Onsite Construction Workforce Utilization by Sex and Race/Ethnicity

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Contents

Introduction

With an estimated nearly 7 million workers in the United States, onsite construction occupations are a core component of the Nation's economy. However, construction occupations historically have experienced low rates of employment among women and most people of color. At the same time, construction occupations have suffered from a persistent shortage of available workers (U.S. Bureau of Labor Statistics, 2022). Indeed, average monthly openings for construction jobs reached a new high of over 400 thousand in 2022 (Federal Reserve Bank of St. Louis, 2023). With these additional openings, there should be opportunities to increase the representation of workers from underrepresented demographic groups in construction.

Demand for construction jobs will likely continue to increase because of the Infrastructure Investment and Jobs Act of 2021. The Act, which funds new investment in the transportation, energy, and water sectors, is expected to create 2 million jobs per year, including many construction jobs (The White House, 2021). As a result, policymakers at the national, State, and local levels seek to expand the construction workforce while at the same time increasing participation among women and people of color.

This poses a question: How many women and people of color could be available to work in construction occupations? The answer to this question requires identifying the total number of women and people of color who have the relevant skills for as well as interest in construction occupations. We are not aware of any nationally-representative data with sufficient information on individuals' construction-related skills and occupational preferences that can provide this answer.

Instead, we estimate the number of women and people of color who could be available for construction occupations by examining occupations with similar job requirements. We compute utilization rates that measure the proportions of an occupation's workers that are women and people of color. We compare the rates for onsite construction occupations with those of similar occupations[1]. Because similar occupations have similar job requirements, we assume utilization rates in construction could rise at least to the level of these similar occupations.

Key Concepts

Research question: How does the utilization of women and people of color in onsite construction compare with similar occupations?

Utilization: the percentage of total workers in an occupation from each demographic group

Similar occupations: for each onsite construction occupation, the other occupations most similar in terms of job requirements identified in O*NET; may include other construction occupations

Utilization gap: the percentage point difference between utilization rates in onsite construction and similar occupations

Consider, for example, a common onsite construction occupation, such as carpenters. Based on the occupation characteristics in the Occupational Information Network (O*NET) database, aircraft structure assembler and motorcycle mechanic occupations have job requirements similar to carpenters. Utilization rates for women and people of color in these occupations serve as our best estimate of utilization rates for those groups that could be achieved among carpenters.

[1] Similar occupations are measured as those occupations most similar to onsite construction occupations in terms of job requirements identified in the Occupational Information Network (O*NET) database. Additional details about the methodology used to determine similarity between occupations are available in appendix A.

This brief examines how the rates of utilization for women and people of color differ between onsite[2] construction (i.e., boilermakers, brickmasons, blockmasons, stonemasons, carpenters, carpet installers, etc.), and similar occupations (i.e., forest and conservation technicians, landscaping and groundskeeping workers, derrick operators, rail car repairers, aircraft structure assemblers, motorcycle mechanics, etc.).[3] The study team calculated the utilization gap—the percentage point difference between the share of workers in similar occupations and the share of workers in onsite construction—for each demographic group. The utilization gap reflects the degree to which representation of women and people of color could increase to resemble similar occupations (see the Study Approach textbox for more information).

Study Approach

The study team used the Census Bureau's 2019 American Community Survey (ACS) 5-Year Estimates Public Use Microdata Sample (PUMS) data to estimate employment in each occupation. The ACS 5-Year PUMS data has an unweighted sample of nearly 16 million total individuals in the United States. The unweighted sample of workers in onsite construction occupations is 297,105 individuals. Data from the 2022 Occupational Information Network (O*NET edition 26.3) database, sponsored by the U.S. Department of Labor's Employment and Training Administration, informed the selection of onsite construction occupations and similar occupations. This approach builds on the method used by Bendick et al. (2011). The estimates presented in this brief are subject to sampling error, measurement error, and other limitations. Full details on the study approach and limitations are available in Appendix A, rather than the body of this brief, to allow readers to focus on our findings.

I. Key Findings

1. Onsite construction occupations employ a substantially lower percentage of women than similar occupations.
2. Onsite construction occupations employ a substantially lower percentage of Asian workers and Black or African American workers than similar occupations.
3. Onsite construction occupations employ a substantially higher percentage of Hispanic or Latinx workers than similar occupations.
4. Utilization gaps for people of color do not vary substantially across States.
5. States with the widest utilization gaps for women tend to be in the Midwest.
6. Many of the local economic areas with the widest utilization gaps for Black or African American workers and Hispanic or Latinx workers are in the Southeast. These wide gaps represent opposite patterns for these two groups. For Black or African American workers, the wide gaps in the Southeast represent higher rates of employment in similar occupations compared to onsite construction occupations whereas the wide gaps for Hispanic or Latinx workers represent higher rates of employment in onsite construction compared to similar occupations.

The Key Findings noted in the textbox above emphasize the pervading disproportionate employment of women and people of color in onsite construction occupations when compared to similar occupations at the national, State, and local levels.

[2] Onsite construction occupations represent a subset of the Standard Occupation Classification major category 47 Construction and Extraction that excludes management-related occupations (U.S. Bureau of Labor Statistics, 2022).
[3] See tables B.1 and B.2 in appendix B for additional details on the specific onsite construction occupations and similar occupations considered.

The next three sections of this brief are organized by geography. Section 1 provides context for the comparison of onsite construction and similar occupations and presents the utilization estimates for each group at the national level. Section 2 and Section 3 present estimates at the State level and Economic Area[4] (EA) level. The analytical approach has key limitations related to the method and the data used. In most cases, these limitations would result in underestimating the degree to which onsite construction occupations underutilize women and people of color. Section 4 summarizes these limitations and their implications. The appendices contain the methodology used to produce these estimates, details about the onsite construction occupations, and additional tables.

[4] EAs are regional markets encompassing one or more statistical areas and the surrounding counties. For example, the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV, EA includes the District of Columbia, Baltimore City, and the surrounding counties in Maryland, Virginia, and West Virginia. These counties include Arlington and Fairfax counties in Virginia and Montgomery and Prince George's counties in Maryland. As of 2004, the U.S. Bureau of Economic Analysis delineated 179 EAs with full coverage of the 50 States and the District of Columbia (Johnson and Kort, 2004).

Section 1. National Estimates of Onsite Construction Utilization

Onsite construction workers represent about 5 percent of the national workforce. Construction establishments—those who make the hiring decisions--tend to be small businesses. About two-thirds of construction establishments employ fewer than five workers (compared with 55 percent of all employers). Only 3 percent of construction establishments employ 50 or more workers (U.S. Census Bureau, 2023).

Compared with the national workforce, onsite construction occupations employ

- mostly men (96.8 percent of onsite construction workforce are men compared to 52.7 percent of national workforce),
- a greater percentage of workers who are people of color (45.3 percent compared to 37.2 percent), and
- a greater percentage of low-wage workers (47.6 percent compared to 40.8 percent; see figure 1.1).

A direct comparison to the overall workforce is unfair. Onsite construction work generally looks different from other types of work. Consider, for example, the physical demands and experience working in hazardous conditions required in onsite construction work. To establish reasonable comparisons when considering onsite construction employment rates, it's important to compare construction occupations to other occupations most similar in skills, training, and interests. This analysis focuses on the differences between onsite construction occupations and a subset of occupations in the national workforce, namely those occupations considered most similar to onsite construction based on job requirements in the O*NET database. For each of the 44 onsite construction occupations defined in the SOC, this study identified 50 occupations most like it. In some cases, the 50 most similar occupations included other onsite construction occupations. These sets of similar occupations serve as an approximate job market that captures the occupations available to someone with the skills and interests relevant to onsite construction.

This section provides a general comparison of the distributions of the total workforce, onsite construction workforce, and workforce of similar occupations by sex and by race and ethnicity. This section also includes a short presentation of estimates of typical wages received by workers in these groups. The remainder of this section explores comparisons between national estimates of utilization rates in onsite construction and in similar occupations, by sex and by race and ethnicity. The Key Findings textbox below summarizes the study findings presented in this section.

II. Key Findings

1. Onsite construction occupations employ proportionately fewer women than similar occupations (3 percent of their workforces are women compared to 12 percent of the workforce of similar occupations).
2. Onsite construction occupations employ proportionately more Hispanic or Latinx workers than similar occupations (36 percent compared to 26 percent).
3. Onsite construction and similar occupations have proportionately more low-wage jobs than the total workforce (47.6 percent, 49.3 percent, and 40.8 percent, respectively). Women are more likely than men and Hispanic or Latinx workers are more likely than workers of other race and ethnicity groups to hold these low-wage jobs. That said, when looking at these demographic groups individually, a smaller share of women and a smaller share of Hispanic or Latinx workers earn low wages in onsite construction than in similar occupations (57.1 percent compared to 65.9 percent for women; 56.8 compared to 59.0 percent for Hispanic or Latinx workers). This suggests that, even though women and Hispanic or Latinx workers are less likely than other groups to earn higher wages, their chances of earning higher wages are greater in onsite construction than in similar occupations.

Figure 1.1 demonstrates the differences between the distribution of demographic groups in the total workforce, onsite construction occupations workforce, and similar occupations workforce. Each demographic group is represented by a distinct color, and each demographic group section is divided into the population of workers who earn a mid to high wage and the workers who earn a low wage.[5] The subsection of workers who earn a low wage is denoted with an asterisk (*).

[5] Workers who earn a low wage are defined as those who make an hourly wage below two-thirds of the median hourly wage for men working full time/full year. See appendix A for additional details on the calculation of low-wage workers and see Ross and Bateman (2019) for Brookings Institute's definition of workers who earn a low wage.

Figure 1.1. Estimated Workforce Distributions by Sex[a] and Race/Ethnicity[b], 2019

Note: ACS = American Community Survey

* Workers who earn a low wage are defined as those who make an hourly wage below two-thirds of the median hourly wage for men working full time/full year. See Ross and Bateman (2019) for Brookings Institute's definition of workers who earn a low wage.

[a] The population of women and men described in this brief is defined by self-reported data on an individual's sex in the ACS Public Use Microdata Sample (PUMS) data. The survey includes two categories for sex—female and male. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men.

[b] Throughout this brief, the specific race and ethnicity categories used are Asian, Black or African American, Indigenous, White, multiracial or another race, and Hispanic or Latinx. These categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. Therefore, individuals identified as Asian, Black or African American, Indigenous, White, and multiracial or another race do not identify as Hispanic or Latinx. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS.

The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian; Melanesian; or Pacific Islander, not specified, in the ACS. The multiracial or another race category includes all individuals who self-identified as other race, two major races, or three or more major races in the ACS.
Onsite construction occupations represent a subset of the Standard Occupation Classification (SOC) major category 47 Construction and Extraction that excludes management-related occupations. This subset includes 44 SOC occupations. A complete list of the occupations included is available in table B.1 in Appendix B.
Similar occupations include 133 SOC occupations determined to be similar to onsite construction occupations according to job requirements reported in the O*NET data. A complete list of the similar occupations is available in table B.2 in Appendix B. Some onsite construction occupations are also included in the set of similar occupations due to similarity between individual onsite construction occupations.
Source: IPUMS USA

Table 1.1 presents the percentage of each demographic group that earns low wages. Forty-five percent of women in the total workforce earn low wages, while 57 percent of women in onsite construction and 66 percent of women in similar occupations earn low wages. Similarly, the proportion of Asian workers earning a low wage is much higher in onsite construction compared to the total workforce (43 percent compared to 34 percent) and higher still in similar occupations (50 percent).

