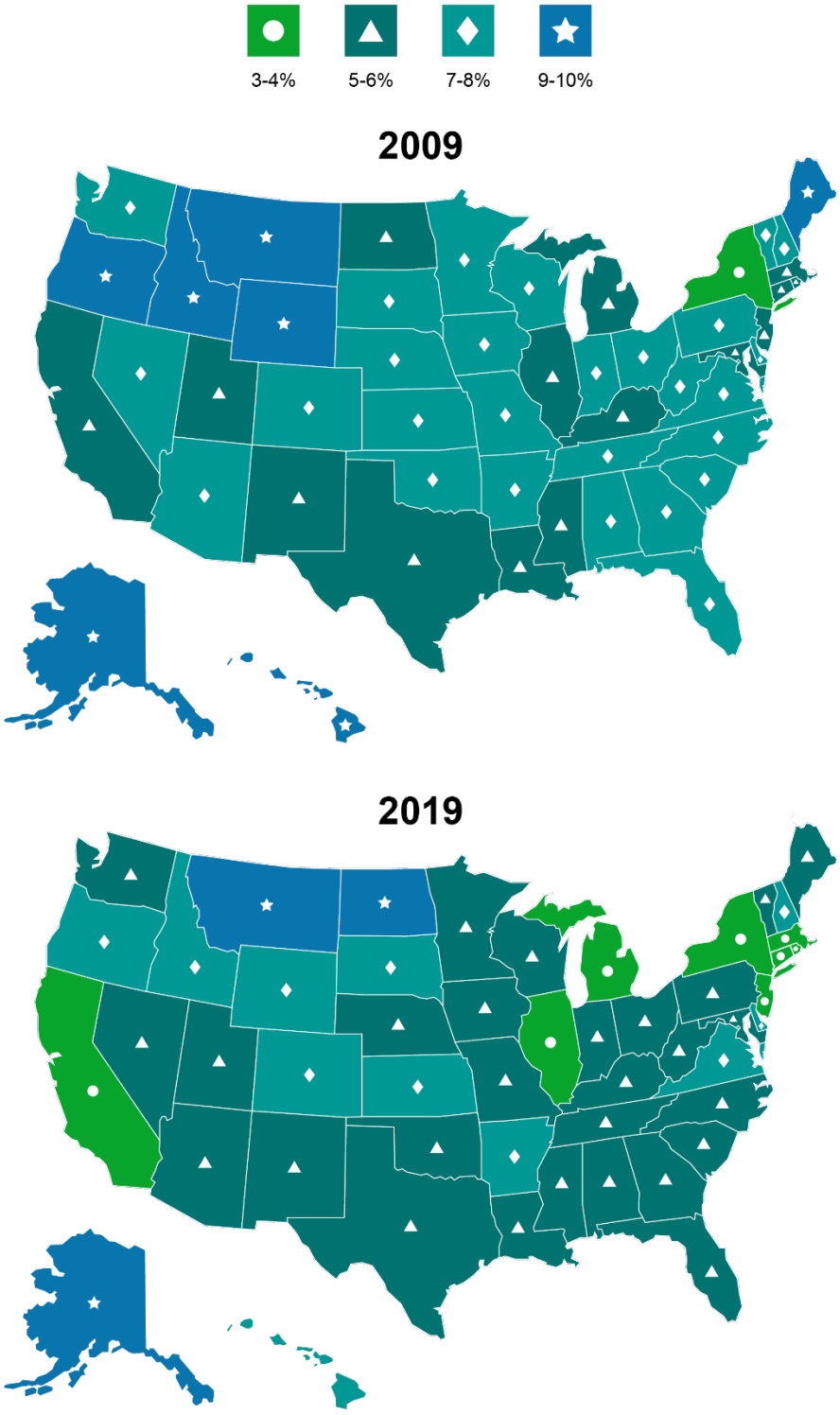
As with the low-wage worker analysis, this analysis compared unemployed veterans in the United States to all unemployed individuals in the Nation to identify trends in demographic characteristics that may be unique to the unemployed veteran population across the 2009 and 2019 periods. Some distributions of unemployed veterans across demographic characteristics vary substantially from those of all unemployed individuals. For example, in both the 2009 and 2019 periods, while over 85 percent of unemployed veterans identify as male, the population of all unemployed individuals is nearly evenly distributed by sex (see table B.4). The percentage change in the total number of unemployed veterans (-38 percent) is also statistically significantly different than the percentage change in the total number of

all unemployed individuals (-19 percent). The difference in the percentage change in the number of unemployed veterans and the percentage change in the number of all unemployed individuals is also statistically significant for 45- to 64-year-olds (-48 percent for unemployed veterans and -19 percent for all unemployed individuals), individuals who identify as not Hispanic or Latino (-40 percent and -24 percent, respectively), individuals who do not have limited English proficiency (-38 percent and -20 percent, respectively), and individuals who identify as White (-41 percent and -24 percent, respectively).

Examine Unemployed Veterans by State

The percentage of all unemployed individuals who were veterans varied across States and over time (see figure 5 and table 3). About 7 percent of all unemployed individuals were veterans at the national level in the 2009 period (of the estimated 10,286,147 total unemployed individuals, an estimated 695,184 were unemployed veterans; see table B.5). However, at the State level, the percentages ranged from 4 percent in New York to 10 percent in Montana. In the 2019 period, as the national percentage fell to 5 percent (of the estimated 8,288,631 total unemployed individuals, an estimated 434,521 were unemployed veterans; see table B.5), the State-level percentages of all unemployed individuals who were veterans ranged from 3 percent in New York to 10 percent in North Dakota. Between 2009 and 2019, the difference in the estimated percentage of all unemployed individuals who were veterans was statistically significant for only five States (California, Iowa, Nebraska, New Jersey, and Ohio). This finding suggests that most States did not see meaningful changes in the relative number of unemployed veterans across the periods.

Figure 5. Percentage of All Unemployed Individuals Who Are Veterans by State: 2009–2019



Note: Data for figure 5 are available in table 3.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table 3. Percentage of All Unemployed Individuals Who Are Veterans by State: 2009–2019

State	Percentage of All Unemployed Individuals Who Are Veterans, 2009	Percentage of All Unemployed Individuals Who Are Veterans, 2019	Percentage Point Difference 2009–2019
Total	**7**	**5**	**-2**
Alabama	7	6	-1
Alaska	9	10	1
Arizona	7	6	-1
Arkansas	7	7	0
California	5	4	-1*
Colorado	8	7	-1
Connecticut	5	4	-1
Delaware	8	7	-1
District of Columbia	5	3	-2
Florida	7	6	-1
Georgia	7	5	-2
Hawaii	9	7	-2
Idaho	9	7	-2
Illinois	5	4	-1
Indiana	7	5	-2
Iowa	8	6	-2*
Kansas	7	7	0
Kentucky	6	6	0
Louisiana	5	5	0
Maine	9	6	-3
Maryland	6	5	-1
Massachusetts	6	4	-2
Michigan	6	4	-2
Minnesota	7	6	-1
Mississippi	5	6	1
Missouri	7	6	-1
Montana	10	10	0
Nebraska	7	5	-2*
Nevada	8	6	-2
New Hampshire	7	7	0
New Jersey	5	3	-2*
New Mexico	6	6	0
New York	4	3	-1
North Carolina	7	5	-2
North Dakota	6	10	4
Ohio	7	5	-2*
Oklahoma	8	6	-2
Oregon	9	7	-2

State	Percentage of All Unemployed Individuals Who Are Veterans, 2009	Percentage of All Unemployed Individuals Who Are Veterans, 2019	Percentage Point Difference 2009–2019
Pennsylvania	7	5	-2
Rhode Island	6	4	-2
South Carolina	7	6	-1
South Dakota	8	8	0
Tennessee	7	6	-1
Texas	6	5	-1
Utah	5	5	0
Vermont	7	5	-2
Virginia	8	7	-1
Washington	8	6	-2
West Virginia	8	6	-2
Wisconsin	7	6	-1
Wyoming	9	8	-1

*Indicates a statistically significant difference at the 95 percent confidence level between the percentage of all unemployed individuals who are veterans in the 2009 period and the percentage of all unemployed individuals who are veterans in the 2019 period.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Key Takeaways and Policy Relevance

Between the 2009 and 2019 periods, the number of unemployed veterans fell from an estimated 700,000 to an estimated 430,000 individuals. When examining this decrease in the estimated number of unemployed veterans, this analysis found—

- Consistent distributions of unemployed veterans by sex, age, race, ethnicity, and English proficiency status across the 2009 and 2019 periods
  - More than 85 percent of all unemployed veterans identified as male
  - About 80 percent of all unemployed veterans were aged 25 to 64
  - More than 90 percent of all unemployed veterans identified as White or Black or African American
  - Less than 10 percent of all unemployed veterans identified as Hispanic or Latino
  - About 1 to 2 percent of all unemployed veterans reported limited English proficiency
- Statistically significant differences in the estimated percentage of unemployed veterans between the 2009 and 2019 periods for five States: California, Iowa, Nebraska, New Jersey, and Ohio
  - While the national percentage of all unemployed individuals who were veterans was about 7 percent in the 2009 period and about 4 percent in the 2019 period, the State-level percentages ranged from 4 to 10 percent in 2009 and from 3 to 10 percent in 2019.

Although this analysis estimates few to no shifts in the composition and distribution of the population of unemployed veterans between the 2009 and 2019 periods, the large drop in the number of unemployed veterans suggests the need to better understand how existing policies and programs may be supporting veterans as they seek employment. Funding research projects to identify which programs and strategies

are most effective in helping lift veterans out of unemployment could inform future program planning and resource allocation.

Section 3. Potential Replicate Analyses for Other Populations

Analyses like those presented in section 2 may be easily conducted using publicly available survey data such as the ACS. When considering a population of focus for such analyses, it is important to examine how the population is defined to determine which survey may best suit the analysis. In addition to ACS data, data from the Census Bureau's over 100 surveys[7] and surveys conducted by other U.S. Government agencies, including the BLS, are publicly available and well-documented online. Table 4 provides examples of surveys with publicly available data to support a variety of research interests for effective policymaking, including examining changes in a population of focus over time.

Table 4. Examples of Nationally Representative Surveys

Topic	Survey(s)
Population and household information	American Community Survey (ACS) Current Population Survey (CPS)
Social and economic well-being	Household Pulse Survey
How Americans spend their time	American Time Use Survey (ATUS)
Employment and wage	Occupational Employment and Wage Statistics (OEWS)
Longitudinal population information	National Longitudinal Surveys (NLS) Survey of Income and Program Participation (SIPP)

In addition to considering other surveys that may better suit analyses on a specific population, researchers and policymakers may build on the example analyses in this report by using more recent data to examine population changes influenced by social, economic, and health factors from the last few years. For example, estimating changes in a population before and following the economic impacts of the COVID-19 pandemic may help identify essential program needs spurred by the pandemic and the potential long-term effects of the national public health emergency. Then, estimating population changes again after the implementation of responsive Federal legislation such as the Families First Coronavirus Response Act can provide additional information about whom the current legislation reaches most effectively and who might still need support. Related analyses may also track population changes by different or additional characteristics than those presented in section 2.

Throughout the analysis process, researchers and policymakers may rely on published survey documentation as one of the most helpful resources for working with survey data. The comprehensive documentation accompanying these public data sources typically covers survey methodology, codebooks, variable changes across survey years, recommendations for making time-based comparisons, and guidance on research best practices such as statistical significance testing and precision measurement.

[7] A complete list of the Census Bureau's surveys is available at https://www.census.gov/programs-surveys/surveyhelp/list-of-surveys.html.

The remainder of this section explores two potential analyses that could be conducted using publicly available survey data. The potential data source, defined population, and characteristics of interest are listed for each analysis, along with tips to remember when estimating population changes.

Potential Analysis 1

How has the distribution of daily hours spent working and caring for household dependents changed for employed individuals between 2019 and 2022?

Potential Data Source: American Time Use Survey (ATUS), BLS

Define the Population: Using employment status as reported in the ATUS, identify all individuals employed at the time of the survey. Consider narrowing this population to only employed individuals with dependents living in their household.

Potential Characteristics of Interest: Capturing patterns in the distribution of time use for employed individuals across demographic characteristics may be helpful to understand how subgroups compare. Characteristics of interest may include age, gender, household size, marital status, part-time/full-time work, household income relative to Federal Poverty Guidelines, industry, occupation, race and ethnicity, and education level.

Tips:

- Before using the ATUS microdata files to conduct your analysis, explore the published ATUS products and data tables to see if the information you need is available in a pretabulated format.
- Follow BLS-recommended processes for accessing and analyzing the ATUS data. This information is available at https://www.bls.gov/tus/data/datafiles-2022.htm.

Policy Relevance: Examining changes in the population of employed individuals who care for household dependents can highlight gaps in the current standards for dependent care support and family leave policy standards. This analysis can also highlight which subgroups of the population may be underserved by the current policies and programs that support workers who care for household dependents.

Potential Analysis 2

How did the population of individuals applying for and receiving unemployment insurance benefits change between the beginning of 2022 and the beginning of 2023?

Potential Data Source: Household Pulse Survey (HPS), Census Bureau

Define the Population: Using the phase 3.3 and phase 3.7 data from the HPS, identify all individuals who applied for and/or received unemployment insurance benefits within the early months of calendar years 2022 and 2023.

Potential Characteristics of Interest: Capturing patterns in the population of individuals who apply for unemployment insurance benefits and those who receive benefits across demographic characteristics may be helpful to understand how subgroups compare. Characteristics of interest may include age, gender, marital status, recency of employment loss, household income relative to Federal Poverty Guidelines, race and ethnicity, disability status, and education level.

Tips:

- Explore the published detailed tables from the HPS to learn more about available characteristics and populations within the survey data. HPS data tables are available at https://www.census.gov/programs-surveys/household-pulse-survey/data.html.
- Review the time periods available through the HPS to consider other specific time periods of interest.

Policy Relevance: Examining changes in the population of individuals applying for and receiving unemployment insurance benefits can highlight gaps in the current unemployment insurance system. This analysis can also highlight any patterns in discrepancies between who applies and who receives benefits and/or how those patterns might change over time. This analysis could support planning around budgeting, improving access to these benefits, and disseminating information on who qualifies for the benefits.

Section 4. Conclusions

Quick and accessible analyses of key population changes over time can support responsive policymaking and effective resource allocation. Section 2 demonstrates how researchers and policymakers can conduct such analyses using publicly available survey data from sources such as the ACS. Analyses like these can offer insight into a population's changing characteristics to highlight trends with policy implications.

Consider the population of low-wage workers in the 2009 and 2019 periods examined in section 2. Over a 10-year period, the demographic and geographic distributions of low-wage workers remained relatively consistent. However, the analysis uncovered notable statistically significant changes. For instance, the analysis reported statistically significant increases in the number of low-wage workers who identify as Asian and the number of low-wage workers who identify as Hispanic or Latino. Given the diversity of languages that may be native to workers who identify as Asian or Hispanic or Latino, these increases may be helpful signals that resources intended to reach low-wage workers should be made accessible in an expanded set of languages. The overall 7 percent low-wage worker population growth may also signal that the existing programs designed to support low-wage workers, such as career pathway programs, may need to expand to remain responsive to the growing need for low-wage worker support. Some of the consistencies this analysis identified, such as a consistent list of the top 10 industries that employ most low-wage workers, also suggest that subpopulations may benefit from additional attention and programming designed specifically for them.

Had these analyses revealed substantial changes in the characteristics and/or locations of low-wage workers, policymakers may conclude other program changes are needed. Ensuring that labor policy and programming remain informed and responsive to these shifts helps improve individuals' access to the resources they need. Conducting quick analyses using publicly available data is the first step in staying abreast of the impact that such changes may have on key populations in need of support.

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Appendix A. Data and Methodology

This appendix details the specific ACS data files, documentation, variables, and methodology used to estimate the explored key populations and comparison populations examined in section 2. This appendix also covers the limitations of these data and methods and suggests potential refinements to improve the presented approach.

A. About the Data

The analyses in section 2 of this report use data from the 2005–2009 and 2015–2019 ACS 5-year Public Use Microdata Samples (PUMS). The PUMS data include person-level and household-level information that enables users to generate custom estimates for specific subnational populations and subgroups that are unavailable through the published ACS pretabulated data products. Compared with ACS 1-year PUMS, ACS 5-year PUMS data offer increased statistical reliability, particularly for subnational and subpopulation estimates,[A-1] because they capture larger samples across the multiyear period.

While ACS 5-year PUMS data are available for years beyond 2019, this report relies on the 2015–2019 period PUMS data as a recent source of information on the two key populations to avoid ACS data collection and weighting complications introduced by the COVID-19 global pandemic.[A-2] The analyses in section 2 rely on prepandemic data because they are intended to serve solely as demonstrative analyses.

For analyses designed to support a specific labor program or initiative, postpandemic data are helpful for capturing the current state of populations and measuring the impact of programs developed in response to the pandemic. In these cases, researchers and policymakers should follow the Census Bureau's recommendations on how best to use ACS data collected in 2020 and later. To account for the smaller, less representative sample of ACS respondents in the 2020 ACS data collection, the Census Bureau released ACS 1-year data with experimental weights for 2020 and urged caution for users of the 2020 data. For ACS 5-year data that include 2020,[A-3] the Census Bureau updated its weighting methodology to improve the reliability of the data from 2020. Because of the updated methodology, the Census Bureau recommends using caution when comparing 5-year data that include 2020 with 5-year data before 2020.

The study team accessed the ACS 5-year PUMS data through the Census Bureau's data querying tool at https://data.census.gov/mdat/#/.

To compare estimates across time periods, the study team identified the relevant variables to use in the ACS 5-year PUMS person-level data for each of the two time periods and then identified any changes in the variables from the 2009 period to the 2019 period. Information on variable changes from one ACS data release to another is available on the Census Bureau's website at

[A-1] Additional information about the ACS 5-year data is available on the Census Bureau's website at https://www.census.gov/newsroom/blogs/random-samplings/2022/03/period-estimates-american-community-survey.html.
[A-2] To learn more about the effects of the COVID-19 pandemic on the ACS data collection for 2020, visit https://www.census.gov/library/working-papers/2021/acs/2021_Rothbaum_01.html.
[A-3] ACS 5-year data that include 2020 are the 2016–2020 estimates, 2017–2021 estimates, 2018–2022 estimates, 2019–2023 estimates, and 2020–2024 estimates.

https://www.census.gov/data/developers/data-sets/acs-5year.2019.html. Additional guidance on comparing estimates across time, best practices in ACS data use, and recommended statistical testing approaches are available on the Guidance for Data Users web page and in the ACS handbooks for data users, both available at https://www.census.gov/programs-surveys/acs/guidance.html.

B. Methodology

The analyses in section 2 include estimates of the U.S. populations of low-wage workers, all workers, unemployed veterans, and all unemployed individuals. Table A.1 details the ACS PUMS variables used to define these populations.

Table A.1. ACS Variables Used to Identify Specific Populations

ACS Variable Name	Description	Use in Population Definition
Low-wage workers and all workers		
ADJINC	Year-specific adjustment factor for income and earnings dollar amounts	Used to adjust the dollar amounts in WAGP to compare across time
AGEP	Person's age	Used to identify individuals aged 18 to 64
COW	Class of worker	Used (with SEMP) to identify self-employed individuals
ESR	Employment status	Used to identify individuals in the labor force
HHT	Household/family type	Used to identify the living situation of high school and college students
SCH	School enrollment	Used to identify individuals currently enrolled in school
SCHG	Grade level attending	Used to identify the grade level of an individual currently enrolled in school
SEMP	Self-employment income in the past 12 months	Used (with COW) to identify self-employed individuals
SEX	Person's self-reported sex	Used to identify men in the population of workers to calculate the threshold for low wages
TYPE	Type of housing unit	Used to identify the institutionalized individuals
WAGP	Wages or salary income in the past 12 months	Used to calculate hourly wage
WKHP	Usual hours worked per week in the past 12 months	Used to calculate hourly wage
WKL	When last worked	Used to identify individuals who worked in the past 12 months
WKW	Weeks worked during past 12 months (binned)	Used to calculate hourly wage
WKWN	Weeks worked during the past 12 months (continuous)	Used to calculate hourly wage
Unemployed veterans and all unemployed individuals		
ESR	Employment status	Used to identify unemployed individuals
MIL	Military service	Used to identify individuals on Active Duty in the past but not at the time of the survey

The population estimates by characteristic presented in section 2 build off the estimates of the total population sizes as defined using variables in table A.1. Table A.2 details the ACS PUMS variables used to tabulate the defined populations by characteristic.

Table A.2. ACS Variables Used in Population Characteristic Tabulations

Characteristic	ACS Variable Name	Description
Sex	SEX	Person's sex
Age	AGEP	Person's age
Race	RAC1P	Detailed race
Ethnicity	HISP	Detailed Hispanic origin
English proficiency status	ENG	Ability to speak English
	LANX	Language other than English spoken at home
Industry	NAICSP	North American Industry Classification System (NAICS) industry codes
State	ST	State Code based on 2010 Census definitions

In addition to the variables included in tables A.1 and A.2, the analyses in this report rely on the person-level survey weight variable, PWGTP, to weight the survey sample to nationally representative estimates of the U.S. population. To calculate precision measures, such as standard error, the analyses rely on the series of 80 person-level replicate weight variables, WGTP1-WGTP80, for the population estimates.

The study team calculated standard errors for the population estimates using the successive difference replication (SDR) method per the recommendation in the ACS PUMS documentation. The SDR method uses the 80 person-level replicate weights (WGTP1-WGTP80) to construct 80 replicate estimates and uses the base person-level weight (PWGTP) to calculate the point estimate. The following formula is used to calculate the standard error for an estimate:

$$SE(X) = \sqrt{\frac{4}{80}\sum_{r=1}^{80}(X_r - X)^2}$$

—where X is the estimate based on the person-level weight, and the values of X_r are the 80 individual estimates based on each of the replicate weights.

When working with publicly available survey data, it is important to capture measures of precision to inform the interpretation of estimates for the population of focus. Measures of precision, such as standard errors, provide information about the reliability of estimates constructed from survey data. For instance, a smaller standard error indicates greater confidence that the estimate from the survey data closely reflects the true population value. When comparing estimates over time, statistical significance testing helps highlight the most informative comparisons about how the population may have changed. Statistical significance testing measures the reliability of observed differences in population estimates over time and indicates the likelihood that an observed difference in estimates reflects an actual difference in the population. Including measures of precision and statistical significance testing in

analyses helps clarify the reliability of the estimates and reduce the potential for misinterpretation and misguided conclusions about changes over time.

C. Limitations and Potential Refinements

The population estimates examined in this report are limited by several factors, including the time period of the data used, the less precise nature of subnational estimates calculated using national survey data, and the challenges associated with comparing survey data across time. These limitations are important to remember when using publicly available survey data.

Limitation 1: Using 2015–2019 Period Data for Recent Estimates

As previously explained, the analyses in section 2 of this report use the ACS 5-year 2015–2019 period PUMS data as recent data when comparing the two key populations over time. While using data before 2020 minimizes data limitations introduced by the COVID-19 global pandemic, it also fails to capture data on the most recent state of the populations. In addition to data collection processes, the pandemic had major effects on the total U.S. population and many subpopulations, including those of particular attention in labor policy, such as the key populations analyzed in this report.[A-4] Therefore, relying on data collected before the pandemic is not as helpful for analyses intended to keep labor programs and initiatives responsive to the most recent shifts in a population. The analyses in section 2 rely on data collected before the pandemic because they are intended as illustrative examples of potential labor policy–related analyses and were not designed to support a specific labor program or initiative.

Potential refinement

To improve the analyses presented in section 2, researchers and policymakers could use more recent ACS 5-year data and refer to Census Bureau guidance for the best ways to make comparisons across 5-year data periods when 2020 data are involved.

Limitation 2: Capturing Subnational Populations Using National Survey Data

While publicly available nationally representative survey data may be a helpful resource for conducting population analyses such as the ones presented in this report, the survey design may limit specific uses of the data. National surveys like the ACS are intended to capture representative information about individuals and households across the United States. ACS survey methodologies prioritize measuring relevant and reliable estimates for many levels of geography in the United States, from national estimates to estimates of smaller geographic areas such as counties and Census tracts. When using ACS data to analyze specific subpopulations in the United States that are not defined by geography as the ACS design intends, but rather by occupation or other characteristics, estimates are more prone to sampling error.

Potential refinement

In addition to complementing population point estimates with estimated measures of precision, such as standard errors, the reliability of population analyses can be improved by identifying the best publicly

[A-4] For additional information on how the COVID-19 pandemic affected the low-wage worker population, see https://www.brookings.edu/articles/the-pandemic-hurt-low-wage-workers-the-most-and-so-far-the-recovery-has-helped-them-the-least/

available survey for the specific analyses and populations of focus. Researchers and policymakers should consider surveys designed to capture populations closely aligned with their population or subject of focus. For example, when examining wage changes for workers within a specific occupation, using data from the BLS Occupational and Wage Statistics program may be more helpful than using data from the ACS. Section 4 provides additional details about identifying and using publicly available survey data that support analyses similar to those presented in section 2 of this report.

Limitation 3: Comparing Survey Data Over Time

Changes in survey questions and designs limit comparisons across survey periods. Survey questions may change for many reasons, including in response to shifts in societal and cultural perceptions of identity, such as changes in reported race and ethnicity categories. For example, the Census Bureau updated the race and ethnicity categories included in the 2020 national census to present a more accurate picture of how people self-identify.[A-5] As a result, when comparing race and ethnicity data from the 2020 census to race and ethnicity data from the 2010 census, researchers and policymakers need to map the race and ethnicity categories across the surveys to ensure they do not misrepresent changes in the survey questions as changes in the population. Similarly, survey designs change over time to reflect the latest best practices in survey methods and data collection procedures. This kind of survey change is apparent in the updated weighting methodology used for the 2020 ACS data. As mentioned in this appendix, data users should proceed cautiously when comparing 2020 ACS data to other years.

Potential refinement

To account for survey changes when comparing estimates over time, researchers and policymakers should rely on survey documentation, resources, and survey team recommendations to aid tricky comparisons. Many publicly available surveys, such as the ACS, offer documentation on variable changes from one survey year to the next. Survey documentation also details the survey methodology and often highlights changes that may have occurred between survey years. To strengthen comparisons across years, researchers and policymakers should consider using data for years where comparisons are reasonable and few differences exist between the surveys.

