



Wage Gaps and Outcomes in Apprenticeship Programs

The Effects of Gender, Race, and Region

By Daniella Zessoules and Olugbenga Ajilore | December 11, 2018

This issue brief contains an update.

Policymakers frequently approach the question of developing the workforce to meet the needs of the 21st century. Despite today's historically low unemployment rates, wages for typical workers have barely budged for decades.¹ While productivity has increased, gains have largely trickled to the richest Americans, exasperating persisting income inequality and painting an ominous picture of middle-class living standards.² Furthermore, gaps in both wealth and income by race and gender have caused disproportionate labor market penalties for certain groups. Wage gaps and growing income inequality along racial lines have persisted despite higher educational attainment. For example, earning a bachelor's degree or higher has not proven to reduce either the black-white or the Latinx wage gap.³ Meanwhile, employers are spending less on worker training than they used to. And too often, the training that they do provide is firm-specific, meaning that those skills do not translate well to other firms.⁴

Registered Apprenticeship programs, which have bipartisan support, aim to address this issue by connecting Americans to decent-paying jobs as electricians, carpenters, and dental assistants, among others.⁵ The program, which the U.S. Department of Labor (DOL) administers through the Workforce Innovation and Opportunity Act, aims to help businesses develop highly skilled employees through hands-on customized training for a variety of occupations.⁶ The DOL asserts that the average hourly wage for a journey person who completes an apprenticeship is \$23.94, equivalent to an annual salary of \$49,795.⁷

Investments in the workforce of tomorrow are necessary both to ensure pathways to relevant economic opportunities as well as to bridge economic disparities along racial and gender lines—including racial wealth and pay gaps—that continue to plague families across the country.⁸ Unfortunately, data on Registered Apprenticeship programs identify prominent economic disparities among women and people of color—many of whom face low enrollment rates within such programs and are concentrated in lower-paying occupations.⁹

In June 2017, President Donald Trump signed an executive order, “Expanding Apprenticeships in America,” in order to promote more “rewarding jobs for American workers.”¹⁰ The move followed Obama administration initiatives aimed at expanding and diversifying the programs, including through funding for equity intermediaries, with the goal of increasing opportunities for underrepresented groups in apprenticeship programs.¹¹ Despite indications of significant investments designated for the programs in fiscal years 2018 and 2019, the Trump administration plans to set up a distinct system that could undermine existing protections and investments that ensure both access to apprenticeship programs and equitable outcomes, specifically for underserved and underrepresented groups.¹² *This would result in weaker labor standards for those who already face barriers to economic prosperity.¹³

The apprenticeship wage and participation gap

Previous research has identified considerable pay discrepancies along gender and racial lines among those who participate in Registered Apprenticeship programs. Women, for example, are far less likely to participate in such programs; when they do, they earn significantly less than their male counterparts upon program completion.¹⁴ This can be partly linked to the differences in their respective top occupations: Men are most likely to participate in the electrician program, with median journeyman hourly wages at \$23.46, while women are most likely to participate in the child care development specialist program, with median journeyman hourly wages at \$9.75.¹⁵ Other top occupations for women include correction officers and pharmacy support staff, both occupations with much smaller median journeyman wages than the top occupations for men. The other top occupations for men include carpentry and plumbing—occupations that have much higher median wages than almost all occupations chosen by women.

Despite pursuing similar occupational tracks, black or African American apprentices fare the worst, with exit hourly wages of just \$14.35, compared with their white counterparts, who earn an average hourly wage of \$26.14 upon completing the program.¹⁶ However, occupational choices alone do not account for the wage differences in Registered Apprenticeship programs.¹⁷ A closer look at regional discrepancies in both participation and pay uncover the nuances behind the apprenticeship wage gap.

Regional differences in apprenticeship program outcomes

This analysis uses the four census regions and divisions designations, defined as the West, Midwest, Northeast, and South, to determine wage discrepancies in the United States.¹⁸ Those completing apprenticeship programs in the West earn more than apprentices in all other regions, with median exit hourly wages at \$33.24. Those in the South, on the other hand, earn median exit hourly wages of \$21.31. In other words, those completing a program in the South face a wage penalty, earning 64 cents for every dollar those in the West make.

FIGURE 1
People completing Registered Apprenticeship programs in the South make much less than people in other regions

Median exit wages by region, fiscal years 2008–2017



Notes: Wage data only include individuals who are exiting because they completed their apprenticeship program. Wages are real wages adjusted with the Consumer Price Index for All Urban Consumers (CPI-U) deflator. Wage data include apprentices who were incarcerated during their apprenticeship and were not making market wages. Of the data sample, 8.5 percent of apprentices made less than the federal minimum wage in fiscal years 2008 to 2017, indicating that these apprentices were incarcerated.