Table 1.1. Percentage of Low-Wage Workers Within Each Workforce by Demographic Group, 2019

Workforce	Men	Women	Asian	Black/African American	Indigenous	White	Multiracial/ Another Race	Hispanic/ Latinx	Total
Total workforce	37.1	44.9	33.5	48.2	48.5	36.2	44.9	54.2	40.8
Onsite construction occupation workforce	47.3	57.1	43.3	48.3	48.3	41.8	47.1	56.8	47.6
Similar occupations workforce	46.8	65.9	49.8	52.8	51.2	43.8	52.2	59.0	49.3

Note: Workers who earn a low wage are defined as those who make an hourly wage below two-thirds of the median hourly wage for men working full time/full year. See Ross and Bateman (2019) for Brookings Institute's definition of workers who earn a low wage.
The population of women and men presented in this brief are defined by self-reported data on an individual's sex in the ACS PUMS data. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men.
The six race and ethnicity categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS. The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian; Melanesian; or Pacific Islander, not specified, in the ACS. The multiracial or another race category includes all individuals who self-identified as other race, two major races, or three or more major races in the ACS.
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Source: IPUMS USA

A. Measuring Utilization Gaps Between Workforces

This section presents utilization gaps—the percentage point difference between the share of workers in similar occupations and the share of workers in onsite construction. A positive gap indicates that onsite construction occupations employ a demographic group at a lower rate than similar occupations. For example, women account for 3.3 percent and 12.2 percent of onsite and similar construction occupations' workforces, respectively. The utilization gap for women is positive -- 8.9 percentage points -- meaning onsite construction occupations employ an 8.9 percentage point **lower** proportion of women than similar occupations (see figure 1.2).

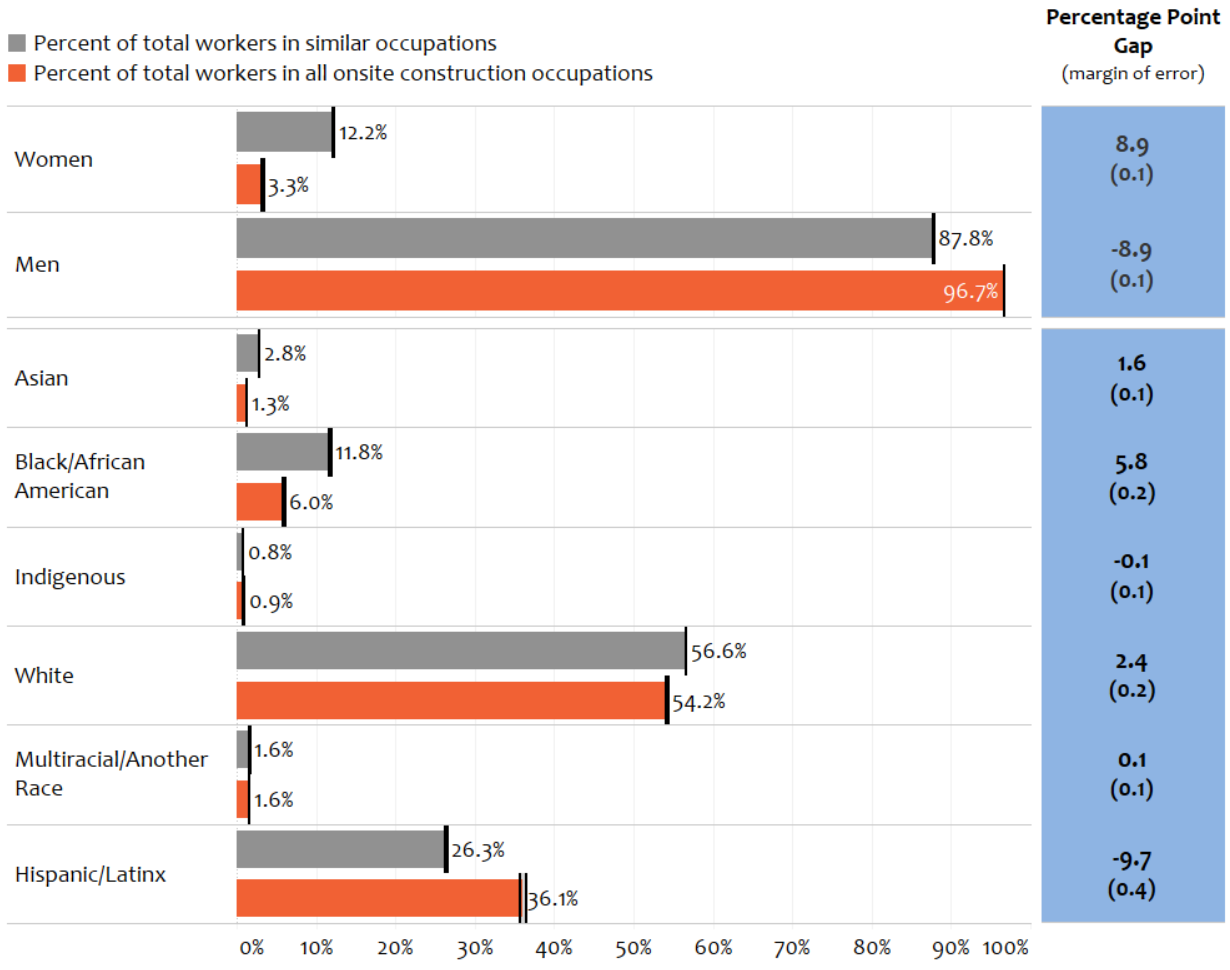
The national utilization gaps for Black or African American workers, Asian workers, and workers who identify as multiracial or another race are positive because onsite construction occupations employ a **lower** proportion of each of these groups than similar occupations. The gaps for Indigenous workers[6]

[6] The estimated population of Indigenous workers in onsite construction is 400 times smaller than the estimated population of Hispanic or Latinx workers. Therefore, proportions for these two groups represent largely different numbers of workers.

and Hispanic or Latinx workers are negative because onsite construction occupations employ a **higher** proportion of each of these groups than similar occupations.[7]

Figure 1.2 compares the utilization of workers in onsite construction and in similar occupations by demographic group. The figure also includes the estimated utilization gaps and margins of error in parentheses.

Figure 1.2. National Utilization Estimates by Sex and Race/Ethnicity Across All Onsite Construction Occupations, 2019



Note: The population of women and men presented in this brief are defined by self-reported data on an individual's sex in the ACS PUMS data. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men. The six race and ethnicity categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS. The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian;

[7] For each occupation, the study team identified the occupations most similar in terms of worker characteristics and skill requirements. Because onsite construction occupations often require specialized skills, the set of similar occupations for any given onsite construction occupation includes other onsite construction occupations. Excluding other onsite construction occupations could result in a set of occupations that are not particularly similar. However, given underutilization of women and most people of color persists across construction occupations, the gaps estimated from this approach are lower than they would be if onsite construction occupations were excluded from the similar set. In particular, if onsite construction occupations were excluded from the set of similar occupations, utilization gap estimates would be 10.6 percentage points for women, 1.9 percentage points for Asian workers, 7.1 percentage points for Black or African American workers, -0.1 percentage points for Indigenous workers, 2.9 percentage points for White workers, 0.1 percentage points for workers who identify as multiracial or another race, and -11.8 percentage points for Hispanic or Latinx workers.

Melanesian; or Pacific Islander, not specified, in the ACS. The multiracial or another race category includes all individuals who self-identified as other race, two major races, or three or more major races in the ACS.
Utilization gaps represent the percentage point difference between the share of workers in similar occupations and the share of workers in onsite construction.
Onsite construction occupations represent a subset of the Standard Occupation Classification (SOC) major category 47 Construction and Extraction that excludes management-related occupations. This subset includes 44 SOC occupations. A complete list of the occupations included is available in table B.1 in Appendix B.
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Source: IPUMS USA

The remainder of this section focuses on the utilization gap. We examine utilization gaps across all onsite construction occupations, for individual onsite construction occupations, and for aggregate groups of onsite construction occupations – craft workers and laborers and helpers[8].

We sort onsite construction occupations into craft workers and laborers and helpers based on the Equal Employment Opportunity-1 (EEO-1) Report (U.S. Equal Employment Opportunity Commission, n.d.). According to the EEO-1 Report Instruction Booklet, occupations in the craft workers category "include higher skilled occupations in construction," and occupations in the laborers and helpers category "include workers with more limited skills who require only brief training to perform tasks that require little or no independent judgement." The median hourly wage of workers in onsite construction occupations in the craft workers category is higher than the median hourly wage of those in onsite construction occupations in the laborers and helpers category (about $17/hour and $14/hour, respectively). Also, while about 44 percent of workers in craft worker onsite construction occupations earn a low wage, nearly 58 percent of workers in laborers and helpers onsite construction occupations earn a low wage. The specific onsite construction occupations that fall into each of these groups are available in Exhibits B.1a and B.1b in Appendix B.

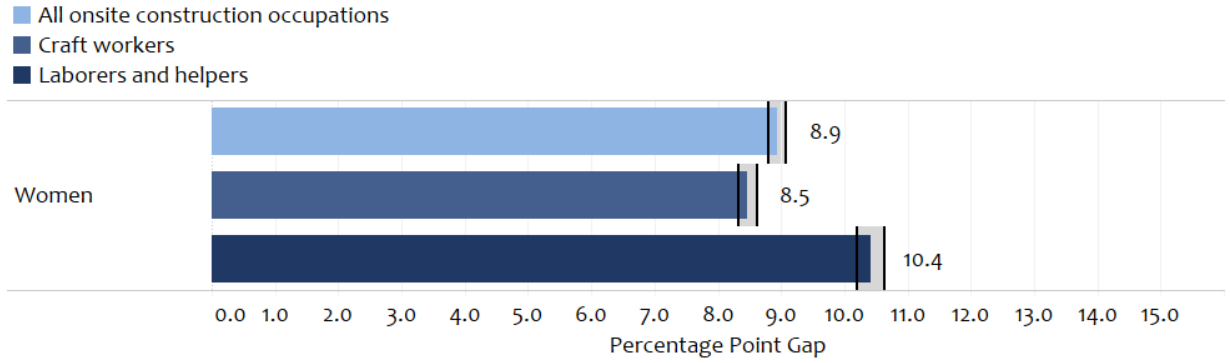
Appendix C contains tables with further details of the national utilization estimates and gaps produced for all onsite construction occupations, estimates produced for craft workers and laborers and helpers, and estimates produced for each individual onsite construction occupation.

B. National Workforce Gaps by Sex

The percentage of all onsite construction workers who are women is 8.9 percentage points lower than for similar occupations. Women are underrepresented across both major onsite construction occupation categories. The gap for craft workers is 8.5, and for laborers and helpers it is 10.4 (figure 1.3).

[8] Each onsite construction occupation is sorted into two categories based on the EEO-1 Report: craft workers and laborers and helpers. This classification encompasses all onsite construction occupations except one occupation, construction and building inspectors, which is not assigned to either group but is included in the aggregate.

Figure 1.3. National Aggregate-level Percentage Point Utilization Gaps for Women, 2019



Note: Onsite construction occupations are classified as either *craft workers* or *laborers and helpers*, with the exception of one occupation, construction and building inspectors, which is not assigned to either group but is included in the "all onsite construction occupations" group. The population of women and men presented in this brief are defined by self-reported data on an individual's sex in the ACS PUMS data. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men.
Utilization gaps represent the percentage point difference between the share of workers in similar occupations and the share of workers in onsite construction.
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Source: IPUMS USA

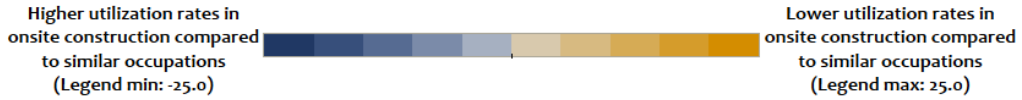
When considering individual onsite construction occupations, the utilization gap for women generally remains between 7.0 and 10.0 percentage points (see figure 1.4). Of the 27 onsite construction occupations presented in figure 1.4, all but 6 occupations have a share of women between 0.7 and 3.8 percent, compared with the shares in their associated similar occupations, which range from 9.5 to 15.2 percent. The widest positive gaps by occupation are for roofers (13.4 percentage points), where women make up 1.8 percent of the workforce and 15.2 percent of the workforce of similar occupations, and plasterers and stucco masons (12.8 percentage points), where women make up 0.7 percent of the workforce and 13.5 percent of the workforce of similar occupations. The workforce of one onsite construction occupation, hazardous materials removal workers, has a share of women that is greater than the share in similar occupations (19.8 and 7.0 percent, respectively).

Figure 1.4 displays the national utilization gaps for women by onsite construction occupation. In figure 1.4 onsite construction occupations are sorted according to median hourly wage[9] and margins of error are included in parentheses next to each gap in the figure. Although the narrowest gap for women is in the onsite construction occupation with the lowest median hourly wage (painters and paperhangers), gaps for women tend to remain consistent regardless of an occupation's median hourly wage.

[9] The median hourly wage for each onsite construction occupation is calculated using individuals' income information in the 2019 5-year ACS PUMS data.

Figure 1.4. National Occupation-Level Percentage Point Utilization Gaps for Women, 2019

Onsite Construction Occupation	Median Hourly Wage Level	Percentage Point Gap (margin of error)
6410-Painters and paperhangers	$	4.4 (0.4)
6710-Fence erectors	$	10.0 (1.0)
6240-Carpet, floor, and tile installers and finishers	$	10.3 (0.6)
6600-Helpers, construction trades	$	7.8 (1.0)
6330-Drywall installers, ceiling tile installers, and tapers	$	8.7 (0.6)
6260-Construction laborers	$	10.8 (0.2)
6515-Roofers	$	13.4 (0.4)
6460-Plasterers and stucco masons	$	12.8 (0.6)
6230-Carpenters	$	8.5 (0.2)
6220-Brickmasons, blockmasons, stonemasons, and reinforcing iron and rebar workers	$$	9.6 (0.3)
6765-Other construction and related workers	$$	9.1 (0.9)
6540-Solar photovoltaic installers	$$	8.6 (1.7)
6250-Cement masons, concrete finishers, and terrazzo workers	$$	10.0 (0.4)
6720-Hazardous materials removal workers	$$	-12.8 (2.5)
6360-Glaziers	$$	8.9 (0.8)
6400-Insulation workers	$$	7.0 (1.3)
6730-Highway maintenance workers	$$	10.0 (0.8)
6441-Pipelayers, plumbers, pipefitters, and steamfitters	$$	7.6 (0.8)
6520-Sheet metal workers	$$	7.6 (0.7)
6442-Solar Thermal Installers and Technicians	$$$	8.4 (0.2)
6305-Construction equipment operators	$$$	7.7 (0.3)
6355-Electricians	$$$	9.8 (0.3)
6530-Structural iron and steel workers	$$$	8.6 (0.8)
6210-Boilermakers	$$$	8.0 (1.5)
6660-Construction and building inspectors	$$$	10.0 (1.4)
6740-Rail-track laying and maintenance equipment operators	$$$	11.2 (1.2)
6700-Elevator and escalator installers and repairers	$$$$	7.8 (1.1)



Note: Individual onsite construction occupations are listed according to their American Community Survey Census Code.
The population of women and men presented in this brief are defined by self-reported data on an individual's sex in the ACS PUMS data. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men.
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$ denotes a median hourly wage less than $15 per hour.
$$ denotes a median hourly wage equal to or greater than $15 and less than $20 per hour.
$$$ denotes a median hourly wage equal to or greater than $20 and less than $30 per hour.
$$$$ denotes a median hourly wage equal to or greater than $30 per hour.
Source: IPUMS USA

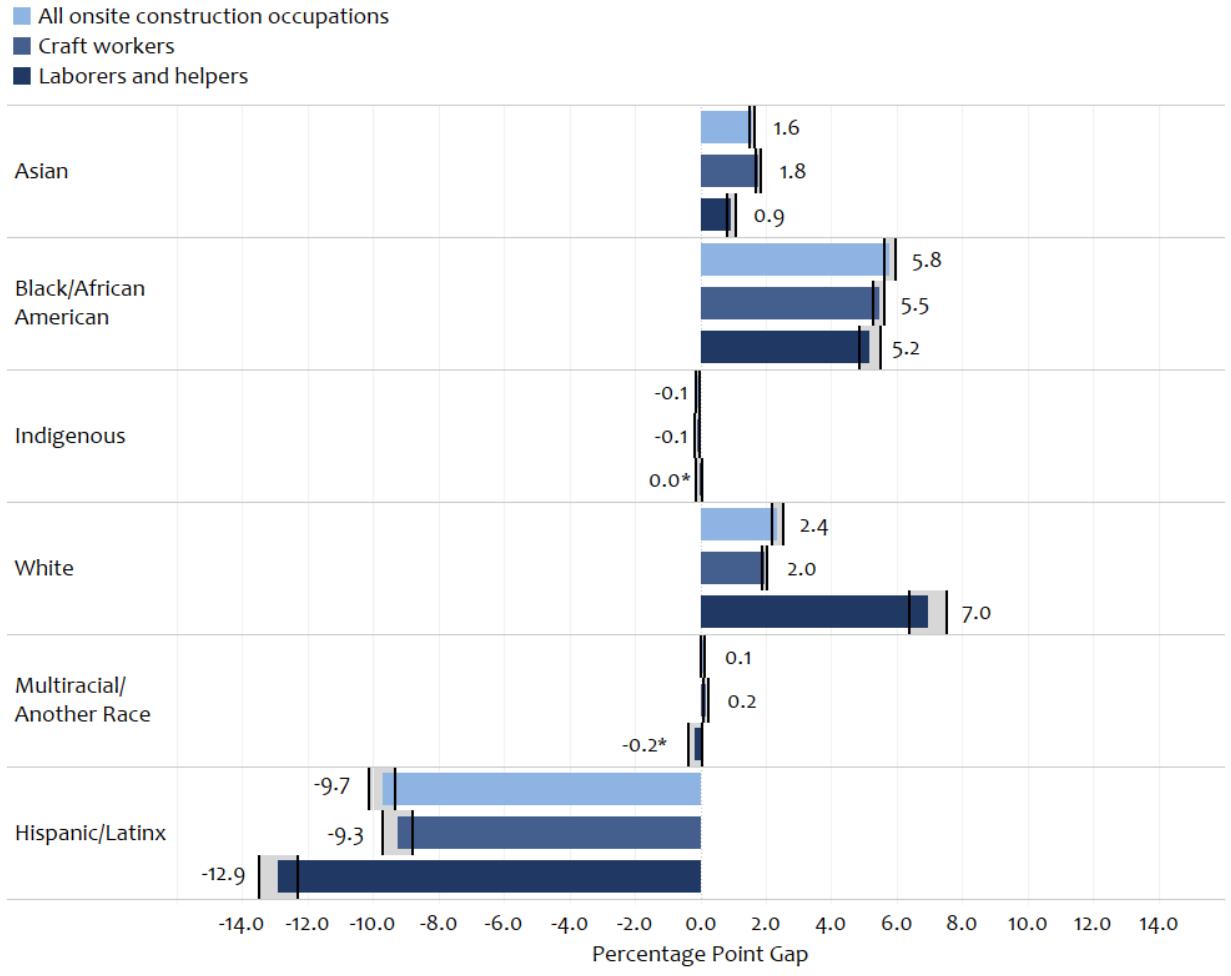
C. National Workforce Gaps by Race/Ethnicity

On average, all onsite construction occupations utilize a smaller percentage of the following workers than in similar occupations:

- Asian workers
- Black or African American workers
- Workers who identify as multiracial or another race
- White workers

These relationships remain generally consistent when dividing all onsite work into the craft workers and laborers and helpers category (see figure 1.5).

Figure 1.5. National Aggregate-Level Percentage Point Utilization Gaps by Race/Ethnicity, 2019



Note: Onsite construction occupations are classified as either craft workers or laborers and helpers, with the exception of one occupation, construction and building inspectors, which is not assigned to either group but is included in the all onsite construction occupations group. The six race and ethnicity categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS. The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian;

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* indicates gaps where the 95 percent confidence interval contains zero.
Source: IPUMS USA

Figure 1.6 displays the national utilization gaps by race and ethnicity for onsite construction occupations. The occupations in figure 1.6 are sorted by median hourly wage and margins of error are included in parentheses next to each gap. According to these estimates, two populations—White workers and Hispanic or Latinx workers—have utilization gap patterns that differ by occupation median hourly wage. Compared with similar occupations, the estimated proportion of White workers in higher wage construction occupations is greater than the estimated proportion in lower wage construction occupations, while the estimated proportion of Hispanic or Latinx workers is greater in lower wage construction occupations and the estimated proportion is lower in higher wage construction occupations. Utilization gap patterns for other race or ethnicity groups do not vary substantially by occupation wage. These patterns at the individual occupation level are important to keep in mind when considering gaps for all onsite construction occupations combined.

Figure 1.6. National Occupation-Level Percentage Point Utilization Gaps by Race/Ethnicity, 2019

