North Carolina

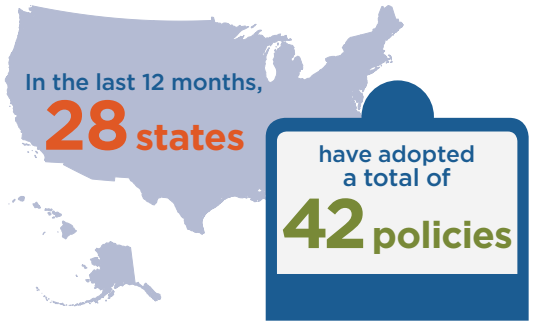
2020 State of Computer Science Education: Illuminating Disparities

Computer science education is more important than ever. The COVID-19 pandemic has highlighted our society's reliance on computing and its power to help businesses innovate and adapt, yet at the same time has surfaced greater disparities for students studying computer science. Computing is the number one source of all new wages in our economy, and there are currently 400,000 open computing jobs across the United States. Yet the U.S. education system does not provide widespread access to this critical subject.

Although access to computer science is key to addressing the equity issues in society, only 47% of our nation's high schools teach foundational computer science. In addition, students from marginalized racial and ethnic groups, students in Title I schools, and students from rural areas are less likely to attend a school that provides access to this critical subject.

States are working to broaden participation in computer science by passing policies to make computer science a fundamental part of the K–12 education system. In addition to adopting more policies, state education leaders extend and innovate on previously adopted policies: continuing to fund computer science education, supporting teachers and students, and providing leadership and guidance.

States that have adopted more of these nine policies have a larger percentage of high schools teaching computer science. States that have funded K–12 computer science professional learning have higher implementation rates than states that have not provided direct funding.



Pursuing an access agenda to K–12 computer science provides policymakers a rare opportunity to address equity, workforce, and education issues on a bipartisan basis. States should enact or expand on all nine of these education policies in order to provide opportunities for all students regardless of where they live, their race/ethnicity, gender, or socioeconomic status.

Nine Policies to Make Computer Science Fundamental

1. Create a state plan for K–12 computer science
2. Define computer science and establish K–12 CS standards
3. Allocate funding for CS teacher professional development
4. