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Achieving Racial Equity in Engineering Would Take 76 Years for Latinx and Black Workers, Georgetown University Report Says

More than 70 years of efforts to diversify the profession have fallen well short of parity

(Washington, DC, June 8, 2021) Engineering occupations are some of the highest-paying and most prestigious in the US labor market, but they are also some of the least diverse. A new report from the Georgetown University Center on Education and the Workforce (CEW) in partnership with the Association of Public and Land-grant Universities (APLU) finds that of the nearly 1.7 million prime-age engineering workers in the United States in 2019, 81% were either White or Asian, and 84% were men. *Mission Not Accomplished: Unequal Opportunities and Outcomes for Black and Latinx Engineers* finds that a mere 3% of engineers working in the field in 2019 were either Black/African American women or Latinx women.

Between 1990 and 2019, the total number of Black/African American and Latinx students who graduated with a bachelor's degree in engineering increased nearly fourfold, but there is still far from equitable representation. Over the same time period, the Latinx share of bachelor's degrees in engineering increased from 3% to 13%, while the Black/African American share held steady at 4%. At this pace, achieving racial equity in engineering on par with population share would take 76 years for Latinx and Black/African American workers as a group and up to 256 years for Black/African American workers alone.

“Having a career in engineering means you’ve made it,” said CEW Director and report lead author Anthony P. Carnevale. “While it’s a marker of climbing the wage and status occupational pyramid, it’s also a social indicator of progress on racial and gender justice.”

Engineering pays well. A person with an engineering bachelor's degree (and no graduate degree) earns 25% more on average than the typical bachelor's degree holder in the first job after graduation. Specialized engineering degrees can boost earnings even more: on average, a person with a bachelor's degree in petroleum engineering (among the highest paying majors at an average of \$106,000) earns 90% more than the average bachelor's degree holder and up to 125% more than those with some of the lowest paying bachelor's degrees.

However, as with almost all fields, Black/African American and Latinx workers earn less than the average. While White and Asian workers with a bachelor's degree in engineering earn 61% and 71% more, respectively, than the average for all bachelor's degree holders, Black/African American and Latinx engineering majors earn just 15% and 18% more, respectively. To attain earnings comparable to those of White engineering majors, Black/African American or Latinx engineers must earn an additional degree beyond the bachelor's degree. On average, a White worker with a bachelor's degree in engineering earns \$90,000 a year. A Black/African American worker must complete a graduate degree in engineering in order to earn, on average, \$87,000. The same applies to Latinx workers, who must earn a graduate degree in engineering in order to earn, on average, \$92,000.

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“This report makes clear that Black and Latinx individuals are underrepresented and underpaid in the engineering workforce,” said Peter McPherson, president of the Association of Public and Land-grant Universities. “It will take a comprehensive, committed, and innovative approach from employers and universities to close the gap. It shouldn’t take decades or centuries to ensure diversity in the engineering workforce mirrors diversity in society. Universities have an important role to play in attracting, supporting, and graduating more Black and Latinx students in engineering programs. Achieving this goal requires a diverse faculty who can inspire a growing number of Black and Latinx students to pursue engineering degrees and careers.”

Specialization in engineering subfields can be lucrative. However, Black/African American and Latinx students who major in engineering are far more likely to major in general engineering than White or Asian students. While only 14% of White and Asian engineering majors hold bachelor’s degrees in general engineering, 23% and 19% of Black/African American and Latinx engineering majors, respectively, have degrees in general engineering.

When Latinx engineering majors do specialize, many of them find themselves in lower-paying fields. For example, 10% of Latinx engineering students major in industrial and manufacturing engineering, a greater share than for any other ethnic or racial group. However, this degree pays only 2% more than a general engineering degree.

Many degree holders tend to leave the engineering profession for other careers. For White and Asian men in engineering, moving out of field leads to higher earnings. By contrast, Black/African American and Latinx men earn more when they remain in field. This is because White engineers working out of field are more likely to work in management occupations, and Asian engineers working out of field are usually still working in other STEM-related occupations. On the other hand, Black/African American and Latinx engineers working out of field are more likely to work in blue-collar occupations, sales and office support, and food and personal services occupations.

Women’s representation in engineering occupations has barely improved. Ten years ago, 15% of engineers were women, compared to 16% today. Overall, women who work in engineering earn less (\$82,000) than men (\$90,000). Black/African American women engineers earn \$80,000 per year and Latinx women engineers are paid even less, \$76,000. Women engineers working out of field also suffer a loss of earnings, mostly because they disproportionately work as teachers.

“If we want to see more underrepresented students and women in engineering jobs, we will need fresh approaches to recruitment and a stronger focus on enrolling, counseling, graduating these students, and seeing that they obtain good jobs that pay equitable wages,” said CEW Chief Economist and report co-author Nicole Smith. “Hiring diverse faculty will also help.”

Other Key Findings:

- White and Asian men with doctorates are paid more in almost every subdivision in engineering than men of other races and ethnicities with doctorates.
- Of all the engineering subdivisions pursued by Black/African American and Latinx engineers, civil engineering had the lowest earnings (\$76,000 on average).
- By age, White engineers between 50 and 75 are the highest earning group (\$117,000/year), and Asian engineers under 29 are the lowest earning group (\$65,000/year).
- Black/African American and Latinx engineers experience the slowest increases in earnings with age, and on average, they earn \$6,000 less annually than the total engineering population.

To view the full report and executive summary, visit cew.georgetown.edu/engineering.

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The Georgetown University Center on Education and the Workforce (CEW) is an independent, nonprofit research and policy institute that studies the links among individual goals, education and training curricula, and career pathways. CEW is affiliated with the Georgetown University McCourt School of Public Policy. For more information, visit cew.georgetown.edu. Follow CEW on Twitter [@GeorgetownCEW](https://twitter.com/GeorgetownCEW), [Facebook](#), [YouTube](#), [LinkedIn](#), and [Medium](#).

APLU is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities in the US, Canada, and Mexico. With a membership of 244 public research universities, land-grant institutions, state university systems, and affiliated organizations, APLU's agenda is built on the three pillars of increasing degree completion and academic success, advancing scientific research, and expanding engagement. Its 2018 Status Report on Engineering Education: A Snapshot of Diversity in Degrees Conferred in Engineering, examined disparities and trends in engineering degrees by subdiscipline, race, gender, and degree level on the national and institutional level. Annually, member campuses enroll 5.0 million undergraduates and 1.3 million graduate students, award 1.3 million degrees, employ 1.3 million faculty and staff, and conduct \$49.2 billion in university-based research.