Research Report

University of California San Francisco

UCSF Health Workforce Research Center on Long-Term Care

# Workforce Displacement and Re-Employment During the Covid-19 Pandemic: Implications for Direct Care Workforce Recruitment and Retention

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## Executive Summary

Demand is rising for direct care workers (including personal care aides, home health aides, and nursing assistants), but recruitment and retention challenges are widespread. While the COVID-19 pandemic has greatly exacerbated these challenges, it has also created a new labor pool comprising millions of workers who have been displaced from occupations with similar entry-level requirements and potentially overlapping job characteristics. However, little is known about whether and how these displaced workers could be re-employed in direct care jobs.

To fill this knowledge gap, this study addressed three research questions:

1. How many direct care workers and workers from other occupations with similar entry-level requirements became unemployed during the first three months of the COVID-19 pandemic?
2. To what extent do the knowledge, skills, work activities, and work context of displaced workers' previous occupations align with those of the three direct care occupations?
3. How many displaced workers re-entered the workforce (including into direct care jobs) within the following year, and from which previous occupations?

The findings from this analysis inform a set of policy and practice recommendations for making direct care jobs more attractive to a range of job seekers (including workers who have been displaced from other occupations), creating or strengthening pipelines into direct care jobs, and developing tailored workforce supports for new segments of this workforce.

### Methods

In this report, we used a matched Current Population Survey (CPS) dataset spanning early 2020 to early 2021. To analyze workforce displacement by occupational and demographic characteristics, we followed workers who were employed in the first quarter of 2020 in occupations with similar entry-level requirements to direct care into the second quarter of 2020 (when pandemic-related unemployment peaked). We then measured whether displaced workers re-entered the workforce in the first quarter of 2021 (when unemployment had declined again). Very few displaced workers were re-employed into direct care jobs, so we explored two possible contributing factors by comparing median wages and work hours for re-employed workers' new occupations against those of direct care jobs.

### Results

During the first three months of the COVID-19 pandemic in 2020, 13.7 million workers were displaced from occupations with similar entry-level requirements to direct care. One year later, in early 2021, 9.1 million workers (or 66 percent of those displaced workers) had re-entered the workforce, leaving 4.6 million displaced workers still out of work. According to our analysis, two major occupational groups with high similarity to direct care also had large numbers of displaced workers who did not re-enter the workforce—food service and serving occupations (with 1.9 million long-term displaced workers) and office and administrative occupations (with 1.2 million long-term displaced workers). Across demographic groups, we found that women and people of color were more likely to be displaced and less likely to re-enter the workforce, as well as displaced workers with caregiving responsibilities.

Four percent of direct care workers were displaced during the second quarter of 2020, and an immeasurably small number of displaced workers (from direct care or any other occupation) were re-employed into direct care. When comparing wages and hours among direct care workers and re-employed workers, we found that re-employed workers tended to earn higher wages than direct care workers. Re-employed workers were also generally more likely to work full time than direct care workers.

## Discussion and Conclusion

The analysis of workforce displacement and re-employment in this report suggests several opportunities to strengthen the direct care workforce during and beyond the COVID-19 pandemic.

First, low wages for direct care workers likely contributed to the lack of movement into these jobs. Direct care wages and benefits must be improved through a combination of changes in Medicaid policy (e.g., making hazard pay provisions permanent) and employer practices (e.g., offering a wider range of benefits to boost overall compensation).

Considering the similarities that were identified between direct care and certain other occupations, this research also highlights the need to develop tailored recruitment messages that effectively reach workers who have been displaced from or may be seeking employment in those other occupations. For example, recruitment messages could highlight shared job characteristics, such as the customer service emphasis, the priority placed on teamwork, or the intrinsic value of caring for others, among others.

Finally, our demographic analyses underscore the need to develop recruitment strategies and employment supports for specific populations within the workforce. For example, people of color would benefit from race-explicit workforce supports and workers with caregiving responsibilities may need assistance accessing affordable childcare or long-term services and supports.

Overall, this research underscores the urgent need to build robust recruitment pipelines into the long-term care field and to make meaningful, lasting improvements in job quality for direct care workers. These strategies are critically needed to grow and stabilize this workforce during the COVID-19 pandemic and beyond.

## Background

Direct care workers (including personal care aides, home health aides, and nursing assistants) provide essential daily assistance to older adults and people with disabilities across long-term services and supports (LTSS) and other care settings. This workforce is in extremely high demand, growing from 3.1 million workers in 2010 to 4.6 million workers in 2020, and is projected to add another 1.3 million jobs from 2019 to 2029—which is more new jobs than any other single occupation.[1] However, low wages and other job quality concerns have created long-standing and widespread recruitment and retention challenges across the LTSS field.[2]

The COVID-19 pandemic has greatly exacerbated these recruitment and retention challenges.[3] Direct care workers have been asked to provide services in hazardous conditions, often without enhanced wages, paid leave benefits, childcare assistance, personal protective equipment, or other critical supports.[4] During this crisis, direct care workers have faced immense stress at work and in their personal lives, and many have left their jobs by choice or necessity[5]—creating vacancies that have been difficult to fill.[6] This instability in the workforce, coupled with temporary variations in demand for care, contributed to falling employment in the long-term care industry in the early stages of the pandemic.[7]

However, in addition to exacerbating the direct care workforce shortage, the COVID-19 crisis has also created a new recruitment opportunity. Many of the industries that were most affected by the pandemic—including restaurants and bars, travel and transportation, entertainment, personal services, retail, manufacturing, and more—offer jobs with similar entry-level requirements to direct care.[8] Further, across industries, women, younger workers, people of color, and workers without a college degree—all populations that are over-represented in direct care—experienced the highest rates of displacement due to COVID-19.[9] Taken together, these factors suggest the opportunity to build a pipeline into direct care jobs from the labor pool of workers displaced by the pandemic.

To some extent, direct care employers and other stakeholders have implemented efforts to leverage this recruitment opportunity. Several national and state-based organizations launched new job boards and developed guides to recruit displaced workers, for example, and employers developed new partnerships and strategies to reach furloughed workers from other industries.[10]

However, little is known about the success of efforts to recruit workers who had been displaced by the COVID-19 pandemic into direct care or the implications for future recruitment and retention efforts in this field.

## Purpose of this Study

This study examines unemployment and re-employment patterns during the COVID-19 period to develop new understanding about how to recruit new workers into direct care jobs, where they are acutely needed. Specifically, the study aims to answer the following research questions:

1. How many direct care workers and workers from other occupations with similar entry-level requirements became unemployed during the first three months of the COVID-19 pandemic?
2. To what extent do the knowledge, skills, work activities, and work context of the displaced workers' previous occupations align with those of the three direct care occupations?
3. How many displaced workers re-entered the workforce (including into direct care jobs) within the following year, and from which previous occupations?

Across these analyses, this study also examines demographic variations, given the evidence that both occupational and demographic factors have been associated with workforce displacement and re-employment during the COVID-19 pandemic.[11]

The findings from this research inform a series of policy and practice recommendations related to making direct care jobs more attractive to job seekers, recruiting specific populations of workers into direct care, and supporting new hires in their transitions into direct care roles.

## Methods

This quantitative study leveraged several data sources and methods to identify workers who lost their jobs due to the COVID-19 pandemic and their re-entry into the workforce during the following year. These analyses focus narrowly on direct care workers and workers from other occupations with similar entry-level requirements.

### Identifying and Quantifying Similar Occupations by Job Zone

This research examined occupational displacement and workforce re-entry among direct care workers and workers from occupations from similar "Job Zones" as defined by the Occupational Information Network (O*NET), an occupational information database developed and maintained by the North Carolina Department of Commerce and funded by the U.S. Department of Labor. The five-level O*NET Job Zone measure includes education, training, and experience requirements for each occupation.[12]

Personal care aides, home health aides, and nursing assistants are classified in Job Zone 2 ("Some Preparation Needed"). To capture all workers who may be likely to transfer into direct care jobs, we included all those displaced from occupations in Job Zone 2, as well as from Job Zone 1 ("Little or No Preparation Needed") and Job Zone 3 ("Medium Preparation Needed").[13] Through this process, we narrowed the survey sample to 632 detailed occupations from Job Zones 1 through 3 and excluded 153 occupations from Job Zones 4 and 5.

To achieve sufficiently large sample sizes to analyze displacement and re-employment in our Current Population Survey (CPS) dataset, we grouped the 632 detailed occupations into 22 major occupational groups, as defined by the U.S. Bureau of Labor Statistics (BLS) through the Standard Occupational Classification (SOC) system.

We then recoded two groups of occupations. First, given the focus of this report, we recoded personal care aides, home health aides, and nursing assistants into a single occupational category called "Direct Care Occupations." There were also six occupational groups with very few workers in Job Zones 1 through 3, which we grouped into a composite "All Other Occupations" category.[14]

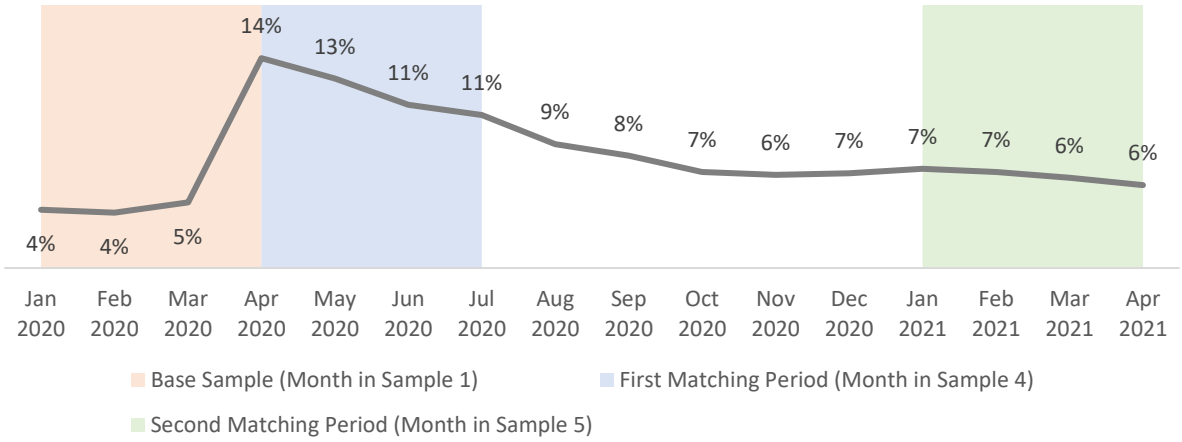
To quantify the number of workers in these major occupational groups (across Job Zones 1 through 3), we used 2020 employment data from the Bureau of Labor Statistics' Occupational Employment and Wage Statistics (OEWS) program.[15]

## Tracking Workforce Displacement and Re-Entry

To track respondents' employment through the COVID-19 pandemic, we developed a dataset using basic monthly data from the CPS. The CPS, which is jointly sponsored by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (BLS), is a nationally representative survey on education, employment, and earnings. In the basic monthly data collection process, CPS respondents are contacted for interviews once a month for four consecutive months, followed by an eight-month break. They are interviewed again once a month for four months.

To build the dataset, we started by pooling respondents who joined the CPS in either January, February, or March 2020 and who reported being employed at the time.[16] We refer to these respondents as "workers" throughout the body of this report. We then used a unique identifier to match those respondents to their fourth month in the survey, in April, May, or June 2020. The first quarter (January through March 2020) preceded the mass unemployment caused by the COVID-19 pandemic in the U.S., while the second quarter (April through June 2020) represented its apex (see Figure 1). Finally, we matched these displaced workers from their fourth to their fifth month in the sample—namely, to January, February, or March 2021, when the unemployment rate had declined considerably. Respondent matches were verified using age, gender, race, ethnicity, and educational attainment. Through this matching process, we were able to measure how many respondents were employed in early 2020, how many were displaced due to COVID-19 three months later, and how many had re-entered the workforce by early 2021.

**Figure 1: Monthly Unemployment Rate in the U.S., Shaded According to CPS Respondent Matching Periods**




Source: Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey. 2021. *Labor Force Statistics*. https://www.bls.gov/cps/; analysis by PHI (July 2021).

A key limitation with this approach is that it was not possible to match 40 percent of respondents across one year, given that attrition rates were particularly high during the COVID-19 pandemic, when the CPS program temporarily stopped performing in-person interviews and closed two call centers.[17] This issue may have had an impact on the representativeness of our findings, considering attrition varied among demographic groups, with higher attrition among respondents aged 16 to 24 (52 percent) and those aged 25 to 34 (49 percent), as well as Black/African-American respondents (48 percent) and Hispanic/Latino respondents (49 percent).[18] To offset this limitation, we used a survey weight that accounts for the likelihood that a respondent dropped out of the sample from their first month in the sample to their fifth month.[19] Also, because survey attrition diminished our sample size somewhat, some descriptive statistics in this report have high error margins and should be interpreted with caution.

### *Displacement*

To answer the first research question, we identified "displaced workers" within this dataset as respondents who became unemployed in April 2020 or thereafter. Because the CPS survey was revised in May 2020 to include a question about whether respondents were out of the labor force and unable to look for work because of COVID-19, we also defined respondents from May and June who answered this question affirmatively as displaced workers.

We first analyzed occupational displacement according to major occupational groups. Displacement rates were drawn from our analysis of CPS data, which we applied to OEWS employment data to estimate the number of displaced workers. We then examined displacement rates according to respondents' demographic characteristics. As a final step in our analysis, to account for covariance among demographic and occupational factors, we carried out an ordinary least squares (OLS) regression analysis, controlling for age, age squared, gender, race and ethnicity, citizenship status, marital status, parental status, the interaction between gender and parental status, cohabitation with an adult with caregiving needs, the interaction between gender and living with an adult with caregiving needs, educational attainment, region, full- or part-time status, employment type, and major occupational group.

### *Re-Entry*

To address our third research question, we defined "workers who re-entered the workforce" (or "re-employed workers") as respondents who had been displaced in the second quarter of 2020 but reported employment in the first quarter of 2021.

Following the approach used in the displacement analysis, we examined workforce re-entry in aggregate, according to displaced workers' original major occupational group before displacement, and by demographic characteristics. In this analysis, we assessed whether respondents were re-employed into the same or a different occupation and clarified whether respondents who did not re-enter the workforce were unemployed, out of the labor force due to COVID-19, or out of the labor force for another reason.

We then explored re-entry using an OLS regression analysis, controlling for age, age squared, gender, race and ethnicity, citizenship status, marital status, parental status, the interaction between gender and parental status, cohabitation with an adult with caregiving needs, the interaction between gender and living with an adult with caregiving needs, educational attainment, region, full or part-time status, employer ownership type, and major occupational group.

### *Job Quality Among Re-Employed Workers*

As described in the Results section, very few displaced workers (i.e., seven total respondents from the CPS sample) re-entered the workforce into direct care jobs. This small sample size made it impossible to meaningfully compare displaced workers who entered direct care versus other occupations. Instead, we compared occupational wages and work hours across direct care jobs and the jobs that displaced workers entered.

For our analysis of work hours, we used full- or part-time status data that are collected from all respondents in the CPS. However, the CPS does not collect wage data from respondents in their fifth month in the survey sample, the period when we examined workforce re-entry. Instead, to generate a wage variable, we matched respondents' state and detailed occupation to the relevant median wage data from the OEWS. There are two limitations with this approach. First, the state-level median wages do not account for wage variation across industries and individual employers. Second, OEWS wage data are collected over three years, meaning they may include pandemic-related wage enhancements (such as hazard pay) but in combination with two previous years of wage data.

## Calculating Occupational Similarity to Direct Care

To address the second research question, we examined the similarities and differences between displaced workers in the same dataset according to their job characteristics. For this analysis, we relied on the O*NET Related Occupations Matrix (ROM) methodology for career changers.[20] This algorithm measures occupational similarities across five broad domains: job zones, knowledge, skills, activities, and context, which comprise a total of 159 unique job elements. (See Appendix 1 for a detailed explanation of the O*NET algorithm.)

For consistency with our analysis of CPS data, we generated average element scores for each major occupational group (weighted according to the number of O*NET survey respondents). We also combined data for personal care aides, home health aides, and nursing assistants into a single "direct care worker" category, but variation in job characteristics across the three occupations was minimal (see Appendix 2).

Using the O*NET ROM algorithm, we measured the difference between direct care jobs and all other major occupations and detailed occupations across all 159 job elements, generating a standardized score using a 100-point scale (see Appendix 3).

While this approach is useful for assessing occupational similarity, its comparability comes at the cost of specificity. That is, by standardizing job elements across occupations, O*NET cannot fully account for the nuanced interplay of knowledge, skills, activities, and contextual factors that characterize direct care jobs versus other major occupational groups. However, the high-level findings on similarities among direct care jobs and certain other occupations can still inform recruitment and retention strategies, as outlined in the discussion section.

## Results

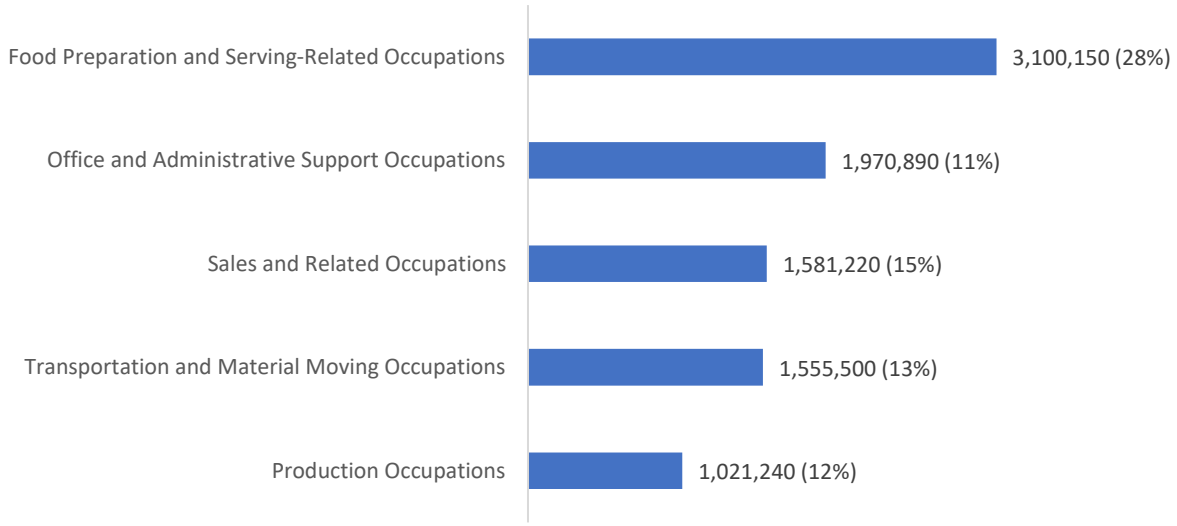
The research results are presented in two sections, with the first section describing workforce displacement due to COVID-19 (focusing on Job Zones 1 to 3) and the second section detailing workforce re-entry. Across both sections, we compare direct care versus other occupations, and draw out demographic factors that are associated with different employment outcomes.

### Workforce Displacement Due to Covid-19

#### *Displacement Due to COVID-19 by Major Occupational Group*

Overall, 13.7 million workers from occupations with similar entry-level requirements to direct care (i.e., from Job Zones 1 to 3) were displaced from their jobs in the first three months of the COVID-19 pandemic (see Figure 2). Two-thirds of displaced workers (67 percent, or 9.2 million workers) were displaced from five major occupational groups: food preparation and serving-related occupations (3.1 million workers), office and administrative support occupations (2 million workers), sales and related occupations (1.6 million workers), transportation and material moving occupations (1.6 million workers), and production occupations (1 million workers). (See Appendix 4 for displacement data for all major occupational groups.)

**Figure 2: Major Occupational Groups with the Most Displaced Workers Due to COVID-19**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; analysis by PHI (June 2021).

As compared to all occupations with similar barriers to entry, direct care workers had a low rate of occupational displacement: four percent (or 168,370 workers) were displaced from their jobs in the first three months of the COVID-19 pandemic.

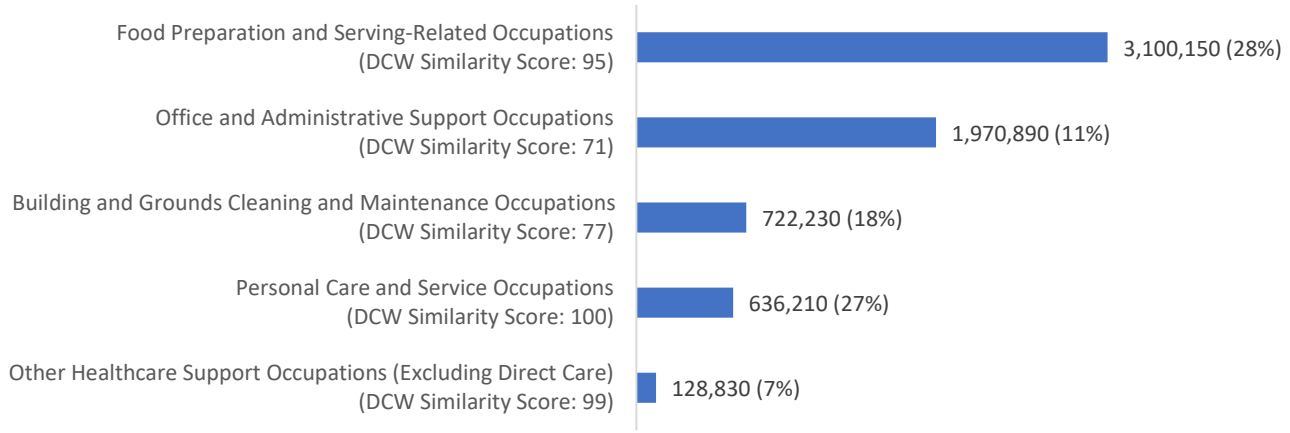
### *Displacement Among Major Occupations with Similarity to Direct Care Jobs*

The occupations with the highest direct care worker similarity scores (i.e., the closest match to the knowledge, skills, work activities, and work contexts characterizing direct care jobs), were personal care and service occupations (e.g. childcare workers), other healthcare support occupations (excluding direct care workers), food preparation and serving-related occupations (e.g. cooks and fast food workers), building and grounds cleaning and maintenance occupations (e.g. janitors and maids), and office and administrative support occupations (e.g. hospitality desk workers).

The job elements that contributed to high similarity scores varied across major occupational groups. For example, the similarity between direct care workers and other healthcare support occupational groups was primarily driven by high scores for activities related to "Assisting and Caring for Others." In contrast, office and administrative support occupations were similar to direct care jobs because they had high scores for service-oriented and social perceptiveness skills.

Among occupations with high direct care worker similarity scores, food preparation and serving-related occupations and office and administrative support occupations both had high numbers of displaced workers (as noted above). Compared to these occupations, personal care and service occupations and healthcare support occupations had fewer displaced workers but had higher direct care worker similarity scores (see Figure 3).

**Figure 3: Displacement Due to COVID-19 from Occupations with the Highest Direct Care Worker Similarity Scores**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

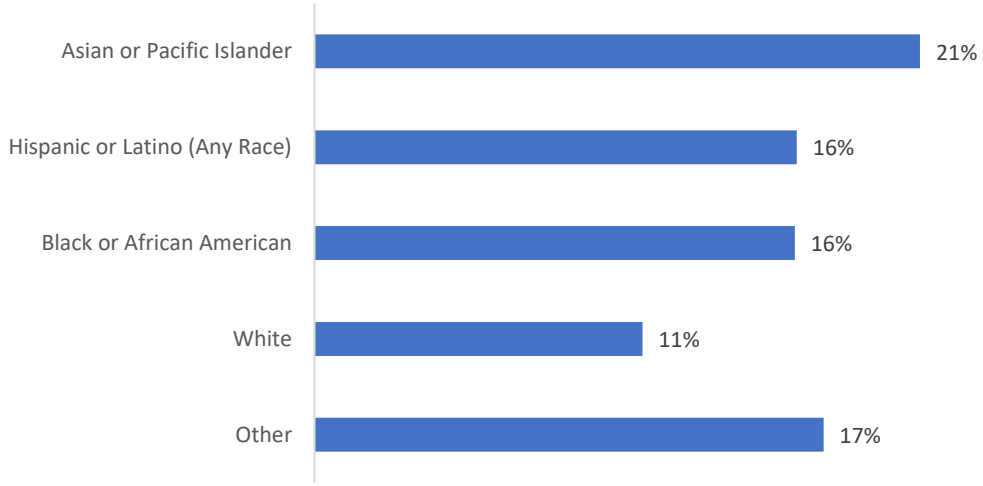
Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; O*NET. 2021. *O*NET 25.3 Database*. https://www.onetcenter.org/database.html#all-files; analysis by PHI (June 2021).

### *Characteristics of Workers Who Were Displaced Due to COVID-19*

Several demographic characteristics were associated with COVID-19-related displacement in this sample. In presenting these results, we focus on the characteristics that are most relevant to developing policy and practice recommendations for recruitment and retention in direct care, rather than discussing every statistically significant correlation. (See Appendix 5 for all descriptive statistics and Appendix 6 for full regression results.)

During the first three months of the pandemic, 16 percent of women lost their jobs compared to 12 percent of men, a statistically significant difference (see Figure 4). Workers of color were also more likely to experience displacement: 21 percent of Asian/Pacific Islander workers and 16 percent of Hispanic/Latino and Black/African-American workers lost their jobs versus 11 percent of white workers. These differences changed slightly in the regression model but were still statistically significant.

**Figure 4: Displacement Due to COVID-19 by Race and Ethnicity**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

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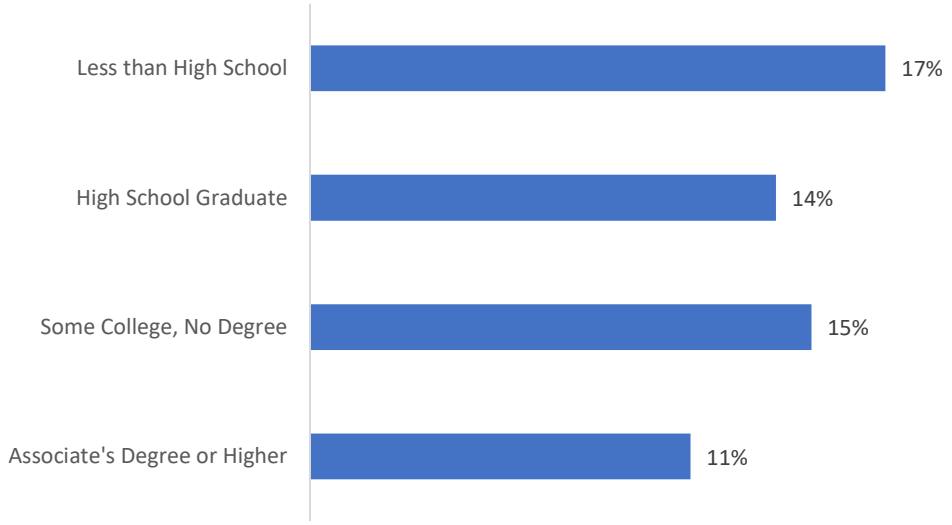
Workers without a college degree also experienced displacement at higher rates than workers with more education: 17 percent of workers with a high school education or less, 14 percent of workers with a high school degree, and 15 percent of workers with some college but no degree were displaced due to COVID-19, compared to 11 percent of workers with an associate's degree or higher (see Figure 5). However, these differences were small and statistically insignificant in the regression analysis, which indicates they were likely caused by variation in educational attainment by gender, race, ethnicity, or other factors.

**Figure 5: Displacement Due to COVID-19 by Educational Attainment**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Source: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

## Workforce Re-Entry Following Displacement Due to Covid-19

### *Workforce Re-Entry by Major Occupational Group*

Across all respondents who had been displaced from Job Zones 1 to 3—i.e., from occupations with similar entry-level requirements to direct care—9.1 million workers (or 66 percent of all displaced workers) had re-entered the workforce by early 2021, leaving 4.6 million displaced workers still out of work. This figure includes 2.3 million workers who were out of the labor force and unable to look for work due to COVID-19, 1.9 million who were unemployed but looking for work, and 511,000 who were out of the labor force for some other reason (e.g., due to retirement). (See Appendix 7 for detailed unemployment and labor force participation data for workers who were not employed in early 2021.)

The largest numbers of re-employed workers had originally been employed in food preparation and serving-related occupations (1.9 million), office and administrative support occupations (1.2 million), sales and related occupations (1.1 million), transportation and material moving occupations (922,800), and production occupations (799,920). These were the occupational groups with the highest number of displaced workers, as well (see Table 1). (See Appendix 8 for workforce re-entry data.)

**Table 1: Major Occupational Groups with the Most Displaced Workers Re-Entering the Workforce (Into Any Occupation and Into the Same Occupational Group)**

| Original Major Occupational Group (Before Displacement) | Re-Entered the Workforce into Any Occupation | Re-Entered the Workforce into the Same Occupational Group | Did Not Re-Enter the Workforce |
|---|---|---|---|
| Food Preparation and Serving Related Occupations | 1,949,390 (63%) | 1,195,430 (39%) | 1,150,760 (37%) |
| Office and Administrative Support Occupations | 1,205,710 (61%) | 594,370 (30%) | 765,180 (39%) |
| Sales and Related Occupations | 1,104,950 (70%) | 878,800 (56%) | 476,270 (30%) |
| Transportation and Material Moving Occupations | 922,800 (59%) | 567,380 (36%) | 632,700 (41%) |
| Production Occupations | 799,920 (78%) | 497,690 (49%) | 221,320 (22%) |
| Direct Care Workers | 14,760 (9%) | 0 (0%) | 153,610 (91%) |

Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; analysis by PHI (June 2021).

Among all workers who were re-employed, 44 percent re-entered the workforce into the same detailed occupation and another 18 percent re-entered the workforce into a different detailed occupation within the same major occupational group. The remaining 38 percent of respondents re-entered the workforce into a different major occupational group. Across most major occupational groups, the majority of displaced workers re-entered the same major occupational group. (See Appendix 9 for detailed findings on occupational changes among re-employed workers.)

Direct care workers had a much lower rate of workforce re-entry compared to other major occupational groups, at nine percent (14,760 workers)—meaning that an estimated 153,610 workers were displaced from the direct care workforce in the first three months of the pandemic and had not been re-employed by the first quarter of 2021.

None of the former direct care workers who re-entered the workforce returned to their previous jobs and an immeasurably small number of displaced workers from other occupations (seven total respondents in the CPS sample) re-entered the workforce into a direct care job.

### *Workforce Re-Entry Among Major Occupations with Similarity to Direct Care Jobs*

The majority of displaced workers who had originally been employed in occupations with high direct care worker similarity scores had re-entered the workforce by early 2021. Re-entry rates were 60 to 65 percent among workers from the five major occupations with the highest direct care worker similarity

scores (see Table 2). The two occupational groups with the highest direct care worker similarity scores had the highest rates of workforce re-entry, including 64 percent of workers from personal care and service occupations and 65 percent from other healthcare support occupations (excluding direct care).

However, a considerable number of displaced workers from these occupations were still unemployed or out of the labor force by early 2021, including nearly 1.2 million workers from food preparation and serving-related occupations and 765,180 workers from office and administrative support occupations.

**Table 2: Workforce Re-entry Among Workers from Occupations with the Highest Direct Care Worker Similarity Scores**

| Original Major Occupational Group (Before Displacement) | DCW Similarity Score | Re-Entered the Workforce | Did Not Re-Enter the Workforce |
|---|---|---|---|
| Food Preparation and Serving Related Occupations | 95 | 1,949,390 (63%) | 1,150,760 (37%) |
| Office and Administrative Support Occupations | 71 | 1,205,710 (61%) | 765,180 (39%) |
| Building and Grounds Cleaning and Maintenance Occupations | 77 | 432,090 (60%) | 290,140 (40%) |
| Personal Care and Service Occupations | 100 | 408,670 (64%) | 227,540 (36%) |
| Other Healthcare Support Occupations | 99 | 84,130 (65%) | 44,700 (35%) |

Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; O*NET. 2021. *O*NET 25.3 Database*. https://www.onetcenter.org/database.html#all-files; analysis by PHI (June 2021).

## *Characteristics of Workers Who Re-Entered the Workforce*

Several demographic characteristics were associated with workforce re-entry among displaced workers. As in the previous section on displacement, this section focuses on findings that are most relevant to developing targeted direct care recruitment and retention strategies. (See Appendix 10 for all descriptive statistics and Appendix 11 for full regression results.)

Women were less likely to re-enter the workforce than men, at 64 percent versus 70 percent, and this difference was nearly statistically significant in the regression model. Workforce re-entry rates also varied by race and ethnicity: 54 percent of Asian/Pacific Islander workers and 57 percent of Black/African-American workers re-entered the workforce, compared to 71 percent of white workers (see Figure 6). In the regression model, the difference in the workforce re-entry rate between Black/African-American workers and white workers was statistically significant, and nearly statistically significant for Asian/Pacific Islander compared to white workers. By contrast, the rate of re-entry for Hispanic/Latino workers was similar to that of white workers.

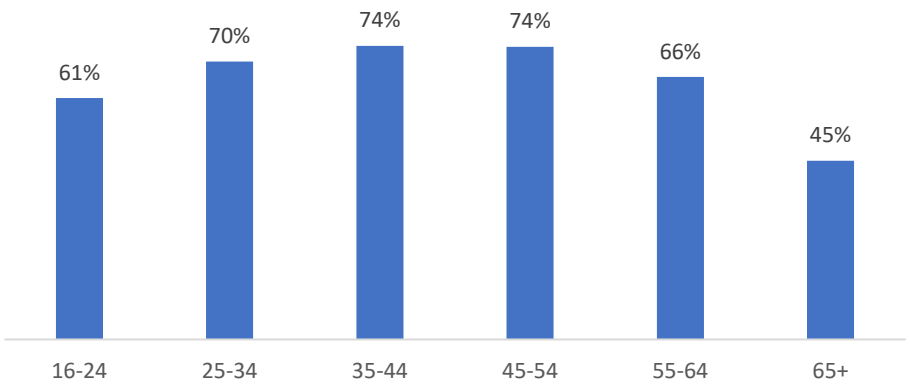
**Figure 6: Workforce Re-Entry Rates by Race and Ethnicity**


Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Source: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

Although not strongly associated with displacement due to COVID-19, age *was* associated with workforce re-entry, with workers aged 25 to 54 more likely to re-enter the workforce than younger and older workers (see Figure 7). Seventy percent of workers aged 25 to 34 and 74 percent of workers aged 35 and 54 re-entered the workforce, versus 61 percent of those aged 16 to 24 and 45 percent of those aged 65 and over. In the regression model, age and age squared were both statistically significant, indicating a non-linear relationship between age and likelihood of workforce re-entry: that is, age was positively associated with workforce re-entry until age 40, when the age effect began to diminish.

**Figure 7: Workforce Re-Entry Rates by Age Group**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Source: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

Personal caregiving responsibilities were also associated with workforce re-entry. While workforce re-entry rates were identical among parents with children at home and all other adults in the descriptive analysis (67 percent), the regression results showed an association between having a child under age 18 living at home and workforce re-entry, particularly for men. According to the regression model, compared to men without children at home, women with children were 10 percent less likely to re-enter the workforce and men with children were 16 percent less likely to re-enter the workforce.

Living in a household with an adult with self-care or independent living difficulties was also negatively associated with workforce re-entry: 44 percent of displaced workers who lived with a person with caregiving needs were not re-employed, compared to 68 percent of workers who did not. In the regression analysis, this association was contingent on gender. Women in households that included someone with a long-term care need were 37 percent less likely to be re-employed than other women, and 45 percent less likely to be re-employed than men who did not live with an adult with caregiving needs. These differences were statistically significant, although the cohabitation variable alone (without the gender interaction) was not.

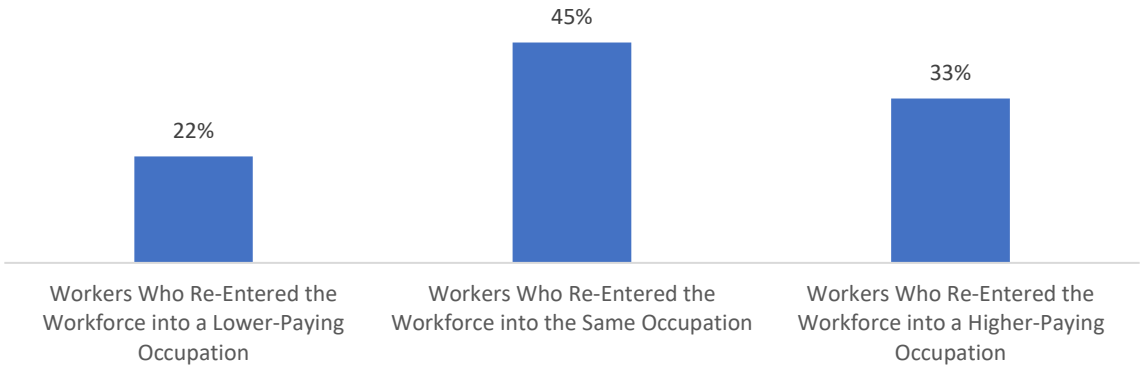
## Key Job Quality Indicators Among Re-Employed Workers

As described in the previous section, an immeasurably small number of workers re-entered the workforce into direct care jobs. This section explores possible reasons why re-entry into direct care was so low by comparing occupational wages and work hours among re-employed workers.

### *Median Wages*

Thirty-three percent of displaced workers re-entered the workforce into an occupation with higher median wages (at the state level) than their previous occupations, while 22 percent re-entered the workforce into a lower-paying occupation (see Figure 8). The remaining 45 percent re-entered the same occupation they were in before being displaced by COVID-19.[21] Notably, all workers, including those who entered lower-paying occupations, entered occupations with median wages that were higher than the median wage for direct care workers (see Figure 9).

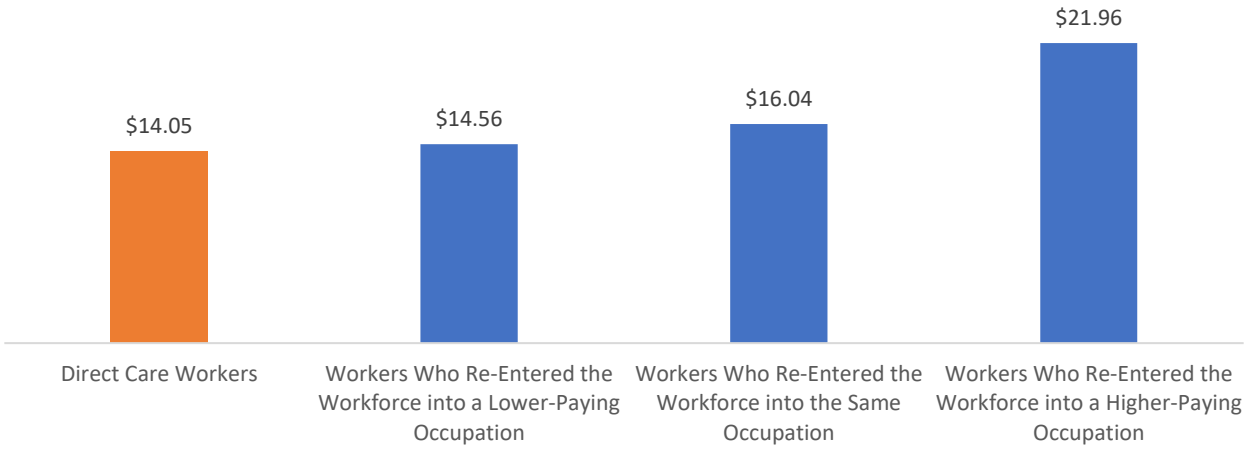
**Figure 8: Re-Employed Workers by Difference Between New and Original Median Wage**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; analysis by PHI (June 2021).

**Figure 9: Median Wages for Re-Employed Workers Versus Direct Care**



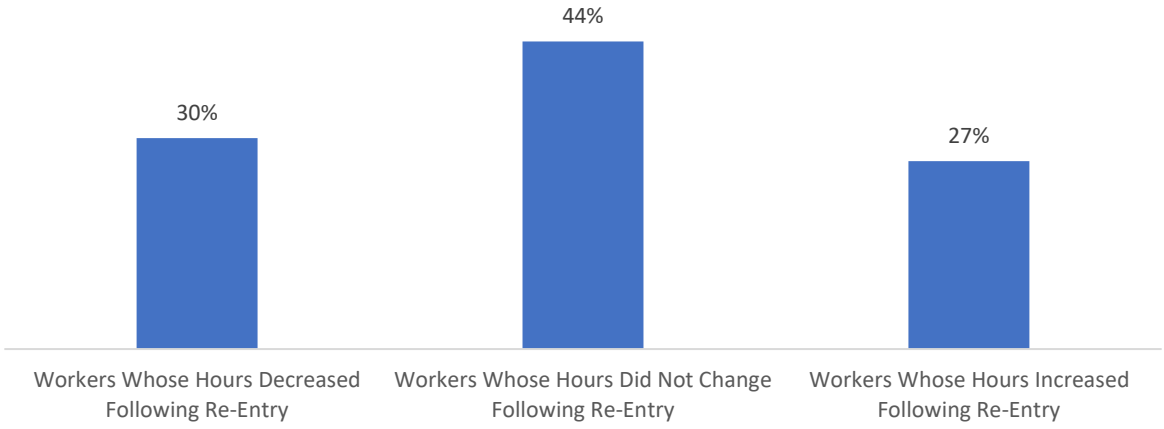

Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; analysis by PHI (June 2021).

## *Work Hours*

Our analysis of work hours found that 30 percent of displaced workers who re-entered the workforce experienced a decrease in weekly work hours, while 27 percent saw an increase in hours (see Figure 10). The remaining 44 percent of workers experienced no change in hours.

**Figure 10: Changes in Work Hours Among Re-Employed Workers**

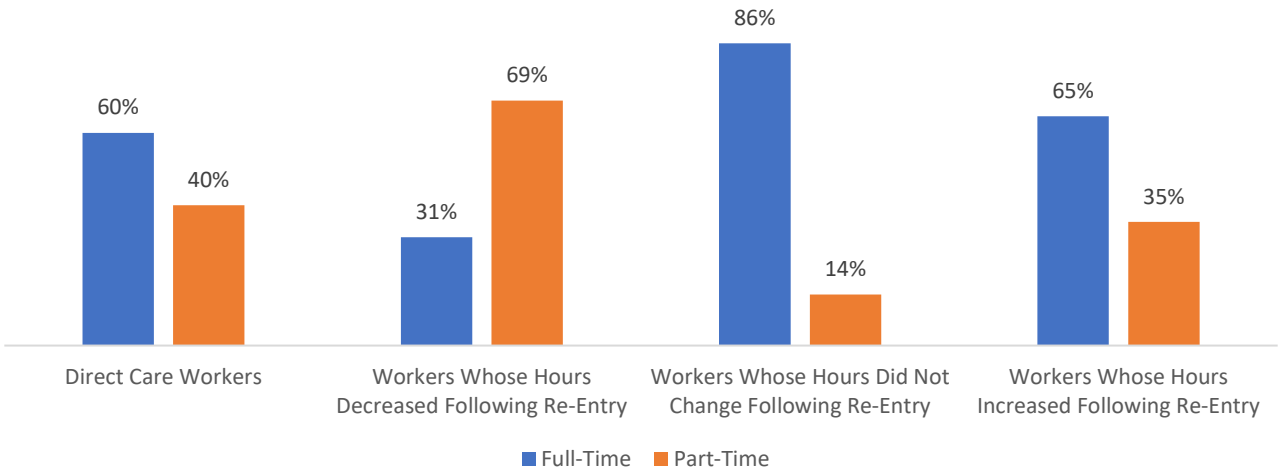



Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

Workers whose hours decreased after they re-entered the workforce were more likely to work part time compared to all direct care workers in early 2021, at 31 percent compared to 60 percent of direct care workers overall (see Figure 11). However, re-employed workers whose hours decreased after re-entry tended to enter occupations with considerably higher median wages than direct care jobs: the median wage for their new occupations after re-entry was $16.26, compared to $14.05 for direct care workers (see Figure 12). Median wages were $16.24 for re-employed workers whose hours increased and $17.39 for re-employed workers whose hours did not change.

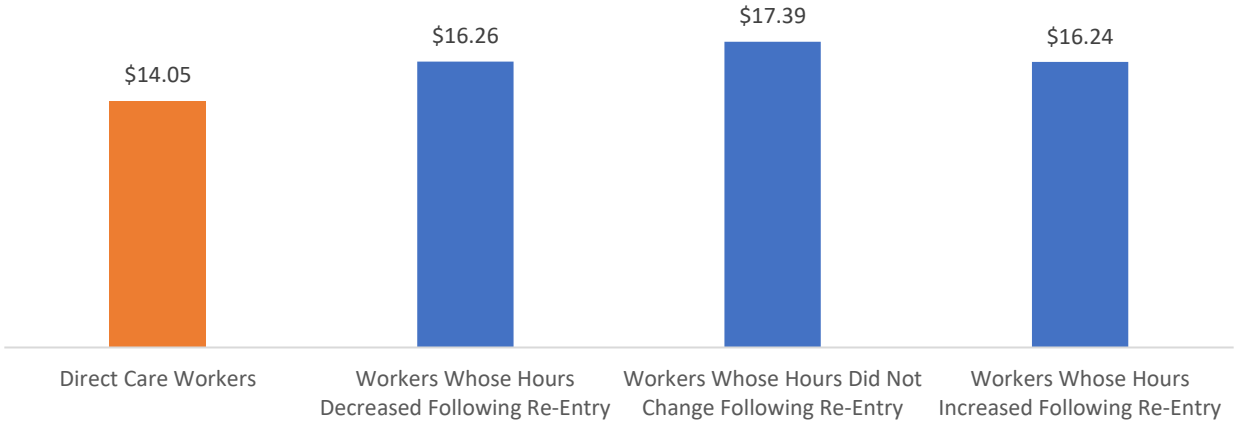
**Figure 11: Employment Status for Re-Employed Workers Versus Direct Care Workers**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

**Figure 12: Median Wages by Employment Status for Re-Employed Workers Versus Direct Care Workers**




Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

## Discussion and Conclusion

This research sheds new light on the large pool of workers who were displaced from their jobs by the COVID-19 pandemic in early 2020 and their potential for recruitment into the direct care workforce. Out of the 13.7 million workers who were displaced from occupations in O*NET Job Zones 1 through 3 due to COVID-19, the majority (66 percent, or 9.1 million workers) had re-entered the workforce by early 2021, leaving 4.6 million who were not re-employed. Through our analysis of similarities among displaced workers' previous occupations and direct care jobs, we have highlighted how many of these workers could be viable candidates for direct care.

Despite this finding, our analysis also showed that large-scale movement of displaced workers into direct care jobs has *not* occurred, despite online job boards and other innovative recruitment strategies deployed by long-term care leaders. Almost no displaced workers re-entered the workforce into a direct care occupation—not even those who had worked in direct care jobs originally. This is a troubling finding given the high demand for direct care workers, which is driven by growing demand and long-standing, widespread recruitment and retention challenges that have been exacerbated by the pandemic.

Instead of entering the direct care workforce, the displaced workers that were the focus of this research (from Job Zones 1 through 3) almost all moved into occupations that had higher median wages compared to direct care—even when moving into occupations with fewer work hours and/or lower median wages compared to their original occupation.

For those workers who did not re-enter the workforce, unemployment benefits may have represented the most rational economic option. The Coronavirus Aid, Relief and Economic Security (CARES) Act authorized enhanced unemployment payments of $600 per week from January through July 2020, and these benefits were then extended at a lower rate of $300 through March 2021.[22] One analysis showed that the enhanced unemployment benefits provided through the CARES Act exceeded usual wage rates for many displaced low-wage workers.[23] These benefits provided much needed financial relief to beleaguered displaced workers—and they highlighted the gross inadequacy of wages in direct care (and other low-wage occupations) for meeting workers' most basic needs.[24]

To make vacant positions more appealing to displaced workers, many employers (particularly in the fast food and leisure and hospitality industries) are raising wages.[25] Unlike these other industries, direct care employers generally cannot fund wage increases by raising prices because they rely heavily on reimbursements from Medicaid and Medicare.[26] Without new public investment in long-term care, direct care employers will continue struggling to compete.

Therefore, increasing wages for direct care workers must be a centerpiece of immediate and ongoing efforts to recruit new job candidates into the LTSS field. One pressing priority is to make COVID-19-related wage enhancements (e.g., hazard pay) permanent. A more ambitious strategy is to raise Medicaid reimbursement rates and require a portion be passed on to workers directly—alongside efforts to explore alternative financing models for LTSS that include a living wage for direct care workers.[27]

Even within the constraints of reimbursement rates, however, employers have a role to play in improving direct care workers' compensation. Beyond raising wages, they can consider offering other benefits—like health insurance, paid family and medical leave, bereavement leave, and asset development programs—that help boost workers' overall compensation.[28]

The findings from this research also highlight several opportunities to recruit new job seekers into the direct care workforce from across occupations and demographic groups. Given the large numbers of workers who are still displaced due to the COVID-19 pandemic, this is the ideal time to pilot-test new recruitment interventions, which could then be replicated and scaled-up to stabilize the workforce well into the future.

First, by focusing on displacement from occupations that share similar characteristics to direct care, we identified particularly large pockets of still-unemployed workers who had been displaced from food preparation and serving-related occupations (which have a direct care worker similarity score of 95) and office and administrative support occupations (with a direct care worker similarity score of 71). To bring these workers into the direct care workforce, recruitment messages could underscore occupational similarities—for example, by focusing on teamwork and customer service—while also emphasizing the intrinsic rewards of providing direct care. To recruit workers who were displaced from other healthcare support occupations, personal care occupations (like childcare), and direct care jobs, it may be more important to acknowledge and appeal to their existing caregiving skills and expertise. Employers, nonprofits organizations, managed care organizations, government agencies, and others could leverage these recruitment strategies to re-employ displaced workers in direct care jobs. This could involve strengthening, replicating, and/or scaling up existing programs as well as launching new ones.

In line with the existing evidence, this research found that several demographic characteristics were associated with occupational displacement and re-entry.[29] First, we found that women were more likely to experience displacement due to COVID-19 than men and less likely to re-enter the workforce. Factors driving this gender divide, according to the broader literature, include the over-representation of women in the type of face-to-face jobs that have been affected by the pandemic (e.g., food service, hospitality, and childcare) and the likelihood that women are the primary caregivers in their households.[30]

Our analysis confirmed that caregiving responsibilities were barriers to workforce re-entry during the pandemic. For example, we found that women who had been displaced were less likely to be re-employed if they lived with family members with self-care or independent living difficulties, although this was not the case for men. By contrast, and in a departure from other research, our findings showed that men with children living at home were less likely to re-enter the workforce than women with children at home.[31] This finding may represent households where it was more feasible or preferable for women to return to the workforce than men. This finding is also likely a reflection of the analytic approach in this study: because our sample was restricted to displaced workers who named COVID-19 as the reason for their displacement, we may have excluded women who exited the labor force during COVID-19 but cited childcare responsibilities rather than the pandemic itself as the reason in their CPS response.[32] Due to our research design, these women were excluded from our analysis of displaced and re-employed workers. Future research could explore these associations and methodological considerations in greater depth.

At the public policy level, family-supportive policies such as paid family and medical leave and expanded access to affordable childcare and LTSS, among others, would help more displaced workers return to the workforce, including into direct care jobs.[33] Direct care employers can also develop strategies to recruit and support workers who have unpaid caregiving responsibilities, such as partnering with community-based organizations to connect workers with childcare and other supports, offering paid leave benefits, and exploring innovative business models such as co-located long-term care and childcare facilities.[34]

Race and ethnicity were also associated with workforce displacement and re-entry in this research. Black/African-American, Hispanic/Latino, and Asian/Pacific Islander workers were more likely to be displaced due to COVID-19 than white workers, and Black/African-American and Asian/Pacific Islander workers were less likely to re-enter the workforce. These disparities reflect pre-existing and persistent systemic inequities, including occupational segregation and employment discrimination.[35] Employers can proactively recruit and retain direct care workers of color by partnering with community-based organizations, promoting diversity, equity and inclusion across all organizational policies and practices. and adopting race-explicit workforce supports, among other strategies.[36]

Finally, given the salience of age in our findings, employers' recruitment and retention strategies could also focus on younger and older workers, for example by promoting flexible schedules and part-time opportunities that students and retirees may value.[37]

In conclusion, the findings from this research and the associated recommendations underline the need to improve direct care jobs and continue developing creative recruitment and retention methods. Raising wages for direct care workers is a critical step toward recruiting new workers into the long-term care field. Other strategies to grow the direct care workforce include developing tailored on-the-job supports and recruitment efforts that are targeted to specific groups of displaced workers and other job seekers. Through these interventions, long-term care leaders will be able to build a stable, adequate direct care workforce to support older adults and people with disabilities throughout the remainder of the COVID-19 crisis and into the future.

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13. For occupations that have not been categorized by O*NET, we assigned Job Zones using data on education, training, and experience from the U.S. Bureau of Labor Statistics' Employment Projections Program (EPP). As an example, taxi drivers lack an O*NET Job Zone classification, but according to EPP data, jobs in the "motor vehicle operators, all other" occupation (which includes taxi drivers) require no formal educational, no experience, and short-term on-the-job training—thus we categorized these jobs in Job Zone 1. U.S. Bureau of Labor Statistics (BLS), Employment Projections Program (EPP). 2020. Education and Training Data, Table 5.4 Education and Training Assignments by Detailed Occupation, 2019. https://www.bls.gov/emp/documentation/education-training-system.htm.
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## Appendix 1: The O*NET Related Occupations Matrix for Career Changers Algorithm

The O*NET Related Occupations Matrix for career changes was developed to help workers determine which occupations they could immediately pursue based on their knowledge, skills, and work history (namely, their education, training, experience, work activities, and work contexts). This algorithm was therefore well-suited to assess the possibility that displaced workers from other occupations would pursue re-employment in direct care.

To measure the difference between direct care jobs and all other major occupational groups across all 159 job elements using the O*NET ROM algorithm, we employed a Euclidean distance formula. As shown in the formula below, we measured the difference between element scores for each occupation and direct care, then squared the differences, summed them, and generated the square root of the sum. In this formula, the X values are the element scores for direct care workers and Y values are the element scores for every other occupation:

$$D_{Domain} = \sqrt{(X_1 - Y_1)^2 + (X_2 - Y_2)^2 + (X_n - Y_n)^2}$$

We then standardized and added together the raw similarity scores, weighting the standardized difference score for the job zones domain 1.3 times higher than the other domains to account for its greater importance, per O*NET researchers' guidance:

$$DCW\ Similarity\ Score = 1.3 * Z\left(D_{Job\ Zone}\right) + Z\left(D_{Knowledge}\right) + Z(D_{Skills}) + Z(D_{Activities}) + Z(D_{Context})$$

Finally, we standardized these scores again to a 100-point scale to improve interpretability. To illustrate how certain detailed occupations within major occupational groups are more similar to direct care jobs than others, we also ran this analysis for detailed occupations.

A more thorough explanation of this methodology, including its history, development, and application, can be found in a 2012 report from the Human Resources Research Organization.[38]

## Appendix 2: Top Five Direct Care Job Elements in Each O*NET Job Characteristic Domain

| Element Name | Scale Name | Scale | Personal Care Aides | Home Health Aides | Nursing Assistants | All Direct Care Workers |
|---|---|---|---|---|---|---|
| **Activities** | | | | | | |
| Assisting and Caring for Others | Importance | 1–5 | 4.7 | 4.8 | 4.6 | 4.7 |
| | Level | 1–7 | 5.2 | 5.3 | 4.6 | 5.1 |
| Documenting/Recording Information | Importance | 1–5 | 4.6 | 4.2 | 4.1 | 4.3 |
| | Level | 1–7 | 3.6 | 4.6 | 3.5 | 3.9 |
| Communicating with Supervisors, Peers, or Subordinates | Importance | 1–5 | 4.2 | 4.3 | 4.1 | 4.2 |
| | Level | 1–7 | 3.6 | 4.6 | 3.6 | 4.0 |
| Getting Information | Importance | 1–5 | 4.1 | 4.4 | 4.2 | 4.2 |
| | Level | 1–7 | 2.9 | 3.3 | 3.4 | 3.2 |
| Establishing and Maintaining Interpersonal Relationships | Importance | 1–5 | 3.9 | 3.9 | 3.9 | 3.9 |
| | Level | 1–7 | 4.2 | 4.4 | 4.2 | 4.3 |
| **Knowledge** | | | | | | |
| Customer and Personal Service | Importance | 1–5 | 3.9 | 3.6 | 3.9 | 3.8 |
| | Level | 1–7 | 4.1 | 4.0 | 4.4 | 4.2 |
| English Language | Importance | 1–5 | 3.3 | 3.5 | 3.3 | 3.4 |
| | Level | 1–7 | 2.7 | 2.9 | 3.0 | 2.9 |
| Administration and Management | Importance | 1–5 | 2.9 | 2.5 | 3.3 | 2.9 |
| | Level | 1–7 | 2.0 | 2.3 | 2.8 | 2.3 |
| Psychology | Importance | 1–5 | 3.0 | 2.6 | 3.0 | 2.8 |
| | Level | 1–7 | 3.4 | 2.9 | 3.5 | 3.2 |
| Public Safety and Security | Importance | 1–5 | 2.6 | 2.6 | 3.2 | 2.7 |
| | Level | 1–7 | 1.9 | 2.0 | 3.0 | 2.2 |
| **Skills** | | | | | | |
| Service Orientation | Importance | 1–5 | 3.9 | 3.6 | 4.0 | 3.8 |
| | Level | 1–7 | 3.8 | 3.4 | 3.9 | 3.7 |
| Active Listening | Importance | 1–5 | 3.5 | 3.8 | 3.6 | 3.6 |
| | Level | 1–7 | 2.9 | 3.6 | 3.0 | 3.2 |
| Social Perceptiveness | Importance | 1–5 | 3.6 | 3.5 | 3.6 | 3.6 |
| | Level | 1–7 | 3.1 | 3.3 | 3.3 | 3.2 |
| Monitoring | Importance | 1–5 | 3.1 | 3.3 | 3.3 | 3.2 |
| | Level | 1–7 | 3.1 | 3.1 | 3.0 | 3.1 |
| Critical Thinking | Importance | 1–5 | 3.0 | 3.4 | 3.1 | 3.2 |
| | Level | 1–7 | 3.0 | 3.3 | 3.1 | 3.1 |

## Appendix 2: Top 5 Direct Care Job Elements in Each O*NET Job Characteristic Domain (Cont.)

| Element Name | Scale Name | Scale | Personal Care Aides | Home Health Aides | Nursing Assistants | All Direct Care Workers |
|---|---|---|---|---|---|---|
| **Context** | | | | | | |
| Contact With Others | Frequency | 1–5 | 4.3 | 4.4 | 4.8 | 4.5 |
| Physical Proximity | Frequency | 1–5 | 4.4 | 4.4 | 4.4 | 4.4 |
| Work With Work Group or Team | Frequency | 1–5 | 4.2 | 4.2 | 4.7 | 4.3 |
| Importance of Being Exact or Accurate | Frequency | 1–5 | 4.2 | 4.3 | 4.5 | 4.3 |
| Wear Common Protective or Safety Equipment | Frequency | 1–5 | 3.9 | 4.2 | 4.4 | 4.1 |

Source: O*NET. 2021. *O*NET 25.3 Database*. https://www.onetcenter.org/database.html#all-files; analysis by PHI (June 2021).

## Appendix 3: Major Occupational Groups and Detailed Occupations with the Highest Direct Care Worker Similar Scores

| Major Occupational Group | Direct Care Worker Similarity Score | Detailed Occupation Title | Direct Care Worker Similarity Score |
|---|---|---|---|
| Personal Care and Service Occupations | 100 | Childcare Workers | 99 |
| | | Animal Caretakers | 88 |
| | | Amusement and Recreation Attendants | 80 |
| | | Shampooers | 79 |
| | | Gambling and Sports Book Writers and Runners | 79 |
| Other Healthcare Support Occupations (Excluding Direct Care) | 99 | Psychiatric Aides | 100 |
| | | Physical Therapist Aides | 97 |
| | | Orderlies | 85 |
| | | Occupational Therapy Aides | 82 |
| | | Occupational Therapy Assistants | 79 |
| Food Preparation and Serving Related Occupations | 95 | Food Preparation Workers | 93 |
| | | Food Servers, Non-restaurant | 92 |
| | | Waiters and Waitresses | 88 |
| | | Cooks, Short Order | 88 |
| | | Cooks, Institution and Cafeteria | 88 |

## Appendix 3: Major Occupational Groups and Detailed Occupations with the Highest Direct Care Worker Similar Scores (Cont.)

| Major Occupational Group | Direct Care Worker Similarity Score | Detailed Occupation Title | Direct Care Worker Similarity Score |
|---|---|---|---|
| Building and Grounds Cleaning and Maintenance Occupations | 77 | Maids and Housekeeping Cleaners | 86 |
| | | Janitors and Cleaners, Except Maids and Housekeeping Cleaners | 74 |
| | | First-Line Supervisors of Housekeeping and Janitorial Workers | 68 |
| | | Pest Control Workers | 62 |
| | | Landscaping and Groundskeeping Workers | 59 |
| Office and Administrative Support Occupations | 71 | Postal Service Clerks | 82 |
| | | Library Assistants, Clerical | 82 |
| | | Gambling Cage Workers | 78 |
| | | Hotel, Motel, and Resort Desk Clerks | 77 |
| | | Office Clerks, General | 76 |

Source: O*NET. 2021. *O*NET 25.3 Database*. https://www.onetcenter.org/database.html#all-files; analysis by PHI (June 2021).

## Appendix 4: Displacement Due to the COVID-19 Pandemic, by Major Occupational Group

| Major Occupational Group | Number Displaced | Displacement Rate by Major Occupational Group | Error Margin (95% Confidence) |
|---|---|---|---|
| **All Occupations** | **13,710,520** | **13%** | **±1%** |
| Food Preparation and Serving Related Occupations | 3,100,150 | 28% | ±5% |
| Office and Administrative Support Occupations | 1,970,890 | 11% | ±2% |
| Sales and Related Occupations | 1,581,220 | 15% | ±3% |
| Transportation and Material Moving Occupations | 1,555,500 | 13% | ±3% |
| Production Occupations | 1,021,240 | 12% | ±3% |
| Construction and Extraction Occupations | 789,180 | 13% | ±3% |
| Building and Grounds Cleaning and Maintenance Occupations | 722,230 | 18% | ±5% |
| Healthcare Practitioners and Technical Occupations | 659,160 | 11% | ±5% |
| Personal Care and Service Occupations | 636,210 | 27% | ±6% |
| Installation, Maintenance, and Repair Occupations | 502,050 | 9% | ±4% |
| Educational Instruction and Library Occupations | 367,820 | 11% | ±5% |
| Protective Service Occupations | 297,660 | 9% | ±4% |
| Healthcare Support Occupations | 128,830 | 7% | ±4% |
| Management Occupations | 84,360 | 10% | ±8% |
| Business and Financial Operations Occupations | 57,730 | 6% | ±4% |
| Computer and Mathematical Occupations | 52,480 | 2% | ±2% |
| **Direct Care Workers** | **168,370** | **4%** | **±4%** |
| All Other Occupations | 204,990 | 11% | ±4% |

Note: All other occupations include architecture and engineering occupations; life, physical, and social science occupations; community and social service occupations; legal occupations; arts, design, entertainment, sports, and media occupations; and farming, fishing, and forestry occupations. The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3. Higher error margins indicate less certainty that values reflect the real-world population.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; analysis by PHI (June 2021).

## Appendix 5: Displacement Due to the COVID-19 Pandemic by Demographic and Employment Characteristics

| | Displacement Rate | Margin of Error (95% Confidence) |
|---|---|---|
| **Gender** | | |
| Male | 12% | ±1% |
| Female | 16% | ±2% |
| **Age** | | |
| 16-24 | 20% | ±3% |
| 25-34 | 11% | ±2% |
| 35-44 | 12% | ±2% |
| 45-54 | 13% | ±2% |
| 55-64 | 12% | ±2% |
| 65+ | 15% | ±4% |
| **Race and Ethnicity** | | |
| White | 11% | ±1% |
| Black or African-American | 16% | ±4% |
| Hispanic or Latino (Any Race) | 16% | ±3% |
| Asian or Pacific Islander | 21% | ±5% |
| Other | 17% | ±8% |
| **Citizenship Status** | | |
| U.S. Citizen by Birth | 13% | ±1% |
| U.S. Citizen by Naturalization | 16% | ±4% |
| Not a Citizen of the U.S. | 15% | ±4% |
| **Marital Status** | | |
| Not Married | 15% | ±2% |
| Married | 12% | ±1% |
| **Parental Status** | | |
| No Children Under Age 18 | 14% | ±1% |
| Any Children Under Age 18 | 11% | ±2% |
| **Household Caregiving Needs** | | |
| No Household Member with Long-Term Care Need | 14% | ±1% |
| Any Household Member with Long-Term Care Need | 12% | ±5% |
| **Educational Attainment** | | |
| Less than High School | 17% | ±3% |
| High School Graduate | 14% | ±2% |
| Some College, No Degree | 15% | ±2% |
| Associate's Degree or Higher | 11% | ±2% |

## Appendix 5: Displacement Due to the COVID-19 Pandemic by Demographic and Employment Characteristics (Cont.)

| | Displacement Rate | Margin of Error (95% Confidence) |
|---|---|---|
| **Region** | | |
| Northeast | 16% | ±3% |
| Midwest | 13% | ±2% |
| South | 12% | ±2% |
| West | 15% | ±2% |
| **Employment Status** | | |
| Full-Time | 11% | ±1% |
| Part-Time | 22% | ±3% |

Note: The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3. Higher error margins indicate less certainty that values reflect the real-world population.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

## Appendix 6: Regression Analysis of Displacement Due to the COVID-19 Pandemic

| | Coefficient Value (T Statistic) |
|---|---|
| **Gender (Relative to Male)** | |
| Female | 0.037*** |
| | (2.844) |
| **Age** | |
| Age | 0.001 |
| | (0.503) |
| Age Squared | 0.000 |
| | (-0.288) |
| **Race and Ethnicity (Relative to White)** | |
| Black or African American | 0.058*** |
| | (3.204) |
| Hispanic or Latino (Any Race) | 0.03* |
| | (1.874) |
| Asian or Pacific Islander | 0.073*** |
| | (2.811) |
| Other | 0.040 |
| | (1.209) |
| **Citizenship Status (Relative to U.S. Citizen by Birth)** | |
| Immigrant | 0.020 |
| | (1.114) |
| **Marital Status (Relative to Not Married)** | |
| Married | -0.016 |
| | (-1.484) |
| **Parental Status (Relative to No Children Under Age 18)** | |
| Any Children Under Age 18 | -0.003 |
| | (-0.202) |
| Women with Children Under Age 18 | -0.009 |
| | (-0.459) |
| **Household Caregiving Needs (Relative to No Household Member with Long-Term Care Need)** | |
| Any Household Member with Long-Term Care Need | -0.013 |
| | (-0.407) |
| Women with a Household Member with Long-Term Care Need | -0.002 |
| | (-0.039) |
| **Educational Attainment (Relative to Less than High School)** | |
| High School Graduate | 0.007 |
| | (0.372) |
| Some College, No Degree | 0.014 |
| | (0.699) |
| Associate's Degree or Higher | -0.007 |
| | (-0.362) |

## Appendix 6: Regression Analysis of Displacement Due to the COVID-19 Pandemic (Cont.)

| | Coefficient Value (T Statistic) |
|---|---|
| **Region (Relative to Northeast)** | |
| Midwest | -0.022 |
| | (-1.398) |
| South | -0.036** |
| | (-2.382) |
| West | -0.015 |
| | (-0.947) |
| **Employment Status (Relative to Full-Time)** | |
| Part-Time | 0.085*** |
| | (5.834) |
| **Employment Type (Relative to Privately Employed)** | |
| Government Employed | -0.096*** |
| | (-6.35) |
| Self-Employed | -0.038*** |
| | (-2.966) |
| **Occupation (Relative to Direct Care Workers)** | |
| Management Occupations | 0.146*** |
| | (3.227) |
| Business and Financial Operations Occupations | 0.092*** |
| | (3.159) |
| Computer and Mathematical Occupations | 0.057** |
| | (2.132) |
| Educational Instruction and Library Occupations | 0.108*** |
| | (3.397) |
| Healthcare Practitioners and Technical Occupations | 0.116*** |
| | (3.621) |
| Healthcare Support Occupations | 0.063** |
| | (2.24) |
| Protective Service Occupations | 0.137*** |
| | (4.33) |
| Food Preparation and Serving Related Occupations | 0.247*** |
| | (7.668) |
| Building and Grounds Cleaning and Maintenance Occupations | 0.188*** |
| | (5.869) |
| Personal Care and Service Occupations | 0.287*** |
| | (7.77) |
| Sales and Related Occupations | 0.152*** |
| | (5.657) |
| Office and Administrative Support Occupations | 0.109*** |
| | (4.557) |

Appendix 6: Regression Analysis of Displacement Due to the COVID-19 Pandemic (Cont.)

| | Coefficient Value (T Statistic) |
|---|---|
| **Occupation (Relative to Direct Care Workers)** | |
| Construction and Extraction Occupations | 0.183*** |
| | (6.216) |
| Installation, Maintenance, and Repair Occupations | 0.135*** |
| | (4.454) |
| Production Occupations | 0.143*** |
| | (5.352) |
| Transportation and Material Moving Occupations | 0.14*** |
| | (5.262) |
| All Other Occupations | 0.137*** |
| | (4.484) |

$R^2$= 0.06, *p<.1, **p<.05, ***p<.01

Note: All other occupations include architecture and engineering occupations; life, physical, and social science occupations; community and social service occupations; legal occupations; arts, design, entertainment, sports, and media occupations; and farming, fishing, and forestry occupations. The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3.

Source: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

## Appendix 7: Employment Status Among Displaced Workers Who Were Not Re-employed, by Original Major Occupational Group

| | Unemployed | Out of Labor Force Due to COVID-19 | Out of Labor Force for Other Reason |
|---|---|---|---|
| **All Occupations** | **40%** | **49%** | **11%** |
| Management Occupations | 100% | - | - |
| Business and Financial Operations Occupations | 100% | - | - |
| Computer and Mathematical Occupations | - | - | 100% |
| Educational Instruction and Library Occupations | 49% | 51% | - |
| Healthcare Practitioners and Technical Occupations | - | 100% | - |
| Healthcare Support Occupations | 32% | 68% | - |
| Protective Service Occupations | - | 79% | 21% |
| Food Preparation and Serving Related Occupations | 41% | 49% | 10% |
| Building and Grounds Cleaning and Maintenance Occupations | 25% | 71% | 4% |
| Personal Care and Service Occupations | 42% | 46% | 12% |
| Sales and Related Occupations | 48% | 46% | 6% |
| Office and Administrative Support Occupations | 51% | 49% | - |
| Construction and Extraction Occupations | 38% | 42% | 21% |
| Installation, Maintenance, and Repair Occupations | 74% | 26% | - |
| Production Occupations | 23% | 51% | 25% |
| Transportation and Material Moving Occupations | 41% | 36% | 24% |
| All Other Occupations | 28% | 71% | 1% |
| **Direct Care Workers** | **16%** | **42%** | **42%** |

Note: All other occupations include architecture and engineering occupations; life, physical, and social science occupations; community and social service occupations; legal occupations; arts, design, entertainment, sports, and media occupations; and farming, fishing, and forestry occupations. The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3. Due to small sample sizes, the majority of error margins (at 95 percent confidence) were over ±15 percentage points. These figures should be interpreted with caution.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

## Appendix 8: Displaced Workers Who Re-Entered the Workforce by Major Original Occupational Group

| Major Occupational Group | Number Re-Employed | Re-Employment Rate by Major Occupational Group | Error Margin (95% Confidence) |
|---|---|---|---|
| **All Occupations** | **9,081,620** | **66%** | **±4%** |
| Food Preparation and Serving Related Occupations | 1,949,390 | 63% | ±10% |
| Office and Administrative Support Occupations | 1,205,710 | 61% | ±11% |
| Sales and Related Occupations | 1,104,950 | 70% | ±10% |
| Transportation and Material Moving Occupations | 922,800 | 59% | ±12% |
| Production Occupations | 799,920 | 78% | ±11% |
| Healthcare Practitioners and Technical Occupations | 572,160 | 87% | ±18% |
| Construction and Extraction Occupations | 490,670 | 62% | ±14% |
| Installation, Maintenance, and Repair Occupations | 456,000 | 91% | ±10% |
| Building and Grounds Cleaning and Maintenance Occupations | 432,090 | 60% | ±14% |
| Personal Care and Service Occupations | 408,670 | 64% | ±12% |
| Educational Instruction and Library Occupations | 280,100 | 76% | ±19% |
| Protective Service Occupations | 176,320 | 59% | ±23% |
| Healthcare Support Occupations | 84,130 | 65% | ±27% |
| Management Occupations | 56,980 | 68% | ±49% |
| Computer and Mathematical Occupations | 41,610 | 79% | ±46% |
| Business and Financial Operations Occupations | 39,850 | 69% | ±30% |
| All Other Occupations | 151,810 | 74% | ±17% |
| **Direct Care Workers** | **14,760** | **9%** | **±20%** |

Note: All other occupations include architecture and engineering occupations; life, physical, and social science occupations; community and social service occupations; legal occupations; arts, design, entertainment, sports, and media occupations; and farming, fishing, and forestry occupations. The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3. Higher error margins indicate less certainty that values reflect the real-world population.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; U.S. Bureau of Labor Statistics (BLS), Division of Occupational Employment and Wage Statistics (OEWS). 2021. *May 2020 State Occupational Employment and Wage Estimates*. https://www.bls.gov/oes/current/oes_nat.htm; analysis by PHI (June 2021).

## Appendix 9: Changes in Occupation Among Re-Employed Workers, by Original Major Occupational Group

| | Same Major Occupational Group, Same Detailed Occupation | Same Major Occupational Group, Different Detailed Occupation | Different Major Occupational Group, Different Detailed Occupation |
|---|---|---|---|
| **All Occupations** | **44%** | **18%** | **38%** |
| Management Occupations | 17% | 32% | 50% |
| Business and Financial Operations Occupations | 43% | 12% | 45% |
| Computer and Mathematical Occupations | 31% | 0% | 69% |
| Educational Instruction and Library Occupations | 39% | 20% | 41% |
| Healthcare Practitioners and Technical Occupations | 51% | 16% | 33% |
| Healthcare Support Occupations | 83% | 17% | - |
| Protective Service Occupations | 49% | 4% | 48% |
| Food Preparation and Serving Related Occupations | 38% | 23% | 39% |
| Building and Grounds Cleaning and Maintenance Occupations | 78% | 4% | 18% |
| Personal Care and Service Occupations | 64% | 5% | 31% |
| Sales and Related Occupations | 58% | 21% | 20% |
| Office and Administrative Support Occupations | 28% | 21% | 51% |
| Construction and Extraction Occupations | 39% | 10% | 51% |
| Installation, Maintenance, and Repair Occupations | 15% | 32% | 53% |
| Production Occupations | 32% | 31% | 38% |
| Transportation and Material Moving Occupations | 39% | 23% | 39% |
| All Other Occupations | 43% | 9% | 49% |
| **Direct Care Workers** | **-** | **-** | **100%** |

Note: All other occupations include architecture and engineering occupations; life, physical, and social science occupations; community and social service occupations; legal occupations; arts, design, entertainment, sports, and media occupations; and farming, fishing, and forestry occupations. The sample for this analysis included respondents from occupations with similar entry-level requirements to direct care jobs, namely O*NET Job Zones 1 through 3. Due to small sample sizes, the majority of error margins (at 95 percent confidence) were over ±15 percentage points. These figures should be interpreted with caution.

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

## Appendix 10: Re-Employment Following Displacement, by Demographic and Employment Characteristics

| | Re-Employment Rate | Margin of Error (95% Confidence) |
|---|---|---|
| **Gender** | | |
| Male | 70% | ±6% |
| Female | 64% | ±5% |
| **Age** | | |
| 16-24 | 61% | ±9% |
| 25-34 | 70% | ±9% |
| 35-44 | 74% | ±9% |
| 45-54 | 74% | ±8% |
| 55-64 | 66% | ±9% |
| 65+ | 45% | ±14% |
| **Race and Ethnicity** | | |
| White | 71% | ±5% |
| Black or African-American | 57% | ±12% |
| Hispanic or Latino (Any Race) | 69% | ±8% |
| Asian or Pacific Islander | 54% | ±14% |
| Other | 59% | ±24% |
| **Citizenship Status** | | |
| U.S. Citizen by Birth | 67% | ±4% |
| U.S. Citizen by Naturalization | 64% | ±12% |
| Not a Citizen of the U.S. | 65% | ±12% |
| **Marital Status** | | |
| Not Married | 63% | ±6% |
| Married | 72% | ±5% |
| **Parental Status** | | |
| No Children Under Age 18 | 67% | ±4% |
| Any Children Under Age 18 | 67% | ±8% |
| **Household Caregiving Needs** | | |
| No Household Member with Long-Term Care Need | 68% | ±4% |
| Any Household Member with Long-Term Care Need | 44% | ±23% |
| **Educational Attainment** | | |
| Less than High School | 59% | ±10% |
| High School Graduate | 69% | ±6% |
| Some College, No Degree | 57% | ±9% |
| Associate's Degree or Higher | 76% | ±7% |

## Appendix 10: Re-Employment Following Displacement, by Demographic and Employment Characteristics (Cont.)

| | Re-Employment Rate | Margin of Error (95% Confidence) |
|---|---|---|
| **Region** | | |
| Northeast | 64% | ±10% |
| Midwest | 70% | ±8% |
| South | 70% | ±7% |
| West | 62% | ±7% |
| **Employment Status** | | |
| Full-Time | 71% | ±5% |
| Part-Time | 61% | ±7% |

Note: Data used for this analysis was limited to workers in occupations with similar entry-level requirements to direct care jobs (O*NET job zones 1 through 3).

Sources: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).

## Appendix 11: Regression Analysis of Re-Employment Following Displacement

| | Coefficient Value (T Statistic) |
|---|---|
| **Gender (Relative to Male)** | |
| Female | -0.071 |
| | (-1.564) |
| **Age** | |
| Age | 0.023*** |
| | (2.915) |
| Age Squared | -0.0003*** |
| | (-3.521) |
| **Race and Ethnicity (Relative to White)** | |
| Black or African American | -0.121** |
| | (-1.973) |
| Hispanic or Latino (Any Race) | 0.010 |
| | (0.171) |
| Asian or Pacific Islander | -0.124 |
| | (-1.641) |
| Other | -0.057 |
| | (-0.503) |
| **Citizenship Status (Relative to U.S. Citizen by Birth)** | |
| Immigrant | -0.051 |
| | (-0.817) |
| **Marital Status (Relative to Not Married)** | |
| Married | 0.069* |
| | (1.668) |
| **Parental Status (Relative to No Children Under Age 18)** | |
| Any Children Under Age 18 | -0.162** |
| | (-2.39) |
| Women with Children Under Age 18 | 0.140 |
| | (1.561) |
| **Household Caregiving Needs (Relative to No Household Member with Long-Term Care Need)** | |
| Any Household Member with Long-Term Care Need | 0.029 |
| | (0.186) |
| Women with Household Member with Long-Term Care Need | -0.34* |
| | (-1.711) |
| **Educational Attainment (Relative to Less than High School)** | |
| High School Graduate | 0.081 |
| | (1.313) |
| Some College, No Degree | -0.030 |
| | (-0.44) |
| Associate's Degree or Higher | 0.101 |
| | (1.575) |

## Appendix 11: Regression Analysis of Re-Employment Following Displacement (Cont.)

| | Coefficient Value (T Statistic) |
|---|---|
| **Region (Relative to Northeast)** | |
| Midwest | 0.092* |
| | (1.679) |
| South | 0.109** |
| | (1.981) |
| West | -0.022 |
| | (-0.401) |
| **Employment Status (Relative to Full-Time)** | |
| Part-Time | -0.011 |
| | (-0.242) |
| **Employment Type (Relative to Privately Employed)** | |
| Government | -0.070 |
| | (-0.943) |
| Self-Employed | 0.103 |
| | (1.487) |
| **Occupation (Relative to Direct Care Workers)** | |
| Management Occupations | 0.335 |
| | (1.256) |
| Business and Financial Operations Occupations | 0.315 |
| | (1.42) |
| Computer and Mathematical Occupations | 0.346 |
| | (1.561) |
| Educational Instruction and Library Occupations | 0.473** |
| | (2.509) |
| Healthcare Practitioners and Technical Occupations | 0.558*** |
| | (3.147) |
| Healthcare Support Occupations | 0.348* |
| | (1.776) |
| Protective Service Occupations | 0.287 |
| | (1.586) |
| Food Preparation and Serving Related Occupations | 0.366** |
| | (2.241) |
| Building and Grounds Cleaning and Maintenance Occupations | 0.358** |
| | (2.131) |
| Personal Care and Service Occupations | 0.356** |
| | (2.193) |
| Sales and Related Occupations | 0.455*** |
| | (2.775) |
| Office and Administrative Support Occupations | 0.325** |
| | (1.964) |

## Appendix 11: Regression Analysis of Re-Employment Following Displacement (Cont.)

| | Coefficient Value (T Statistic) |
|---|---|
| Construction and Extraction Occupations | 0.280 |
| | (1.615) |
| Installation, Maintenance, and Repair Occupations | 0.576*** |
| | (3.456) |
| Production Occupations | 0.44*** |
| | (2.644) |
| Transportation and Material Moving Occupations | 0.324* |
| | (1.958) |
| All Other Occupations | 0.44** |
| | (2.535) |

$R^2$= 0.14, *p<.1, **p<.05, ***p<.01

Note: All other occupations include architecture and engineering occupations; life, physical, and social science occupations; community and social service occupations; legal occupations; arts, design, entertainment, sports, and media occupations; and farming, fishing, and forestry occupations. Data used for this analysis was limited to workers in occupations with similar entry-level requirements to direct care jobs (O*NET job zones 1 through 3).

Source: Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2021. Integrated Public Use Microdata Series, Current Population Survey: Version 8.0. https://doi.org/10.18128/D030.V8.0; analysis by PHI (June 2021).