Onsite Construction Occupation	Median Hourly Wage Level	Percentage Point Gap (margin of error)					
		Asian	Black/African American	Indigenous	White	Multiracial/ Another Race	Hispanic/Latinx
6410-Painters and paperhangers	$	1.9 (0.2)	7.7 (0.4)	0.3 (0.1)	14.4 (0.5)	0.1 (0.2)*	-24.3 (1.2)
6710-Fence erectors	$	2.5 (0.4)	8.2 (1.7)	-0.6 (0.7)*	1.8 (3.1)*	-0.1 (1.0)*	-11.9 (4.3)
6240-Carpet, floor, and tile installers and finishers	$	1.5 (0.3)	8.3 (0.6)	0.3 (0.2)	7.4 (1.4)	0.6 (0.3)	-18.1 (2.2)
6600-Helpers, construction trades	$	1.7 (0.7)	3.2 (1.9)	-0.2 (0.6)*	7.6 (2.5)	-1.9 (1.5)	-10.3 (3.1)
6330-Drywall installers, ceiling tile installers, and tapers	$	2.1 (0.2)	8.8 (0.6)	-0.7 (0.4)	21.4 (1.2)	0.7 (0.3)	-32.3 (2.4)
6260-Construction laborers	$	0.8 (0.1)	5.4 (0.3)	0.0 (0.1)*	7.2 (0.4)	0.1 (0.1)*	-13.6 (0.6)
6515-Roofers	$	2.9 (0.2)	7.5 (0.7)	-0.1 (0.2)*	17.1 (1.2)	0.3 (0.3)*	-27.7 (1.8)
6460-Plasterers and stucco masons	$	2.5 (0.2)	8.7 (1.5)	0.6 (0.2)	23.9 (3.3)	0.8 (0.6)	-36.5 (4.4)
6230-Carpenters	$	1.7 (0.1)	5.1 (0.3)	0.0 (0.1)*	3.8 (0.4)	0.1 (0.1)*	-10.7 (0.8)
6220-Brickmasons, blockmasons, stonemasons, and reinforcing iron and rebar workers	$$	2.3 (0.3)	2.9 (0.9)	-0.1 (0.3)*	7.7 (1.8)	0.2 (0.4)*	-13.0 (1.7)
6765-Other construction and related workers	$$	1.2 (0.5)	3.9 (1.7)	-0.3 (0.5)*	-2.8 (2.0)	-0.5 (0.7)*	-1.5 (2.0)*
6540-Solar photovoltaic installers	$$	1.7 (1.0)	3.7 (3.4)	-0.3 (0.9)*	-2.0 (4.6)*	-0.6 (1.3)*	-2.5 (4.2)*
6250-Cement masons, concrete finishers, and terrazzo workers	$$	2.3 (0.1)	1.4 (1.7)*	0.1 (0.4)*	13.0 (2.0)	-0.1 (0.6)*	-16.7 (2.8)
6720-Hazardous materials removal workers	$$	0.1 (1.1)*	-6.7 (2.6)	0.3 (0.3)	13.5 (3.1)	-0.5 (0.9)*	-6.6 (2.7)
6360-Glaziers	$$	1.1 (0.6)	7.7 (1.0)	0.5 (0.3)	-12.5 (2.3)	0.0 (0.7)*	3.1 (2.8)
6400-Insulation workers	$$	1.9 (0.5)	4.7 (1.6)	-0.1 (0.6)*	12.0 (2.0)	0.0 (0.7)*	-18.6 (3.4)
6730-Highway maintenance workers	$$	2.2 (0.3)	2.4 (1.4)	-0.3 (0.3)	-17.9 (0.8)	0.4 (0.4)	13.1 (1.4)
6441-Pipelayers, plumbers, pipefitters, and steamfitters	$$	1.8 (0.5)	3.2 (1.5)	-0.1 (0.4)*	-0.6 (2.5)*	0.1 (0.6)*	-4.5 (2.6)
6520-Sheet metal workers	$$	0.8 (0.5)	6.6 (1.1)	0.2 (0.2)	-15.0 (1.1)	-0.2 (0.4)*	7.5 (1.4)
6442-Solar Thermal Installers and Technicians	$$$	1.6 (0.2)	1.9 (0.4)	0.0 (0.1)*	-1.7 (0.7)	0.0 (0.2)*	-1.9 (0.8)
6305-Construction equipment operators	$$$	1.9 (0.2)	4.8 (0.5)	-0.8 (0.3)	-14.9 (0.9)	0.4 (0.2)	8.6 (0.9)
6355-Electricians	$$$	1.0 (0.2)	1.6 (0.3)	0.0 (0.1)*	-4.0 (0.7)	0.0 (0.2)*	1.5 (0.5)
6530-Structural iron and steel workers	$$$	1.9 (0.4)	4.2 (1.4)	-0.5 (0.5)*	-8.1 (0.7)	-0.4 (0.6)*	2.9 (2.4)
6210-Boilermakers	$$$	1.0 (1.2)*	4.7 (2.9)	-0.5 (1.0)*	-10.7 (2.2)	0.5 (0.7)*	4.9 (4.1)
6660-Construction and building inspectors	$$$	0.0 (0.5)*	-0.1 (1.1)*	0.1 (0.3)*	-4.9 (1.3)	0.0 (0.5)*	4.8 (1.1)
6740-Rail-track laying and maintenance equipment operators	$$$	2.1 (0.7)	-4.5 (4.8)*	-0.5 (1.1)*	-5.5 (4.9)	-0.2 (1.5)*	8.6 (5.9)
6700-Elevator and escalator installers and repairers	$$$$	1.0 (0.8)	2.9 (1.9)	0.2 (0.5)*	-10.4 (2.3)	-0.3 (1.0)*	6.6 (2.8)

Note: Individual onsite construction occupations are listed according to their American Community Survey Census Code.
The six race and ethnicity categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS. The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian; Melanesian; or Pacific Islander, not specified, in the ACS. The multiracial or another race category includes all individuals who self-identified as other race, two major races, or three or more major races in the ACS.
Utilization gaps represent the percentage point difference between the share of workers in similar occupations and the share of workers in onsite construction.
Onsite construction occupations represent a subset of the Standard Occupation Classification (SOC) major category 47 Construction and Extraction that excludes management-related occupations. This subset includes 44 SOC occupations. A complete list of the occupations included is available in table B.1 in Appendix B.
Similar occupations include 133 SOC occupations determined to be similar to onsite construction occupations according to job requirements reported in the O*NET data. A complete list of the similar occupations is available in table B.2 in Appendix B. Some onsite construction occupations are also included in the set of similar occupations due to similarity between individual onsite construction occupations.
* indicates gaps where the 95 percent confidence interval contains zero.
$ denotes a median hourly wage less than $15 per hour.
$$ denotes a median hourly wage equal to or greater than $15 and less than $20 per hour.
$$$ denotes a median hourly wage equal to or greater than $20 and less than $30 per hour.
$$$$ denotes a median hourly wage equal to or greater than $30 per hour.
Source: IPUMS USA

D. National Workforce Gaps Over Time

Low utilization of women and people of color in onsite construction has been a persistent problem (U.S. Bureau of Labor Statistics, 2022). To understand whether and how these low rates of utilization have changed, the study team examined trends between 2010[10] and 2019. As figure 1.7 illustrates, women's utilization gap grew slightly, by 0.2 percentage points. While the proportion of onsite construction and similar occupations workers who are women increased in this period, the 0.2 percentage point change reflects that even more women joined the ranks of similar occupations compared with onsite construction occupations (0.9 and 0.7 percentage point increases, respectively).

National gaps for Black or African American workers and Asian workers also increased. The gap expansion reflects a 0.1 percentage point decrease in the proportion of Black or African American workers employed in onsite construction occupations and a 1.5 percentage point increase in the proportion of workers employed in similar occupations. For Asian workers, the expansion reflects greater growth in the proportion of workers employed in similar occupations compared with onsite construction (0.5 and 0.1 percentage point increases, respectively).

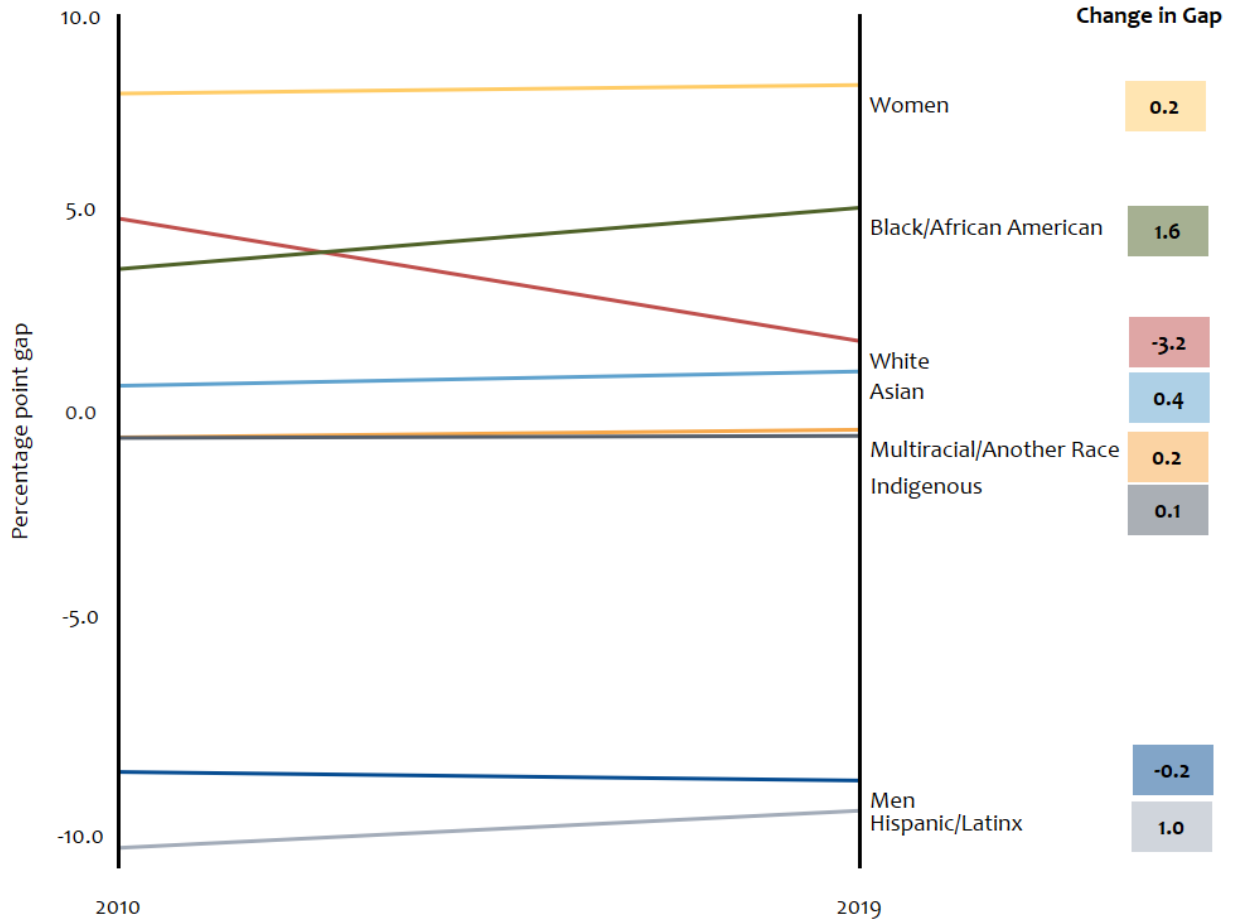
Over time, Hispanic or Latinx workers have been employed at higher rates in onsite construction compared with similar occupations. However, the national gap for Hispanic or Latinx workers has narrowed. This change reflects that more Hispanic or Latinx workers joined similar occupations during this period. The proportion of Hispanic or Latinx workers employed in similar occupations grew by 1.7 percentage points, while the proportion employed in onsite construction occupations grew slightly, by 0.7 percentage points.

In contrast to many other trends, the national gap for White workers decreased as a result of a larger drop in the population of White workers in similar occupations compared with onsite construction (4.1 and 1.0 percentage point decreases, respectively).

The gap for workers who identify as multiracial or another race had relatively little change across this period (0.2 percentage point increase) and the gap for Indigenous workers also changed very slightly (0.1 percentage point increase).

[10] The study team used the Census Bureau's 2010 ACS 5-Year Estimates PUMS data to estimate employment in onsite construction and similar occupations for 2010.

Figure 1.7. Change in National Percentage Point Utilization Gaps by Sex and Race/Ethnicity Across All Onsite Construction Occupations, 2010 to 2019



Note: The population of women and men presented in this brief are defined by self-reported data on an individual's sex in the ACS PUMS data. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men.
The six race and ethnicity categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS. The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian; Melanesian; or Pacific Islander, not specified, in the ACS. The multiracial or another race category includes all individuals who self-identified as other race, two major races, or three or more major races in the ACS.
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Source: IPUMS USA

Section 2. State Estimates of Onsite Construction Utilization

State trends in utilization gaps largely mirror those at the national level. While state-level variations exist across all the gaps the study team calculated, no State shows consistently low or high gaps across all demographic groups.

This section focuses on State-level results for all onsite construction occupations. Appendix C has tables with further details of the State-level estimates produced for all onsite construction occupations and estimates produced for craft workers and laborers and helpers.

III. Key Findings

1. In Midwest States, women are employed at much higher rates in similar occupations compared with onsite construction occupations.
2. State-level race and ethnicity trends mirror national trends: Generally, onsite construction occupations employ a lower share of Asian workers and Black or African American workers than similar occupations. Onsite construction occupations employ a generally higher share of Hispanic or Latinx workers than similar occupations.

A. State Workforce Gaps By Sex

At the State level, the onsite construction workforce has a smaller share of women than the workforce of similar occupations.

- The utilization gap for women is generally between 6.0 and 10.0 percentage points, meaning onsite construction occupations workforce includes between 6.0 and 10.0 percentage points fewer women than similar occupations.
- Gaps range from 2.6 percentage points in Wyoming to 13.3 percentage points in Indiana,[11] and three of the five States with the largest utilization gaps for women are located in the Midwest (Indiana, Wisconsin, and Michigan).
- No State has a negative gap, meaning similar occupations employ a greater percentage of women than onsite construction occupations across all States.

Table 2.1 includes the median gap for women across all 50 States and the District of Columbia and a list of the 5 States with the widest and narrowest gaps. See figure 2.1 for a map of the State gaps for women across all onsite construction occupations. The specific estimates and gaps for craft workers and laborers and helpers appear in appendix C.

[11] The 95 percent confidence intervals for the gaps in Wyoming and the District of Columbia contain zero, suggesting there may not be a gap between the utilization of women in onsite construction and similar occupations in these locations.

Table 2.1. Summary of State Percentage Point Utilization Gaps for Women Across All Onsite Construction Occupations, 2019

Worker Sex	Top Five Widest Gaps	Median Gap	Top Five Narrowest Gaps
Women	13.3 Indiana	8.9	2.6* Wyoming
	12.4 Kentucky		3.7 Louisiana
	12.1 Wisconsin		3.9 West Virginia
	11.9 New Hampshire		4.8 North Dakota
	11.9 Michigan		5.1 New Mexico

Note: The population of women and men presented in this brief are defined by self-reported data on an individual's sex in the ACS PUMS data. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men.
Utilization gaps represent the percentage point difference between the share of workers in similar occupations and the share of workers in onsite construction.
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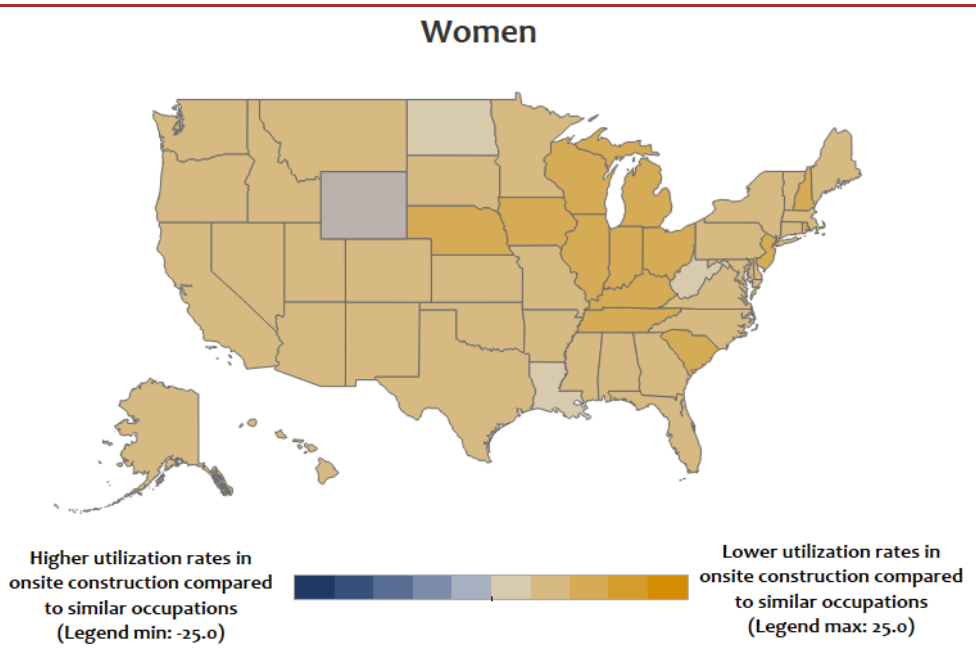
* indicates States where the 95 percent confidence interval for the change in gaps contains zero.
Source: IPUMS USA

Figure 2.1. State Percentage Point Utilization Gaps for Women Across All Onsite Construction Occupations, 2019



Note: States are grayed out in the map if the 95 percent confidence interval for the gap contains zero.
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Source: IPUMS USA

B. State Workforce Gaps by Race/Ethnicity

- At the State level, onsite construction occupations generally employ a lower proportion of Asian workers and Black or African American workers and a higher share of Hispanic or Latinx workers than in similar occupations.
- The direction of utilization gaps for Indigenous workers and workers who identify as multiracial or another race varies by State, and these gaps are often close to zero. Estimates for these groups are subject to limitations due to sample size.
- The direction of utilization gaps for White workers varies by State: 19 States have positive gaps, 30 States and the District of Columbia have negative gaps, and Hawaii has no gap[12].

Table 2.2 includes the median gap for workers across all 50 States and the District of Columbia and a list of the 5 States with the widest gaps and narrowest gaps by race and ethnicity. See figure 2.2 for maps of the State gaps by race and ethnicity across all onsite construction occupations.

Table 2.2. Summary of State Percentage Point Utilization Gaps by Race/Ethnicity Across All Onsite Construction Occupations, 2019

Worker Race/Ethnicity	Top Five Widest Gaps	Median Gap	Top Five Narrowest Gaps
Asian	4.4 California	1.4	0.0* Wyoming
	4.2 Minnesota		-0.1* Mississippi
	4.0 Alaska		-0.1* Montana
	3.4 Hawaii		-0.1* District of Columbia
	2.9 Washington		0.1 West Virginia
Black/African American	24.2 District of Columbia	3.0	-0.2* Montana
	18.0 Georgia		0.0* Wyoming
	17.6 South Carolina		0.2* Vermont
	16.7 Mississippi		0.4* Oregon
	13.5 Alabama		0.5 Idaho
Indigenous	-3.4 North Dakota	0.0	0.0 New Hampshire
	-3.2* Alaska		0.0* Indiana
	-1.7* Wyoming		0.0* Maryland
	-1.2* New Mexico		0.0* Virginia
	-0.9 North Carolina		0.0* Maine

[12] The 95 percent confidence intervals for the utilization gaps for White workers in five of the 19 States with positive gaps, the District of Columbia and 10 of the 30 States with negative gaps, and in Hawaii contain zero.

Worker Race/Ethnicity	Top Five Widest Gaps	Median Gap	Top Five Narrowest Gaps
White	-14.7 Rhode Island	-1.8	0.0* Hawaii
	-13.2 New Jersey		-0.6* Georgia
	-10.4 Mississippi		-0.8* Vermont
	-8.7 Illinois		-0.8* West Virginia
	8.7 Texas		-0.9* Connecticut
Multiracial/ another race	-3.8 Hawaii	0.2	0.0* Nebraska
	-1.2* Alaska		0.0* Pennsylvania
	-1.2* Connecticut		0.0* West Virginia
	1.0 North Dakota		0.1* South Carolina
	0.8* Delaware		0.1* Wisconsin
Hispanic/Latinx	-19.5 Maryland	-3.2	-0.3* West Virginia
	-18.8 Georgia		0.1* Vermont
	-18.7 District of Columbia		0.2* Alaska
	-18.0 North Carolina		0.5* Idaho
	-17.8 Texas		0.5* Maine

Note: The six race and ethnicity categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS. The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian; Melanesian; or Pacific Islander, not specified, in the ACS. The multiracial or another race category includes all individuals who self-identified as other race, two major races, or three or more major races in the ACS.
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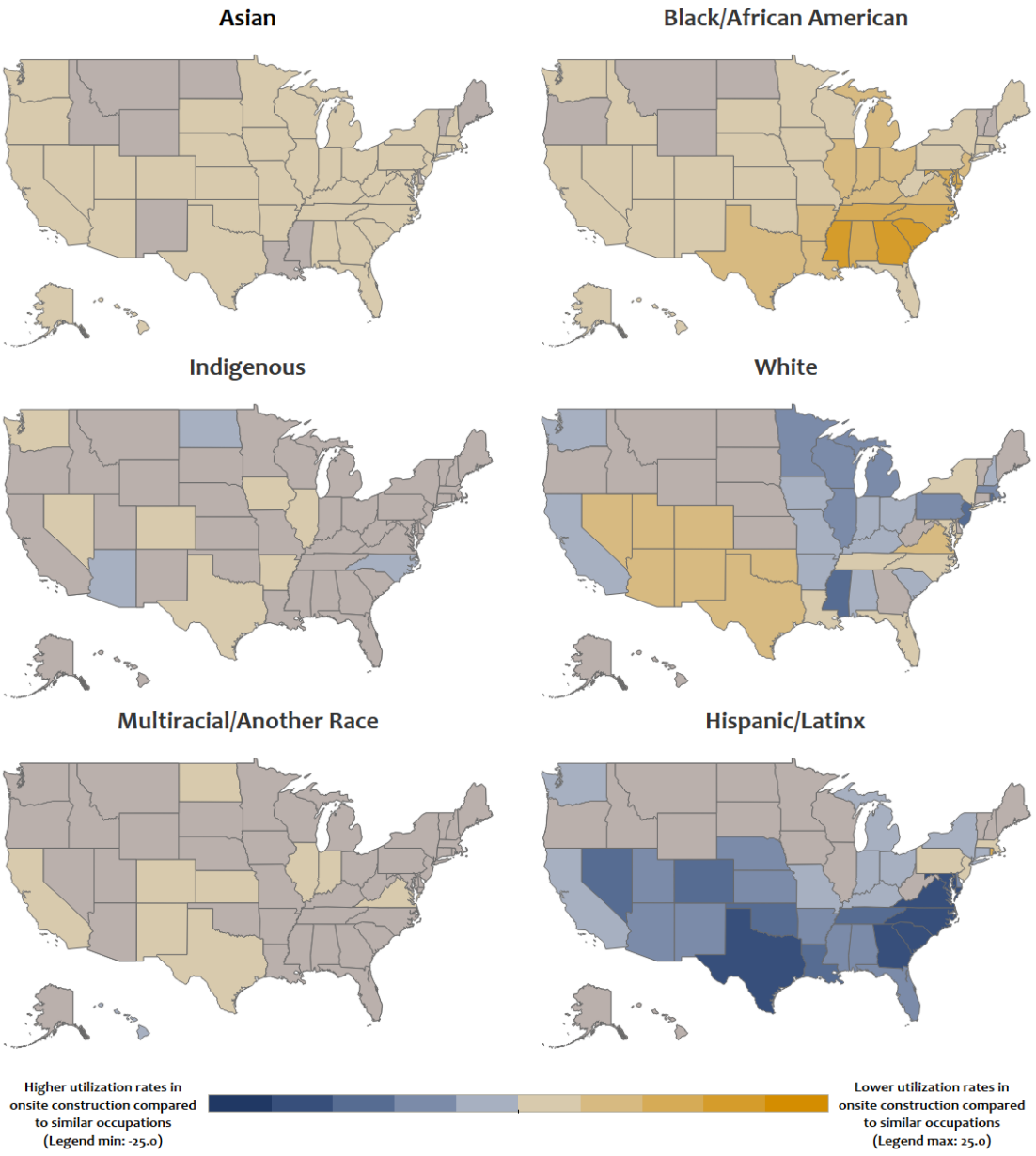
Source: IPUMS USA

Figure 2.2. State Percentage Point Utilization Gaps by Race/Ethnicity Across All Onsite Construction Occupations, 2019



Note: States are grayed out in the map if the 95 percent confidence interval for the gap contains zero.
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Source: IPUMS USA

C. State Workforce Gaps Over Time

Trends in State gaps in utilization align with the patterns observed at the national level. While most groups see small changes in gaps across the States, Black or African American workers tend to see an expansion in gaps, and White workers tend to see a decrease in gaps. Figure 2.3 displays the changes in State utilization gaps for each group, comparing estimates from 2010[13] to estimates 2019. The States with the greatest gap increase and decrease are highlighted for each group.

Women in the District of Columbia saw the largest expansion in the utilization gap (3.8 to 6.8[14]). This growth of 3.0 percentage points is caused by a decrease in the proportion of women in onsite construction (0.7 percentage points), coupled with an increase in the proportion of women in similar occupations (2.3 percentage points). The gap in Vermont narrowed the most over this period, from 10.1 percentage points in 2010 to 6.4 percentage points in 2019. This narrowing reflects a large relative increase in the proportion of women in onsite construction in Vermont (3.6 percentage point increase) and a small decrease in the proportion of women in similar occupations (0.1 percentage point decrease[15]).

The largest gap decrease for Asian workers occurred in Hawaii, where the proportion of Asian workers decreased in onsite construction and similar occupations. The gap decreased from 6.7 percentage points in 2010 to 3.4 percentage points in 2019, reflecting a 0.7[16] percentage point decrease in the proportion of Asian workers in onsite construction and a 3.9 percentage point decrease in the proportion of Asian workers in similar occupations. In South Dakota, the estimated proportion of Asian workers in onsite construction rose 0.3[17] percent, while the proportion in similar occupations rose 1.5 percentage points. Although onsite construction occupations in South Dakota employed a larger proportion of workers, the combination of these increases led to a gap increase of 1.9 percentage points, the largest increase of all States for Asian workers.

In South Carolina, the gap for Black or African American workers expanded by 5.9 percentage points. The proportion of Black or African American workers employed by onsite construction occupations in South Carolina dropped by 3.3 percentage points, and the proportion of Black or African American workers in similar occupations increased by 2.6 percentage points. Conversely, in Florida, the gap for Black or African American workers decreased by 1.0 percentage point, reflecting a 1.6 percentage point increase in the proportion of workers in onsite construction, coupled with a 0.6 percentage point increase in the proportion of workers in similar occupations.

The most extreme changes in gaps for Indigenous workers occurred in Alaska and South Dakota. In both States, the relationship between the proportion of Indigenous workers in onsite construction and similar

[13] The study team used the Census Bureau's 2010 ACS 5-Year Estimates PUMS data to estimate employment in onsite construction and similar occupations for 2010.
[14] The 95 percent confidence intervals for the 2010 and 2019 utilization gaps for women in the District of Columbia contain zero, suggesting there may not be a gap between the utilization of women in onsite construction and similar occupations in either time period.
[15] The 95 percent confidence interval for the difference between the 2019 and 2010 similar occupations utilization rates for women in Vermont contains zero, suggesting that there may not be a difference in utilization between the two time periods.
[16] The 95 percent confidence interval for the difference between the 2019 and 2010 utilization gaps for Asian workers in Hawaii contains zero.
[17] The 95 percent confidence interval for the change in the utilization rate of Asian workers in onsite construction in South Dakota contains zero.

occupations reversed over this period. In South Dakota, the estimated gap in 2010 was -3.7 percentage points, signifying that onsite construction employed a greater proportion of Indigenous workers than similar occupations (7.3 and 3.6 percent of their respective workforces). However, the estimated gap of 0.4[18] percentage points in 2019 demonstrates the opposite relationship, where the proportion in onsite construction is now less than in similar occupations (3.9 and 4.3 percent of their respective workforces). In Alaska, the opposite trend occurred. The gap decreased from 0.2 to -3.2[19] percentage points as the proportion of Indigenous workers in onsite construction increased beyond the increase in the proportion of workers in similar occupations.

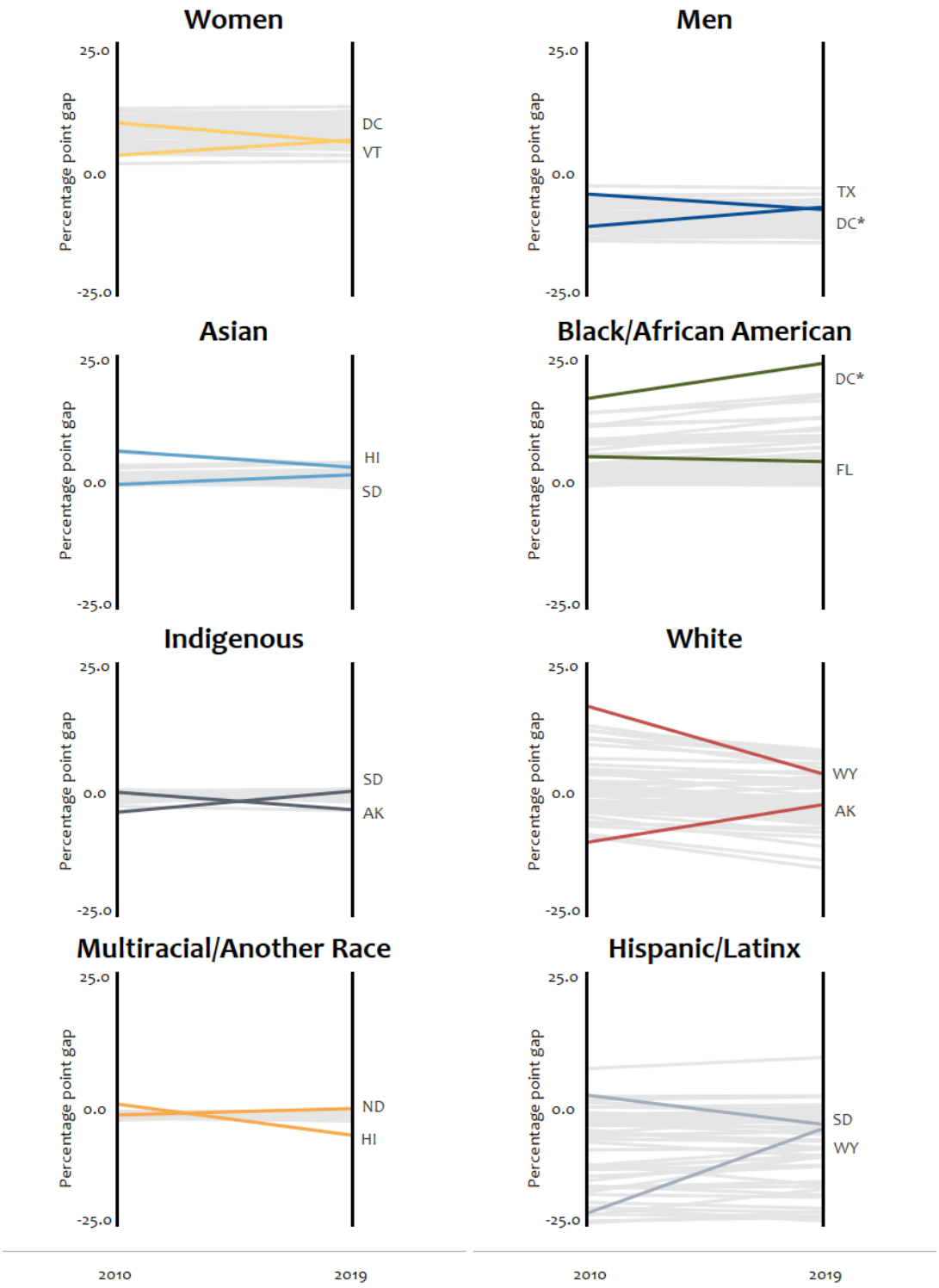
For White workers, the most dramatic gap changes occurred in Alaska and Wyoming. In Alaska, the proportion of White workers in onsite construction remained greater than in similar occupations across the period, but the proportions for the two sets of occupations became more similar over time. The proportion of White workers in onsite construction fell by 11.4 percentage points and by 4.1 percentage points in similar occupations, resulting in a reduction of the gap by 7.3 percentage points. The changes in Wyoming also resulted in a narrower gap. The proportion of White workers in onsite construction in Wyoming remained smaller than in similar occupations across the comparison period. White workers represented about 69.3 percent of onsite construction workers and 86.5 percent of workers in similar occupations in 2010 compared with about 81.3 and 85.3, respectively, in 2019. Thus, the gap in Wyoming narrowed by 13.2 percentage points over the period.

For workers who identify as multiracial or another race, the largest gap increase occurred in North Dakota, and the largest gap decrease occurred in Hawaii. In North Dakota, the proportion of workers in onsite construction occupations who identify as multiracial or another race increased by 0.5 percentage points, and the proportion of workers in similar occupations increased more drastically by 1.7 percentage points. Given these increases, the gap widened by 1.2 percentage points. In Hawaii, the increase in the proportion of workers who identify as multiracial or another race in onsite construction (from 19.2 percent to 27.3 percent) was greater than the increase in similar occupations (from 20.9 percent to 23.5 percent). As a result, the gap decreased from 1.8[20] percentage points in 2010 to -3.8 percentage points in 2019.

The greatest narrowing of a gap for Hispanic or Latinx workers occurred in Wyoming, from -17.9 to -2.8[21] percentage points. This gap change mostly resulted from a decrease in the proportion of Hispanic or Latinx workers in onsite construction (from 28.1 to 13.3 percent), while the proportion of workers in similar occupations remained relatively constant (from 10.2 to 10.5). South Dakota also saw a substantial change in the gap for Hispanic or Latinx workers. The proportion in onsite construction increased from 0.9 to 7.3 percent, and the proportion in similar occupations increased from 4.3 percent to 5.4 percent, resulting in a gap change from 3.4 percentage points to -1.8[22] percentage points.

[18] The 95 percent confidence interval for the utilization gap for Indigenous workers in South Dakota contains zero.
[19] The 95 percent confidence intervals for the 2010 and 2019 utilization gaps for Indigenous workers in Alaska both contain zero.
[20] The 95 percent confidence interval for the 2010 utilization gap for workers who identify as multiracial or another race in Hawaii contains zero.
[21] The 95 percent confidence interval for the 2019 utilization gap for Hispanic or Latinx workers in Wyoming contains zero.
[22] The 95 percent confidence interval for the 2019 utilization gap for Hispanic or Latinx workers in South Dakota contains zero.

Figure 2.3. Greatest Changes in State Percentage Point Utilization Gaps by Sex and Race/Ethnicity Across All Onsite Construction Occupations, 2010 to 2019



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Onsite construction occupations represent a subset of the Standard Occupation Classification (SOC) major category 47 Construction and Extraction that excludes management-related occupations. This subset includes 44 SOC occupations. A complete list of the occupations included is available in table B.1 in Appendix B.
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Source: IPUMS USA

Section 3. Economic Area Estimates of Onsite Construction Utilization

EAs represent regional markets for labor, products, and information. The U.S. Bureau of Economic Analysis constructed the 179 EAs under the assumption that counties that fall under an EA are assumed to be economically related to one another. Some geographically larger EAs contain counties spanning multiple States. For some smaller EAs, a single EA may encompass an entire State, such as Hawaii.

This section focuses on EA-level results for all onsite construction occupations. At the EA level, trends in onsite construction utilization continue to align with those seen at the national and State levels. Appendix C contains tables with further details of the EA-level estimates produced for all onsite construction occupations and estimates produced for craft workers and laborers and helpers.

IV. Key Findings

1. Across all EAs, women make up a smaller portion of the onsite construction workforce compared with the workforce of similar occupations.
2. Many EAs with the largest gaps for Black or African American workers and Hispanic or Latinx workers are in the Southeast. These wide gaps represent opposite patterns for these two groups. For Black or African American workers, the wide gaps in the Southeast represent lower rates of employment in onsite construction occupations compared to similar occupations whereas the wide gaps for Hispanic or Latinx workers represent higher rates of employment in onsite construction compared to similar occupations.
3. EA-level race and ethnicity trends are similar to State and national trends, with generally lower proportions of Asian workers and Black or African American workers and generally higher proportions of Hispanic or Latinx workers in onsite construction than in similar occupations.

A. EA Workforce Gaps By Sex

At the EA level, across all onsite construction occupations, the utilization gap for women is generally between 6.0 and 11.0 percentage points.

- Gaps range from 0.5[23] percentage points in the Gulfport-Biloxi-Pascagoula, MS, EA to 15.0 percentage points in the Montgomery-Alexander City, AL, EA.
- Similar to the State gaps, many EAs with the largest utilization gaps for women are located in the Midwest. In fact, three out of the five widest gaps for women occur in EAs in the Midwest.
- As with States, all EAs have a positive gap for women, meaning onsite construction occupations employ a smaller percentage of women than similar occupations.

[23] The 95 percent confidence interval for the utilization gap for women in the Gulfport-Biloxi-Pascagoula, MS, EA contains zero.

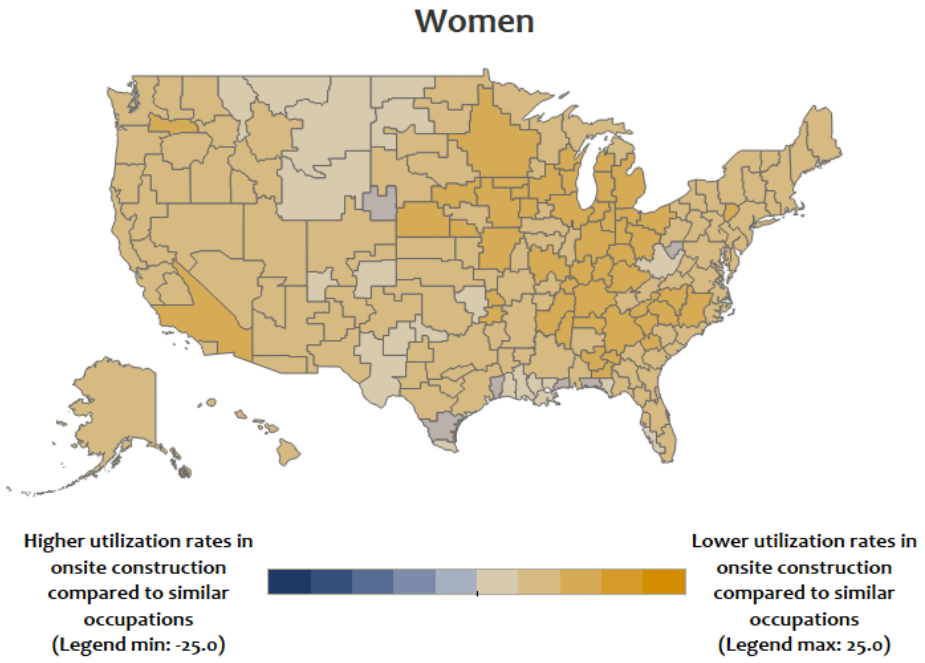
Table 3.1 includes the median gap for women across all 179 EAs and a list of the 5 EAs with the widest gaps and narrowest gaps. See figure 3.1 for a map of the EA gaps for women across all onsite construction occupations.

Table 3.1. Summary of Economic Area Percentage Point Utilization Gaps for Women Across All Onsite Construction Occupations, 2019

Worker Sex	Top Five Widest Gaps		Median Gap	Top Five Narrowest Gaps	
Women	15.0	Montgomery-Alexander City, AL	8.2	0.5*	Gulfport-Biloxi-Pascagoula, MS
	14.8	Grand Rapids-Muskegon-Holland, MI		2.0*	Scotts Bluff, NE
	14.4	Dayton-Springfield-Greenville, OH		2.2*	Beaumont-Port Arthur, TX
	14.3	Toledo-Fremont, OH		2.3*	Corpus Christi-Kingsville, TX
	14.3	Greenville-Spartanburg-Anderson, SC		2.5	New Orleans-Metairie-Bogalusa, LA

Note: The population of women and men presented in this brief are defined by self-reported data on an individual's sex in the ACS PUMS data. This brief refers to individuals who identified as female in the ACS as women and individuals who identified as male in the ACS as men.
Utilization gaps represent the percentage point difference between the share of workers in similar occupations and the share of workers in onsite construction.
Onsite construction occupations represent a subset of the Standard Occupation Classification (SOC) major category 47 Construction and Extraction that excludes management-related occupations. This subset includes 44 SOC occupations. A complete list of the occupations included is available in table B.1 in Appendix B.
Similar occupations include 133 SOC occupations determined to be similar to onsite construction occupations according to job requirements reported in the O*NET data. A complete list of the similar occupations is available in table B.2 in Appendix B. Some onsite construction occupations are also included in the set of similar occupations due to similarity between individual onsite construction occupations.
* indicates EAs where the 95 percent confidence interval for the change in gaps contains zero.
Source: IPUMS USA

Figure 3.1. Economic Area Percentage Point Utilization Gaps for Women Across All Onsite Construction Occupations, 2019



Note: Economic Areas are grayed out in the map if the 95 percent confidence interval for the gap contains zero.
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Source: IPUMS USA

B. EA Workforce Gaps by Race/Ethnicity

At the EA level, relationships between the onsite construction workforce and the workforce of similar occupations vary by race and ethnicity category and remain consistent with gaps at the State level. Table 3.2 includes the median gap for workers across all 179 EAs and a list of the 5 EAs with the widest gaps and narrowest gaps by race and ethnicity. See figure 3.2 for maps of the EA gaps by race and ethnicity across all onsite construction occupations.

When onsite construction occupations are organized into craft workers and laborers and helpers, the distribution of gaps across all 179 EAs remains generally consistent with gaps seen across all occupations. The specific estimates and gaps for craft workers and laborers and helpers appear in appendix C.

Table 3.2. Summary of EA Percentage Point Utilization Gaps by Race/Ethnicity Across All Onsite Construction Occupations, 2019

Worker Race/Ethnicity	Top 5 Widest Gaps		Median Gap	Top 5 Narrowest Gaps	
Asian	7.1	San Jose-San Francisco-Oakland, CA	0.8	0.0*	Harrisonburg, VA
	5.2	San Diego-Carlsbad-San Marcos, CA		0.0*	Tupelo, MS
	4.8	Sacramento-Arden-Arcade-Truckee, CA-NV		0.0*	Cape Girardeau-Jackson, MO-IL
	4.0	Minneapolis-St. Paul-St. Cloud, MN-WI		0.0*	Boise City-Nampa, ID
	4.0	Anchorage, AK		0.0*	Jackson-Yazoo City, MS
Black/ African American	23.8	Columbus-Auburn-Opelika, GA-AL	2.4	-0.1*	Aberdeen, SD
	21.6	Memphis, TN-MS-AR		0.0*	State College, PA
	20.1	Montgomery-Alexander City, AL		0.0*	Spokane, WA
	19.0	Columbia-Newberry, SC		0.0*	Alpena, MI
	18.9	Charleston-North Charleston, SC		0.1*	Duluth, MN-WI
Indigenous	-9.1	Flagstaff, AZ	0.0	0.0*	Cleveland-Akron-Elyria, OH
	-3.7	Grand Forks, ND-MN		0.0*	Albany-Schenectady-Amsterdam, NY
	-3.7	Fargo-Wahpeton, ND-MN		0.0*	New York-Newark-Bridgeport, NY-NJ-CT-PA
	-3.5	Minot, ND		0.0*	McAllen-Edinburg-Pharr, TX
	-3.2*	Anchorage, AK		0.0*	Sioux City-Vermillion, IA-NE-SD
White	-18.6	Columbus-Auburn-Opelika, GA-AL	-1.6	-0.1*	Miami-Fort Lauderdale-Miami Beach, FL
	-14.0	Montgomery-Alexander City, AL		-0.1*	Charleston, WV
	-13.9	Kennewick-Richland-Pasco, WA		-0.1*	Marinette, WI-MI
	-12.9	Albany, GA		0.0*	Honolulu, HI
	-12.8	Wenatchee, WA		0.2*	Waterloo-Cedar Falls, IA
Multiracial/ another race	-3.8	Honolulu, HI	0.2	0.0*	Philadelphia-Camden-Vineland, PA-NJ-DE-MD
	-3.6*	Mobile-Daphne-Fairhope, AL		0.0*	El Paso, TX
	-2.1*	Texarkana, TX-Texarkana, AR		0.0*	Milwaukee-Racine-Waukesha, WI
	-1.9*	Jonesboro, AR		0.0*	Cincinnati-Middletown-Wilmington, OH-KY-IN
	-1.8*	Twin Falls, ID		0.0*	Tupelo, MS
Hispanic/ Latinx	-23.3	Dallas-Fort Worth, TX	-2.5	0.0*	Boise City-Nampa, ID
	-21.9	Charlotte-Gastonia-Salisbury, NC-SC		0.0*	Duluth, MN-WI
	-20.2	Washington-Baltimore-Northern Virginia, DC-MD-VA		0.0*	Sioux City-Vermillion, IA-NE-SD
	-20.1	Atlanta-Sandy Springs-Gainesville, GA-AL		0.0*	Mason City, IA
	-19.5	Raleigh-Durham-Cary, NC		0.1*	Philadelphia-Camden-Vineland, PA-NJ-DE-MD

Note: The six race and ethnicity categories were constructed based on self-reported race and ethnicity information in the ACS PUMS data and are mutually exclusive. The Asian category includes all individuals who self-identified as Chinese, Japanese, or other Asian in the ACS. The Indigenous category includes all individuals who self-identified as American Indian or Alaska Native; Native Hawaiian; Polynesian; Micronesian; Melanesian; or Pacific Islander, not specified, in the ACS. The multiracial or another race category includes all individuals who self-identified as other race, two major races, or three or more major races in the ACS.
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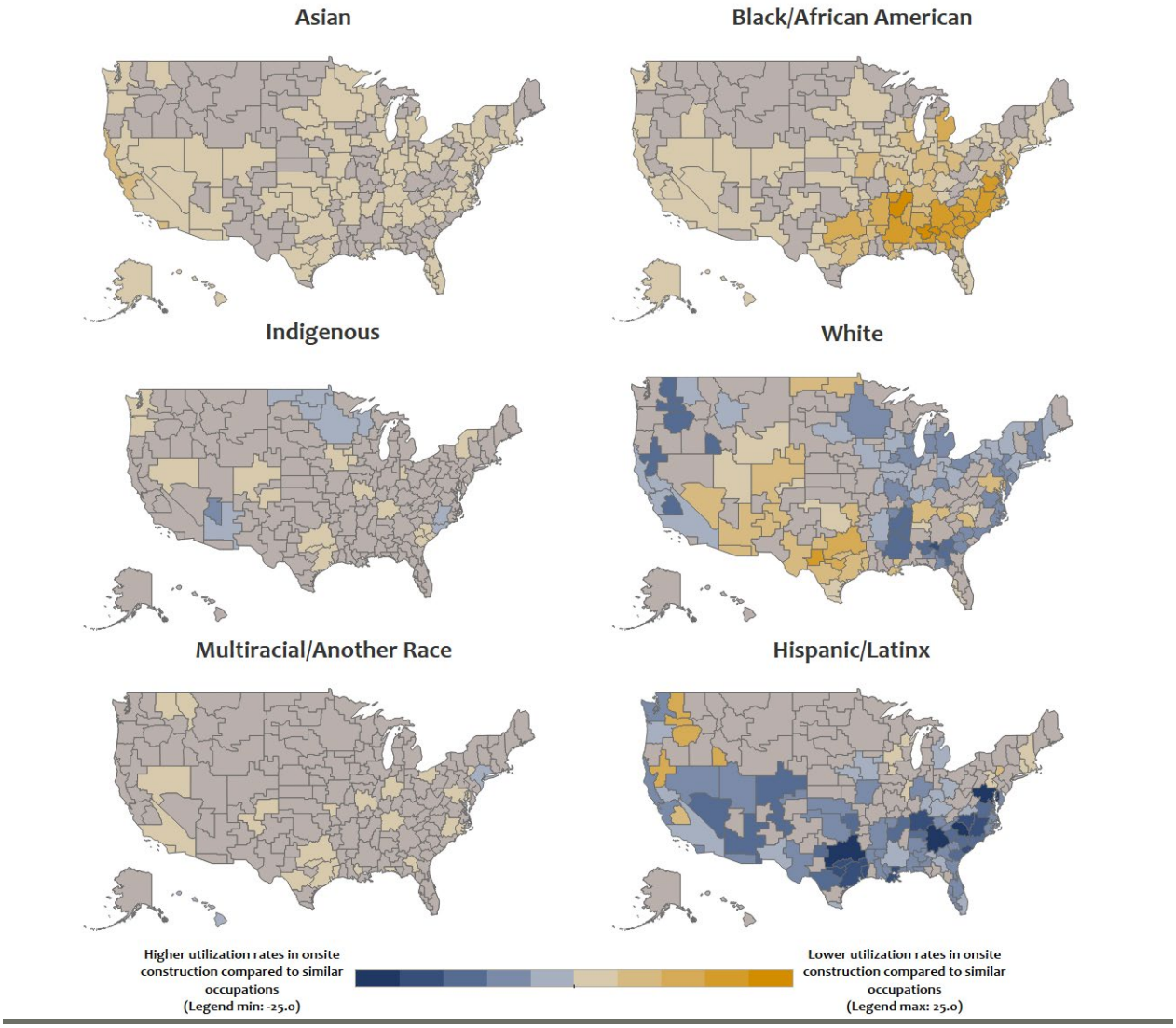
Source: IPUMS USA

Figure 3.2. Economic Area Percentage Point Utilization Gaps by Race/Ethnicity, 2019



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Source: IPUMS USA

C. EA Workforce Gaps Over Time

As with State and national gaps, gaps at the EA level stayed relatively constant over time for each group. Gaps for Black or African American workers increased slightly, and gaps for White workers decreased slightly across EAs. Figure 3.3 displays the changes in EA utilization gaps for each group, comparing estimates from 2010[24] to estimates from 2019. The EAs with the greatest gap increase and decrease are highlighted for each group.

For women, the largest expansion of a gap occurred in the Lewiston, ID-WA, EA, where the estimated gap increased by about 8.0 percentage points over the period. This expansion reflects a greater increase in the proportion of women in similar occupations compared with the increase in the proportion of women in onsite construction. The greatest narrowing of a gap for women occurred in the Wichita Falls, TX, EA, where the gap fell by about 4.8 percentage points. This change reflects an increase in the proportion of women in onsite construction and a decrease in the proportion of women in similar occupations in this area.

The largest gap decrease for Asian workers occurred in the Honolulu, HI, EA, where the proportion of Asian workers decreased in onsite construction and similar occupations. The gap decreased by 3.3 percentage points, reflecting a 0.7[25] and 3.9 percentage point decrease in the proportion of Asian workers in onsite construction and similar occupations, respectively. The largest gap expansion for Asian workers occurred in the Grand Rapids-Muskegon-Holland, MI, EA, where the gap grew by 2.3 percentage points. This growth resulted from a small increase in the proportion of Asian workers in onsite construction and a larger increase in the proportion of workers in similar occupations.

In the Jonesboro, AR, EA, the gap for Black or African American workers expanded by 12.2 percentage points, the largest expansion across all EAs. This growth reflects a decrease in the proportion of Black or African American workers in onsite construction and an increase in the proportion of workers in similar occupations across this period. The greatest gap reduction for Black or African American workers occurred in the Tallahassee, FL, EA, where the gap fell 8.2 percentage points. An increase in the proportion of Black or African American workers in onsite construction and a decrease in the proportion of workers in similar occupations contributed to this gap reduction.

The most extreme changes in gaps for Indigenous workers occurred in the Rapid City, SD, and Flagstaff, AZ, EAs. In the Rapid City, SD, EA, the gap increased by 6.9 percentage points as the proportion of Indigenous workers in onsite construction fell and the proportion of workers in similar occupations rose. In the Flagstaff, AZ, EA, the gap fell by 7.7 percentage points because of an increase in the proportion of workers in onsite construction and a decrease in the proportion of Indigenous workers in similar occupations.

For White workers, the most dramatic gap increase occurred in the Abilene, TX, EA, where a 9.5 percentage point increase resulted from a decrease in the proportion of White workers in onsite construction occupations alongside almost no change in similar occupations. The greatest gap drop occurred in the Texarkana, TX-Texarkana, AR, EA. In this area, the gap fell by 20.5 percentage points as

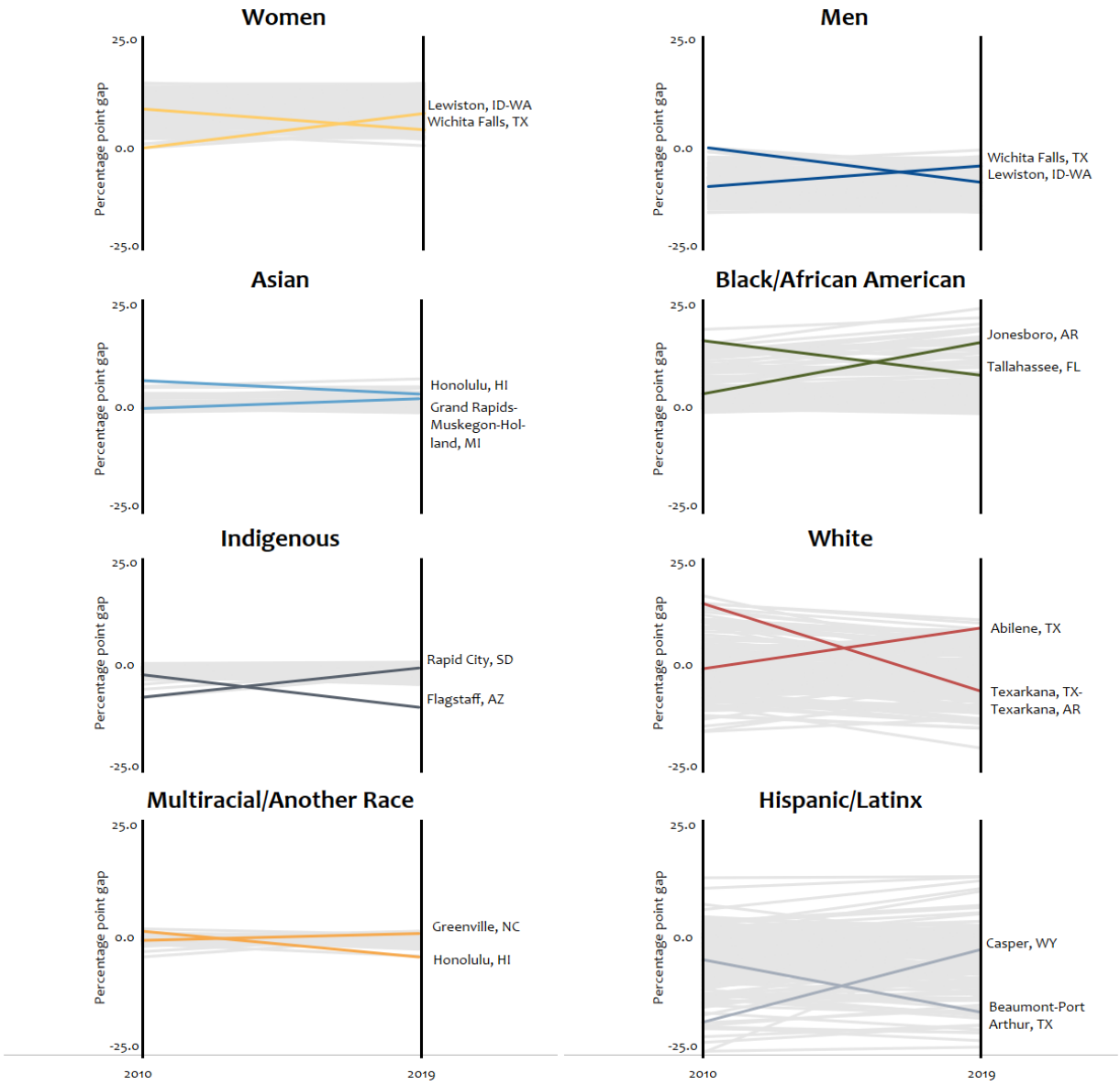
[24] The study team used the Census Bureau's 2010 ACS 5-Year Estimates PUMS data to estimate employment in onsite construction and similar occupations for 2010.
[25] The 95 percent confidence interval for the decrease in the proportion of Asian workers in onsite construction in the Honolulu, HI, EA contains zero.

the proportion of White workers in onsite construction grew at three times the rate of the proportion of White workers in similar occupations.

For workers who identify as multiracial or another race, the largest gap increase occurred in the Greenville, NC, EA. A decrease in the proportion of workers in onsite construction, coupled with a nearly double increase in similar occupations, resulted in a 1.5 percentage point increase in the gap. In the Honolulu, HI, EA, the gap for workers who identify as multiracial or another race fell by 5.6 percentage points as the growth of the proportion of workers who identify as multiracial or another race in onsite construction outpaced the growth in similar occupations.

The greatest gap narrowing for Hispanic or Latinx workers occurred in the Casper, WY, EA, where the gap shrunk by 15.6 percentage points. This reduction reflects a 13.1 percentage point decrease in the proportion of Hispanic or Latinx workers in onsite construction and a 2.5 percentage point increase in the proportion of workers in similar occupations. The greatest gap expansion occurred in the Beaumont-Port Arthur, TX, EA, where the 11.3 percentage point growth of the gap reflects an equivalent 11.3 percentage point increase in the proportion of Hispanic or Latinx workers in onsite construction with almost no change in similar occupations.

Figure 3.3. Greatest Changes in Economic Area Percentage Point Utilization Gaps by Sex and Race/Ethnicity Across All Onsite Construction Occupations, 2010 to 2019



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Source: IPUMS USA

Section 4. Limitations and Potential Refinements

This analysis compared the demographic composition of onsite construction occupations and similar occupations. A resulting positive utilization gap indicates the onsite construction occupations employ a lower proportion of workers from a particular demographic group than similar occupations. While not a perfect measure, a positive utilization gap suggests the onsite construction occupation workforce could increase the representation of certain demographic groups.

This section discusses the limitations of this study, given the data used and assumptions made.

1. **Likely underutilization in similar occupations:** Utilization gaps reflect the degree to which the proportion of underrepresented workers in onsite construction could increase to resemble similar occupations. The utilization gaps do not reflect how construction occupations would change in the absence of discrimination and other barriers. This is due, in part, to the fact that similar occupations may also face similar barriers that lead to the underutilization of women and people of color. Moreover, because the identification of similar occupations is designed to maximize similarity, some sets of similar occupations include other onsite construction occupations. In addition to external barriers and discrimination affecting onsite and similar occupations, workers from different demographic groups may be sorting into industries and occupations in unexamined ways.
2. **Data limitations in the ACS:** This study used the ACS nationally representative survey data to capture reliable information about the U.S. population. However, the ACS may not fully represent employment for subgroups of the population in the occupations of interest. This may lead to inaccurate or unstable estimates for these subpopulations based on small sample sizes in the data. The U.S. Census designed the ACS to capture details of the U.S. population, but it is not intended as a tool to capture the occupational breakdown of the U.S. population. To alleviate this concern, this brief includes margins of error for all estimates.
3. **Data limitations in O*NET:** The study team selected similar occupations based on the information in the O*NET database. The O*NET database describes an occupation using employment requirements and worker attributes. Analysts and occupational experts provide information on each occupation instead of examining the existing workforce. These expert assumptions may capture relevant occupational details for a wide range of workers but may fall short of capturing characteristics specific to the subgroups of interest in this study. This approach may affect the extent to which the O*NET data accurately reflect the skills and experiences of workers in each occupation.
4. **Exclusion of nonsimilar occupations:** The study cannot measure the full potential workforce for onsite construction occupations. This analysis relies on the workforce composition of similar occupations, yet workers employed in nonsimilar occupations may be successful candidates for onsite construction occupation job openings.

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