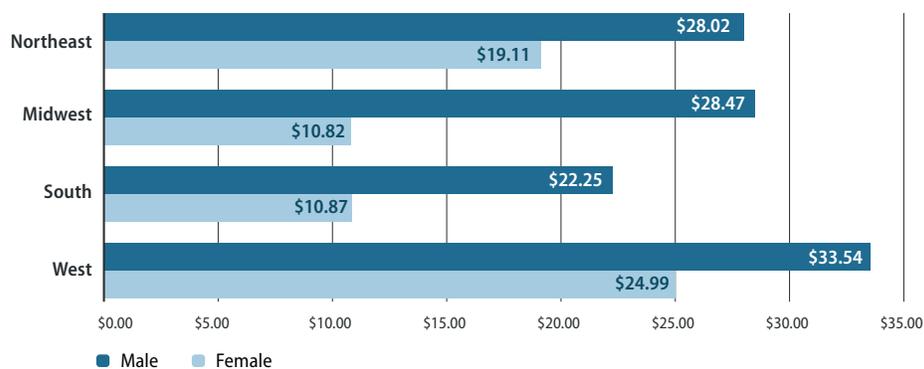
Source: Authors' calculations using data covering fiscal years 2008 to 2017 from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

The wide gender wage gap in the South and the Midwest

In 2017, women's median earnings upon completing apprenticeship programs were just 42 percent of their male counterparts' earnings.¹⁹ A closer look by region shows that the gender wage gap in apprenticeship programs is smallest in the West and Northeast. However, it grows larger in the South and the Midwest, where women make 49 percent and 38 percent, respectively, of their male counterparts' earnings. Upon completing the program in these two regions, women make slightly more than \$10 per hour; in the West, women earn a median hourly wage of \$25 upon completion of the program.

FIGURE 2
The apprenticeship gender wage gap is smallest in the West and Northeast and greatest in the South and Midwest

Median exit wages by region and gender, fiscal years 2008–2017



Notes: Wage data only include individuals who are exiting because they completed their apprenticeship program. Wages are real wages adjusted with the Consumer Price Index for All Urban Consumers (CPI-U) deflator. Wage data include apprentices who were incarcerated during their apprenticeship and were not making market wages. Of the data sample, 8.5 percent of apprentices made less than the federal minimum wage in fiscal years 2008 to 2017, indicating that these apprentices were incarcerated.

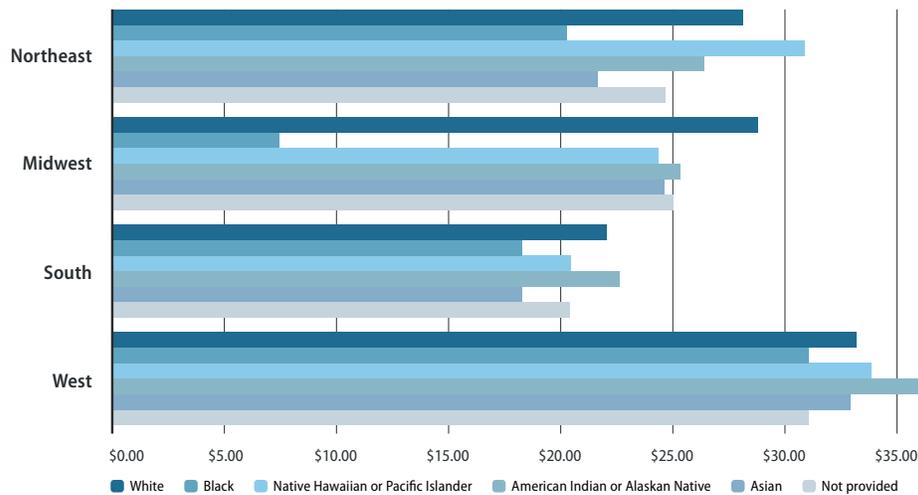
Source: Authors' calculations using data covering fiscal years 2008 to 2017 from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

The racial wage gap by region

A breakdown of exit wages by region and race makes it clear that both region and race influence individuals' earnings upon exiting apprenticeship programs. Across races, all groups generally fare worse in the South and Midwest than in other regions. Across regions, however, blacks or African Americans earn the least overall. In the Midwest, this gap is particularly stark, with blacks or African Americans earning median exit hourly wages of just \$7.45, compared with their white counterparts, who make \$28.79 per hour upon completing the program—almost four times as much.²⁰ The top occupation choices across race by region may partly explain this gap. For example, the top occupation for blacks or African Americans in the Midwest is housekeeping, with 14 percent of black or African American apprentices participating in this occupation. For white apprentices, however, the top occupation is electrician work, with 14 percent of whites in the Midwest participating in this occupation. Black or African American apprentices in the Northeast and West fare much better, with respective top occupations as correction officers and electricians—both occupations associated with higher median earnings.

FIGURE 3
In all regions, black apprentices make less than all other races

Median exit wages by region and race, fiscal years 2008–2017



Notes: Wage data only include individuals who are exiting because they completed their apprenticeship program. Wages are real wages adjusted with the Consumer Price Index for All Urban Consumers (CPI-U) deflator. Wage data include apprentices who were incarcerated during their apprenticeship and were not making market wages. Of the data sample, 8.5 percent of apprentices made less than the federal minimum wage in fiscal years 2008 to 2017, indicating that these apprentices were incarcerated. Racial data include individuals of Hispanic ethnicity.

Source: Authors' calculations using data covering fiscal years 2008 to 2017 from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

FIGURE 4

Black apprentices in the Midwest are the only race whose top occupation is housekeeping

The top 5 occupations for those exiting in fiscal years 2008–2017, by race, in the Midwest and their corresponding median journeyperson wages

Top occupations for white apprentices		Top occupations for black apprentices		Top occupations for Asian apprentices	
Electrician	14.81%	Housekeeper	14.01%	Electrician	17.28%
Carpenter	8.15%	Electrician	6.77%	Truck driver, heavy	4.32%
Plumber	5.71%	Construction craft laborer	4.9%	Carpenter	3.89%
Pipe fitter (construction)	5.57%	Cook	4.37%	Construction craft laborer	3.89%
Structural steel worker	3.88%	Carpenter	4.11%	Pipe fitter (construction)	3.67%

Top occupations for Native Hawaiian or Pacific Islander apprentices		Top occupations for American Indians or Alaskan Native apprentices	
Electrician	8.33%	Electrician	18.38%
Carpenter	8.33%	Structural steel worker	5.83%
Truck driver, heavy	8.33%	Pipe fitter (construction)	5.09%
Plumber	7.87%	Carpenter	4.98%
Construction craft laborer	6.02%	Operating engineer	3.92%

Note: Wage data only include individuals who are exiting because they completed their apprenticeship program.

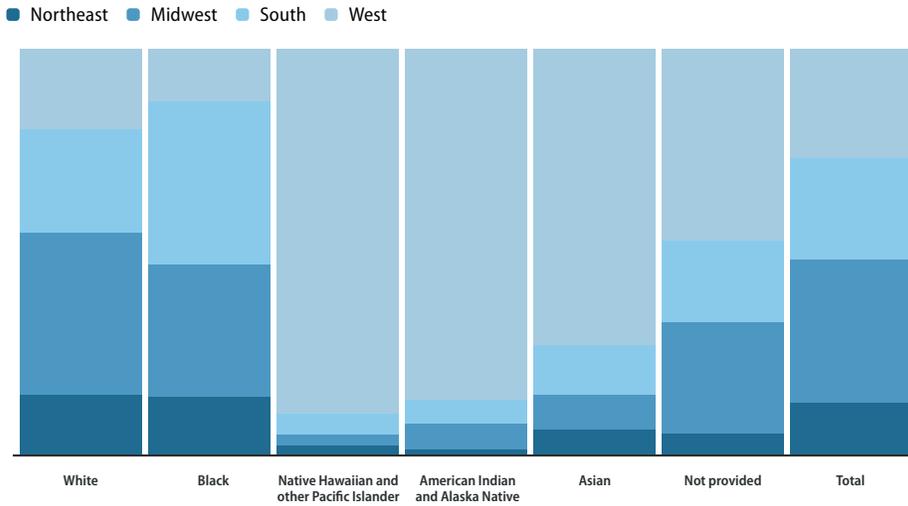
Source: Authors' calculations using fiscal year 2008 to fiscal year 2017 data from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

Regional differences in participation rates across racial and ethnic groups and gender

Blacks or African Americans are most likely to complete apprenticeship programs in the South and Midwest and least likely to complete programs in the West, where median wages among all groups are highest. Native Hawaiian or Pacific Islanders, American Indians or Alaskan Natives, and Asians are most likely to participate in apprenticeship programs in the West. Hispanics are also more likely than non-Hispanics to participate in the programs in the West.²¹ Overall, women are much less likely to participate in apprenticeship programs than men; in 2017, just 7.3 percent of apprentices were women.