[A-5] For more information on the updated race and ethnicity categories included in the 2020 national census, see https://www.census.gov/library/stories/2021/08/improved-race-ethnicity-measures-reveal-united-states-population-much-more-multiracial.html

Appendix B. Detailed Data Tables

This appendix includes detailed tables with the estimated number of individuals in the focus and reference populations in the 2009 and 2019 periods. Table B.1 includes the national-level estimated number of low-wage workers and the estimated number of all workers by demographic characteristic—sex, age, race, ethnicity, and English proficiency status—in the 2009 and 2019 periods. Table B.2 includes the national-level estimated number of low-wage workers and the estimated number of all workers by industry for the 10 industries that employ the greatest number of low-wage workers. Table B.3 includes the State-level estimated number of low-wage workers and the estimated number of all workers in the 2009 and 2019 periods. Tables B.4 and B.5 follow the same structures as B.1 and B.3, respectively, with estimates for the number of unemployed veterans and all unemployed individuals. All tables in this appendix present the percentage change between the period-specific estimates. The standard errors for the estimates presented in these tables are available in appendix C.

Table B.1. National Distribution of Low-Wage Workers and All Workers by Characteristic: 2009–2019

Characteristics		Estimated Number of Low-Wage Workers			Estimated Number of All Workers		
		2009	2019	Percentage Change	2009	2019	Percentage Change
Total		**47,325,790**	**50,585,288**	**6.9**	**118,039,783**	**126,274,608**	**7.0***
Sex	Female	25,700,213	27,119,944	5.5	56,408,846	60,734,509	7.7
	Male	21,625,577	23,465,344	8.5	61,630,937	65,540,099	6.3
Age	18 to 24 years old	12,486,196	12,729,726	2.0	15,890,478	16,152,219	1.6
	25 to 44 years old	21,324,016	23,142,207	8.5	57,327,319	60,398,256	5.4
	45 to 64 years old	13,515,578	14,713,355	8.9*	44,821,986	49,724,133	10.9*
Race	American Indian/Alaska Native	456,894	495,146	8.4	866,887	957,951	10.5
	Asian	1,920,380	2,516,155	31.0*	5,311,167	7,399,773	39.3*
	Black/African American	6,886,951	8,111,699	17.8	14,040,789	16,130,284	14.9*
	Native Hawaiian and Other Pacific Islander	93,536	127,284	36.1*	185,672	252,404	35.9*
	White	32,843,065	33,702,954	2.6	88,993,019	91,554,721	2.9
	Some other race	4,231,042	4,093,963	-3.2	6,807,733	6,742,679	-1.0
	Two or more races	893,922	1,538,087	72.1*	1,834,378	3,236,338	76.4*
Ethnicity	Hispanic/Latino	10,485,014	13,030,604	24.3*	17,385,612	22,983,117	32.2*
	Not Hispanic/Latino	36,840,776	37,554,684	1.9	100,653,935	103,291,450	2.6
English proficiency status	Limited English proficiency	7,295,726	6,990,084	-4.2	10,935,070	11,120,437	1.7
	Not limited English proficiency	40,030,064	43,595,204	8.9	107,104,713	115,154,171	7.5

Note: For all characteristics, the differences at the 95 percent confidence level between the percentage change in the estimated number of low-wage workers and the percentage change in the estimated number of all workers were tested for statistical significance, but no statistically significant differences were found.
* Indicates a statistically significant difference at the 95 percent confidence level between the population size in the 2009 period and the population size in the 2019 period.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table B.2 National Distribution of Low-Wage Workers and All Workers by Industry: 2009–2019

Industry	Estimated Number of Low-Wage Workers			Estimated Number of All Workers		
	2009	2019	Percentage Change	2009	2019	Percentage Change
Food services and drinking places	5,062,488	6,250,468	23.5	6,540,482	8,223,552	25.7
Educational services	3,259,569	3,611,552	10.8	10,070,444	11,145,858	10.7
Administrative and support services	2,504,129	2,835,608	13.2	4,217,851	4,815,064	14.2
Construction	3,107,264	2,785,910	-10.3	8,108,046	7,701,130	-5.0
Ambulatory healthcare services	1,941,357	2,463,951	26.9	4,933,547	6,208,165	25.8
Food and beverage stores	1,641,697	1,922,926	17.1	2,522,822	2,839,027	12.5
General merchandise stores	1,712,620	1,769,809	3.3	2,496,441	2,545,021	1.9
Social assistance	1,442,366	1,702,309	18.0	2,342,826	2,751,771	17.5
Hospitals	1,421,506	1,511,514	6.3	5,576,144	6,486,553	16.3
Nursing and residential care facilities	1,314,904	1,445,575	9.9	2,303,400	2,601,248	12.9

Note: For low-wage workers and all workers, the differences in the population sizes in the 2009 and 2019 periods were tested for statistical significance, but no statistically significant differences were found.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table B.3. State-Level Estimated Number of Low-Wage Workers and All Workers: 2009–2019

State	Estimated Number of Low-Wage Workers			Estimated Number of All Workers		
	2009	2019	Percentage Change	2009	2019	Percentage Change
Total	**47,325,790**	**50,585,288**	**6.9**	**118,039,783**	**126,274,608**	**7.0***
Alabama	737,833	726,361	-1.6	1,727,093	1,753,879	1.6
Alaska	114,614	107,959	-5.8	283,013	298,330	5.4
Arizona	1,038,066	1,100,907	6.1	2,369,134	2,571,390	8.5
Arkansas	478,442	467,374	-2.3	1,044,976	1,072,943	2.7
California	5,724,169	6,449,169	12.7	13,802,228	15,107,699	9.5
Colorado	754,908	859,133	13.8	1,988,910	2,309,091	16.1
Connecticut	449,613	446,414	-0.7	1,409,997	1,429,340	1.4
Delaware	124,664	136,160	9.2	350,660	371,072	5.8
District of Columbia	78,897	75,658	-4.1	241,648	302,792	25.3
Florida	3,047,879	3,614,839	18.6	6,776,943	7,606,682	12.2
Georgia	1,451,818	1,671,338	15.1	3,717,457	3,991,686	7.4
Hawaii	233,365	242,674	4.0	521,212	572,558	9.9
Idaho	259,671	280,325	8.0	556,802	623,069	11.9
Illinois	1,967,836	1,960,970	-0.3	5,133,743	5,156,801	0.4
Indiana	990,277	1,041,329	5.2	2,545,156	2,640,334	3.7
Iowa	468,787	449,288	-4.2	1,213,054	1,262,482	4.1
Kansas	457,145	451,339	-1.3	1,127,826	1,153,397	2.3
Kentucky	660,954	672,824	1.8	1,585,159	1,639,640	3.4
Louisiana	720,903	721,101	0.0	1,650,522	1,689,324	2.4
Maine	215,764	194,868	-9.7	510,400	506,525	-0.8
Maryland	794,278	821,465	3.4	2,372,033	2,494,901	5.2
Massachusetts	799,874	865,098	8.2	2,670,941	2,835,989	6.2
Michigan	1,466,001	1,557,362	6.2	3,843,236	3,859,405	0.4
Minnesota	752,535	764,390	1.6	2,196,452	2,358,263	7.4
Mississippi	482,193	464,993	-3.6	1,046,720	1,040,932	-0.6
Missouri	922,823	954,403	3.4	2,332,207	2,385,748	2.3