FIGURE 5
Blacks and whites are most likely to participate in Registered Apprenticeship programs in the South, whereas other races are more likely to participate in the West

Breakdown by race after exit, fiscal years 2008–2017

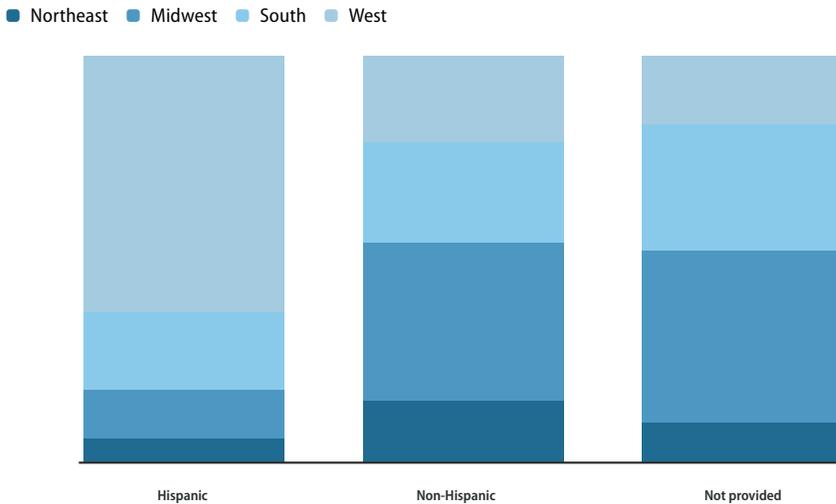


Notes: Wage data only include individuals who are exiting because they completed their apprenticeship program. Racial data include individuals of Hispanic ethnicity.

Source: Authors' calculations using data covering fiscal years 2008 to 2017 from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

FIGURE 6
Hispanic people are more likely to participate in Registered Apprenticeship programs in the Midwest or Northeast, where wages are highest overall, than in other regions

Breakdown by Hispanic and non-Hispanic ethnicity, fiscal years 2008–2017



Note: Wage data only include individuals who are exiting because they completed their apprenticeship program.

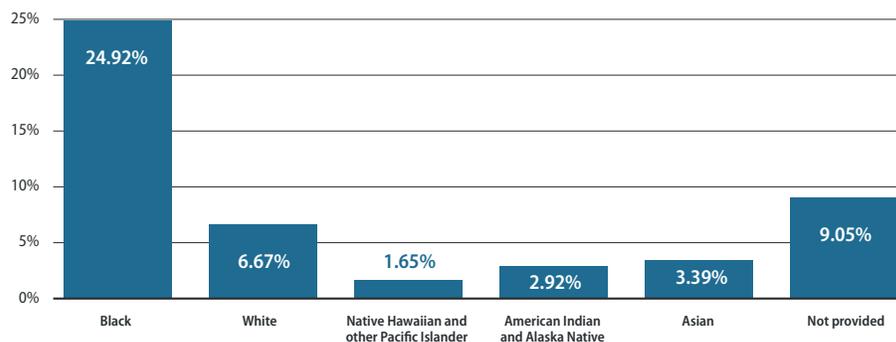
Source: Authors' calculations using data covering fiscal years 2008 to 2017 from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

Incarceration and apprenticeship program outcomes

This analysis includes those who complete apprenticeship programs while incarcerated, which likely contributes to the racial wage gap among those who participate in such programs. The authors' analysis assumes that those making less than the minimum wage upon completing the program are incarcerated. Of the data sample, 8.5 percent made less than the federal minimum wage in FYs 2008–2017, with female apprentices disproportionately represented in this group compared with male apprentices—at respective rates of 18 percent and 7.7 percent.²² Blacks or African Americans are more likely than all other racial groups combined to make less than the minimum wage upon completion of the apprenticeship program. One-quarter of black or African American apprentices exit these programs making less than the federal minimum wage. A previous analysis examining the median exit wage for incarcerated apprentices found that from 2008 to 2016, this group made just 35 cents per hour.²³

The vast majority of those who earn less than minimum wage are located in the Midwest, where wages for blacks or African Americans are lowest. On the other hand, only 2.5 percent of those making less than the federal minimum wage nationwide are located in the West, where wages are the highest for all races.²⁴

FIGURE 7
Blacks disproportionately make less than the minimum wage compared with other groups upon completing Registered Apprenticeship programs
Breakdown by race of those making less than the minimum wage upon completion