State	Estimated Number of Low-Wage Workers			Estimated Number of All Workers		
	2009	2019	Percentage Change	2009	2019	Percentage Change
Montana	172,345	160,058	-7.1	355,491	384,613	8.2
Nebraska	310,308	293,295	-5.5	721,576	775,067	7.4*
Nevada	428,103	507,061	18.4	1,071,982	1,191,801	11.2
New Hampshire	191,668	200,000	4.3	559,875	572,102	2.2
New Jersey	1,228,713	1,327,489	8.0	3,544,769	3,618,469	2.1
New Mexico	343,793	341,949	-0.5	721,140	736,482	2.1
New York	2,923,475	2,933,365	0.3	7,528,747	7,668,039	1.9
North Carolina	1,462,614	1,618,230	10.6	3,570,092	3,970,968	11.2
North Dakota	115,633	99,951	-13.6*	265,547	314,079	18.3*
Ohio	1,733,422	1,728,915	-0.3	4,594,393	4,618,400	0.5
Oklahoma	613,039	615,815	0.5	1,348,400	1,437,790	6.6
Oregon	603,757	669,172	10.8	1,448,566	1,587,697	9.6
Pennsylvania	1,877,545	1,858,095	-1.0	4,925,141	5,030,418	2.1
Rhode Island	153,018	149,218	-2.5	434,283	433,861	-0.1
South Carolina	718,756	825,066	14.8	1,700,532	1,899,003	11.7
South Dakota	135,344	129,262	-4.5	310,350	331,831	6.9
Tennessee	987,811	1,072,185	8.5	2,373,403	2,548,386	7.4
Texas	4,193,753	4,844,501	15.5	9,177,503	10,942,722	19.2
Utah	466,623	506,836	8.6	1,019,687	1,193,224	17.0
Vermont	102,241	88,289	-13.6	247,608	239,798	-3.2
Virginia	1,162,348	1,237,771	6.5	3,227,309	3,466,212	7.4
Washington	965,791	1,086,765	12.5	2,628,966	2,988,387	13.7
West Virginia	278,174	259,209	-6.8	653,913	631,933	-3.4
Wisconsin	871,587	853,378	-2.1	2,376,568	2,432,144	2.3
Wyoming	92,620	81,672	-11.8	216,420	226,910	4.8

* Indicates a statistically significant difference at the 95 percent confidence level between the population size in the 2009 period and the population size in the 2019 period.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table B.4. National Distribution of Unemployed Veterans and All Unemployed Individuals by Characteristic: 2009–2019

Characteristics		Estimated Number of Unemployed Veterans			Estimated Number of All Unemployed Individuals		
		2009	2019	Percentage Change	2009	2019	Percentage Change
Total		**695,184**	**434,521**	**-37.5*†**	**10,286,147**	**8,288,631**	**-19.4***
Sex	Female	66,990	61,232	-8.6	5,024,354	4,045,119	-19.5
	Male	628,194	373,289	-40.6	5,961,573	4,639,880	-22.2
Age	18 to 24 years old	43,967	30,383	-30.9*	2,930,636	2,255,667	-23.0*
	25 to 44 years old	217,545	149,217	-31.4*	4,329,466	3,480,448	-19.6*
	45 to 64 years old	364,094	189,848	-47.9*†	2,775,625	2,253,146	-18.8*
	65 years and older	69,578	65,073	-6.5*	250,420	299,370	19.5*
Race	American Indian/Alaska Native	8,352	6,561	-21.4	138,296	116,265	-15.9
	Asian	9,105	8,039	-11.7	388,431	395,433	1.8
	Black/African American	131,288	88,103	-32.9*	2,316,362	1,879,870	-18.8*
	Native Hawaiian and Other Pacific Islander	1,079	1,128	4.5	17,791	18,119	1.8
	White	516,416	305,626	-40.8*†	7,101,832	5,406,216	-23.9*
	Some other race	13,649	8,972	-34.3*	724,083	508,373	-29.8*
	Two or more races	15,295	16,092	5.2	265,902	329,810	24.0*
Ethnicity	Hispanic/Latino	43,950	43,417	-1.2	1,798,823	1,676,471	-6.8
	Not Hispanic/Latino	651,234	391,104	-39.9*†	9,143,040	6,960,153	-23.9*
English proficiency status	Limited English proficiency	10,323	7,645	-25.9*	1,040,886	718,679	-31.0
	Not limited English proficiency	684,861	426,876	-37.7*†	9,940,409	7,953,855	-20.0

* Indicates a statistically significant difference at the 95 percent confidence level between the population size in the 2009 period and the population size in the 2019 period.
† Indicates a statistically significant difference at the 95 percent confidence level between the percentage change in the estimated number of unemployed veterans and the percentage change in the estimated number of all unemployed individuals.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table B.5. State-Level Estimated Number of Unemployed Veterans and All Unemployed Individuals: 2009–2019

State	Estimated Number of Unemployed Veterans			Estimated Number of All Unemployed Individuals		
	2009	2019	Percentage Change	2009	2019	Percentage Change
Total	**695,184**	**434,521**	**-37.5***	**10,286,147**	**8,288,631**	**-19.4***
Alabama	11,554	7,419	-35.8*	158,016	126,728	-19.8
Alaska	2,728	2,597	-4.8	29,258	25,999	-11.1
Arizona	14,170	12,118	-14.5	193,201	184,889	-4.3
Arkansas	7,266	4,824	-33.6*	91,974	66,912	-27.2
California	67,158	43,609	-35.1*	1,342,231	1,155,145	-13.9
Colorado	12,734	8,970	-29.6*	149,992	124,948	-16.7
Connecticut	6,866	4,207	-38.7*	119,555	109,847	-8.1
Delaware	2,402	1,689	-29.7	27,325	23,973	-12.3
District of Columbia	1,478	888	-39.9	28,512	27,292	-4.3
Florida	46,499	31,823	-31.6	633,282	541,779	-14.4
Georgia	26,074	15,993	-38.7*	353,527	278,636	-21.2
Hawaii	2,793	1,967	-29.6	30,054	27,613	-8.1
Idaho	4,386	2,625	-40.2*	44,085	33,908	-23.1
Illinois	28,782	14,531	-49.5*	494,478	372,828	-24.6
Indiana	17,453	8,596	-50.7*	233,075	154,637	-33.7*
Iowa	6,017	3,539	-41.2*	71,677	58,528	-18.3
Kansas	5,917	4,151	-29.8	72,665	58,461	-19.5
Kentucky	9,743	6,533	-32.9*	144,003	108,268	-24.8
Louisiana	8,294	6,997	-15.6	147,388	135,318	-8.2
Maine	3,616	1,676	-53.7*	38,418	27,131	-29.4*
Maryland	11,330	7,903	-30.2*	171,743	158,139	-7.9
Massachusetts	13,217	6,885	-47.9*	220,655	172,156	-22.0
Michigan	32,746	12,437	-62.0*	487,456	275,769	-43.4*
Minnesota	12,245	6,840	-44.1*	157,463	105,952	-32.7*
Mississippi	6,680	5,433	-18.7	113,064	93,407	-17.4