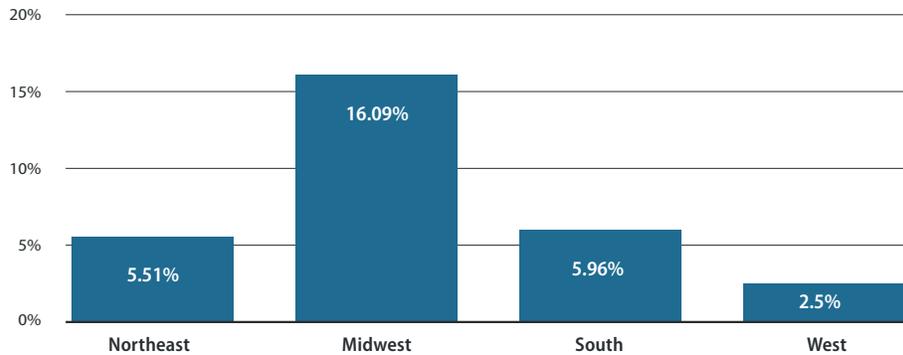
Note: Wage data only include individuals who are exiting because they completed their apprenticeship program. Racial data include individuals of Hispanic ethnicity.

Source: Authors' calculations using data covering fiscal years 2008 to 2017 from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

FIGURE 8

Midwesterners are more likely to make less than the minimum wage upon completing Registered Apprenticeship programs than people from other regions

Breakdown by region of those making less than minimum wage upon completion



Note: Wage data only include individuals who are exiting because they completed their apprenticeship program.

Source: Authors' calculations using data covering fiscal years 2008 to 2017 from U.S. Department of Labor, "Registered Apprenticeship Partners Information Data System (RAPIDS)." Data on file with the authors.

Conclusion

The incarceration of blacks and African Americans and occupational segregation along racial and gender lines require more research in order to make Registered Apprenticeship programs accessible—empowering them to honor their mission to “provide affordable paths to good jobs and, ultimately, careers.”²⁵

When preparing for the workforce of the future, it is necessary to consider the effects programs have on underserved and underrepresented groups who face greater barriers in the labor market. A closer look at regional differences in apprenticeship programs spotlights the disparate outcomes as a result of place—and further, how place, race, and gender interact to exacerbate existing pay inequities. Moving forward, apprenticeship programs must center racial and gender equity in order to best serve all Americans. If this were the case, apprenticeship programs could equitably equip workers with the skills needed to learn on the job while earning good wages and develop a workforce that meets the needs of the 21st century.

Daniella Zessoules is a special assistant for Economic Policy at the Center for American Progress. Olugbenga Ajilore is a senior economist at the Center.

**Update, January 16, 2019: This issue brief has been updated to reflect that the analysis does not differentiate between union and nonunion Registered Apprenticeships. Further explanation is available in the methodological note.*

Methodological note:

This analysis uses the U.S. Department of Labor’s Registered Apprenticeship Partners Information Data System (RAPIDS) database, containing individual level data from 25 Office of Apprenticeship states and 9 of the 27 State Apprenticeship Agency states or territories.²⁶ The analysis breaks down Registered Apprenticeship outcomes by defined census regions and divisions. However, several states are not included in the RAPIDS database, including Washington, Oregon, Hawaii, Montana, Minnesota, Wisconsin, New Mexico, Virginia, North Carolina, Maryland, Delaware, New York, Connecticut, Massachusetts, Vermont, and Maine.

It should be noted that some of the omitted states—including Washington, Oregon, New York, Minnesota, Connecticut, Maine, Montana, and Massachusetts—have proportionally higher rates of unionization. Because of this, this analysis does not distinguish between union and nonunion apprenticeship programs. Previous analyses have concluded that wage rates are greater among union apprenticeship programs than in nonunion apprenticeship programs. Participation and completion rates for women and people of color have also been shown to be higher in union programs than in nonunion programs.²⁷ For example, a report on the Vikings Stadium project, which included joint labor-management apprenticeships with targeted workforce goals, showed substantial success in hiring women and people of color in the construction industry.²⁸ A study of union and nonunion construction workers in union apprenticeship programs in New York found that black union construction workers earn 36.1 percent more than black nonunion construction workers.²⁹ Also, it is worth noting that incarceration rates may affect wage differentials between union and nonunion programs. This will be the subject of future CAP research.

Although industry-recognized apprenticeships (IRAPs) exempt some industries from meeting certain wage requirements, including those mandated in the Davis-Bacon Act, IRAPs cannot be used in the construction industry or for military apprenticeships.³⁰

Endnotes

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