State	Estimated Number of Unemployed Veterans			Estimated Number of All Unemployed Individuals		
	2009	2019	Percentage Change	2009	2019	Percentage Change
Missouri	15,655	8,570	-45.3*	196,353	131,033	-33.3*
Montana	2,808	2,101	-25.2	26,105	20,088	-23.0
Nebraska	3,228	1,666	-48.4*	41,106	31,480	-23.4
Nevada	7,738	5,796	-25.1	91,822	89,573	-2.4
New Hampshire	2,729	1,911	-30.0*	34,500	26,238	-23.9
New Jersey	15,987	8,523	-46.7*	293,691	241,817	-17.7
New Mexico	4,066	3,466	-14.8	60,680	59,123	-2.6
New York	29,604	15,898	-46.3*	654,914	526,822	-19.6
North Carolina	26,036	14,805	-43.1*	325,933	264,843	-18.7
North Dakota	703	1,140	62.2	11,503	10,280	-10.6
Ohio	34,357	15,120	-56.0*	437,471	295,782	-32.4*
Oklahoma	7,873	6,072	-22.9	94,770	90,303	-4.7
Oregon	12,625	7,670	-39.2*	139,166	107,341	-22.9
Pennsylvania	28,655	17,907	-37.5*	396,919	331,192	-16.6
Rhode Island	2,432	1,375	-43.5*	36,172	29,352	-18.9
South Carolina	13,383	8,942	-33.2*	169,608	133,421	-21.3
South Dakota	1,473	1,347	-8.6	16,971	10,771	-36.5
Tennessee	17,154	10,608	-38.2*	227,473	166,706	-26.7
Texas	48,282	38,340	-20.6	746,574	673,870	-9.7
Utah	3,404	2,823	-17.1	61,402	50,487	-17.8
Vermont	1,325	562	-57.6*	18,544	11,647	-37.2
Virginia	16,961	14,064	-17.1	200,192	190,298	-4.9
Washington	18,337	10,781	-41.2*	216,266	178,189	-17.6
West Virginia	4,429	3,323	-25.0	50,552	50,432	-0.2
Wisconsin	12,706	6,263	-50.7*	173,043	105,560	-39.0*
Wyoming	1,086	1,198	10.3	11,320	13,720	21.2

* Indicates a statistically significant difference at the 95 percent confidence level between the population size in the 2009 period and the population size in the 2019 period.
Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Appendix C. Standard Error Tables

This appendix includes detailed tables with the standard errors for the estimated number of individuals in the populations of focus and reference populations in the 2009 and 2019 periods. Table C.1 includes the national-level standard errors for the estimated number of low-wage workers and the estimated number of all workers by demographic characteristic—sex, age, race, ethnicity, and English proficiency status—in the 2009 and 2019 periods. Table C.2 includes the national-level standard errors for the estimated number of low-wage workers and the estimated number of all workers by industry for the 10 industries that employ the greatest number of low-wage workers. Table C.3 includes the State-level standard errors for the estimated number of low-wage workers and the estimated number of all workers in the 2009 and 2019 periods. Tables C.4 and C.5 follow the same structures as C.1 and C.3, respectively, with standard errors for the estimates for the number of unemployed veterans and the number of all unemployed individuals. The estimates associated with the standard errors presented in these tables are available in appendix B.

Table C.1. Standard Errors for National Distribution of Low-Wage Workers and All Workers by Characteristic: 2009–2019

Characteristics		Standard Error for Estimated Number of Low-Wage Workers		Standard Error for Estimated Number of All Workers	
		2009	2019	2009	2019
Total		**1,134,340**	**1,643,636**	**1,828,837**	**2,533,190**
Sex	Female	2,348,809	4,197,372	3,461,878	6,117,042
	Male	4,941,932	6,297,718	7,875,552	9,817,037
Age	18 to 24 years old	637,739	892,484	765,975	1,058,375
	25 to 44 years old	894,528	1,321,482	1,579,556	2,189,315
	45 to 64 years old	282,553	398,370	512,766	709,782
Race	American Indian/Alaska Native	21,186	27,905	29,959	40,963
	Asian	126,714	167,821	252,062	329,609
	Black/African American	331,744	537,392	513,907	784,914
	Native Hawaiian and Other Pacific Islander	4,985	12,216	8,926	19,996
	White	1,078,674	1,596,706	1,715,926	2,401,595
	Some other race	315,220	330,881	429,755	474,820
	Two or more races	44,915	105,701	66,993	159,823
Ethnicity	Hispanic/Latino	586,799	850,242	800,570	1,232,172
	Not Hispanic/Latino	1,148,192	1,630,174	1,929,539	2,512,590
	Advanced degree	28,406	47,430	106,545	155,067
English proficiency status	Limited English proficiency	452,487	390,386	594,335	536,758
	Not limited English proficiency	1,378,347	2,224,358	2,273,205	3,420,872

Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table C.2. Standard Errors for National Distribution of Low-Wage Workers and All Workers by Industry: 2009–2019

Industry	Standard Error for Estimated Number of Low-Wage Workers		Standard Error for Estimated Number of All Workers	
	2009	2019	2009	2019
Food services and drinking places	210,621	362,857	258,020	444,344
Educational services	69,359	122,391	135,840	217,276
Administrative and support services	120,005	163,438	159,610	217,111
Construction	175,856	177,306	279,375	295,851
Ambulatory healthcare services	49,979	97,989	81,917	156,101
Food and beverage stores	63,610	110,647	83,501	136,951
General merchandise stores	58,648	99,540	75,668	120,335
Social assistance	48,673	73,068	64,928	95,644
Hospitals	34,529	56,558	74,965	125,525
Nursing and residential care facilities	30,090	49,025	42,556	67,600

Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data.

Table C.3. Standard Errors for State-Level Estimated Number of Low-Wage Workers and All Workers: 2009–2019

State	Standard Error for Estimated Number of Low-Wage Workers		Standard Error for Estimated Number of All Workers	
	2009	2019	2009	2019
Total	**1,134,340**	**1,643,636**	**1,828,837**	**2,533,190**
Alabama	56,523	117,486	81,334	173,456
Alaska	24,308	26,763	34,319	43,893
Arizona	170,788	159,379	264,381	246,723
Arkansas	38,806	47,560	54,572	73,012
California	730,522	952,356	1,211,199	1,532,554
Colorado	82,671	106,635	125,451	165,708
Connecticut	34,890	59,490	53,542	95,044
Delaware	13,697	18,307	22,572	31,902
District of Columbia	16,721	19,040	32,992	50,298
Florida	330,792	791,587	493,485	1,168,953
Georgia	202,121	266,064	325,978	397,180
Hawaii	29,124	52,242	39,084	81,311
Idaho	15,090	34,274	19,429	46,542
Illinois	162,723	220,954	271,320	339,909
Indiana	37,214	102,137	60,153	148,243
Iowa	4,057	26,617	8,093	38,580
Kansas	26,165	43,957	33,819	57,458
Kentucky	52,248	74,026	74,781	104,208
Louisiana	71,432	128,028	107,553	201,863
Maine	13,878	16,516	19,421	22,739
Maryland	79,804	113,042	135,188	194,056
Massachusetts	87,526	98,730	182,071	176,624
Michigan	114,101	141,443	170,404	194,874
Minnesota	24,289	77,968	38,688	114,284
Mississippi	41,763	69,395	59,031	108,481
Missouri	61,705	91,730	93,071	128,295

State	Standard Error for Estimated Number of Low-Wage Workers		Standard Error for Estimated Number of All Workers	
	2009	2019	2009	2019
Montana	27,056	20,761	36,689	27,097
Nebraska	13,984	13,089	19,316	17,560
Nevada	30,607	70,318	53,661	118,505
New Hampshire	15,435	18,913	24,554	26,624
New Jersey	102,938	138,055	190,328	216,690
New Mexico	38,423	63,464	54,478	91,329
New York	325,898	286,614	625,332	492,382
North Carolina	130,573	244,012	174,516	340,312
North Dakota	3,564	2,851	4,832	3,566
Ohio	130,870	138,609	206,013	208,410
Oklahoma	47,616	80,790	64,990	115,994
Oregon	51,846	61,857	75,560	92,133
Pennsylvania	115,681	159,274	197,669	247,517
Rhode Island	17,659	21,095	32,419	39,392
South Carolina	86,030	144,088	123,541	203,427
South Dakota	8,616	8,864	13,485	12,891
Tennessee	78,028	122,742	116,671	181,382
Texas	518,320	752,224	762,193	1,135,118
Utah	67,389	55,414	88,870	85,665
Vermont	8,087	8,583	11,223	11,689
Virginia	133,875	210,610	189,594	314,003
Washington	96,538	96,007	139,317	135,357
West Virginia	14,266	29,071	21,310	44,685
Wisconsin	37,411	64,286	51,132	86,061
Wyoming	7,772	8,663	11,652	15,808

Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table C.4. Standard Errors for National Distribution of Unemployed Veterans and All Unemployed Individuals by Characteristic: 2009–2019

Characteristics		Standard Error for Estimated Number of Unemployed Veterans		Standard Error for Estimated Number of All Unemployed Individuals	
		2009	2019	2009	2019
Total		**14,483**	**12,858**	**289,207**	**320,375**
Sex	Female	8,696	8,789	680,504	893,791
	Male	92,323	76,661	1,403,784	1,423,653
Age	18 to 24 years old	2,890	2,614	180,171	197,640
	25 to 44 years old	10,700	9,892	214,092	238,947
	45 to 64 years old	9,233	7,649	72,992	80,304
	65 years and older	1,290	1,457	3,992	5,817
Race	American Indian/Alaska Native	632	716	8,812	9,293
	Asian	1,059	1,177	29,105	35,031
	Black/African American	7,876	6,019	152,765	154,181
	Native Hawaiian and Other Pacific Islander	182	235	1,818	2,384
	White	13,267	12,287	252,275	289,703
	Some other race	1,148	1,140	50,862	51,516
	Two or more races	1,410	1,317	15,542	26,237
Ethnicity	Hispanic/Latino	2,570	3,687	94,813	134,261
	Not Hispanic/Latino	19,958	16,107	369,941	382,040
English proficiency status	Limited English proficiency	680	957	57,805	45,453
	Not limited English proficiency	22,021	19,238	420,317	482,731

Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data

Table C.5. Standard Errors for State-Level Estimated Number of Unemployed Veterans and All Unemployed Individuals: 2009–2019

State	Standard Error for Estimated Number of Unemployed Veterans		Standard Error for Estimated Number of All Unemployed Individuals	
	2009	2019	2009	2019
Total	**14,483**	**12,858**	**289,207**	**320,375**
Alabama	1,328	1,117	20,500	30,303
Alaska	362	586	6,583	5,339
Arizona	1,743	1,507	36,530	35,633
Arkansas	662	889	10,351	12,320
California	8,314	6,853	169,038	184,040
Colorado	1,290	958	20,677	19,018
Connecticut	586	472	13,957	15,890
Delaware	412	244	4,215	4,385
District of Columbia	642	373	7,328	9,324
Florida	3,935	6,565	77,680	131,483
Georgia	3,208	2,456	60,254	62,543
Hawaii	366	331	2,970	4,984
Idaho	410	390	4,803	6,764
Illinois	2,700	1,630	60,657	56,089
Indiana	923	858	16,729	22,469
Iowa	426	372	3,456	8,666
Kansas	666	664	7,051	10,893
Kentucky	858	851	18,766	17,789
Louisiana	1,166	1,262	25,504	34,945
Maine	389	383	4,460	3,605
Maryland	1,217	984	25,526	27,107
Massachusetts	1,629	832	30,281	31,190
Michigan	3,145	1,282	51,764	38,333
Minnesota	1,106	824	12,382	18,075
Mississippi	757	1,400	17,525	19,608

State	Standard Error for Estimated Number of Unemployed Veterans		Standard Error for Estimated Number of All Unemployed Individuals	
	2009	2019	2009	2019
Missouri	1,533	1,053	23,787	17,205
Montana	455	347	5,635	3,527
Nebraska	373	255	4,305	4,180
Nevada	1,326	676	8,328	15,048
New Hampshire	280	293	4,126	3,853
New Jersey	1,175	757	25,789	31,076
New Mexico	496	552	10,188	15,230
New York	2,939	1,406	92,758	72,791
North Carolina	2,025	2,159	35,084	51,211
North Dakota	142	302	1,841	1,400
Ohio	3,196	1,059	48,394	40,292
Oklahoma	613	1,074	10,618	15,508
Oregon	1,685	823	13,349	14,283
Pennsylvania	2,183	1,920	45,685	43,913
Rhode Island	253	258	4,784	6,094
South Carolina	1,244	1,549	24,494	30,917
South Dakota	405	521	2,050	2,693
Tennessee	1,756	1,314	26,338	31,192
Texas	5,557	4,906	117,731	131,544
Utah	446	711	10,924	7,612
Vermont	227	189	3,443	2,220
Virginia	1,811	1,917	28,749	36,485
Washington	1,567	961	23,653	22,654
West Virginia	354	642	5,884	9,245
Wisconsin	862	629	15,892	12,743
Wyoming	207	195	1,943	3,285

Sources: 2015–2019 American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS) data; 2005–2009 ACS 5-year PUMS data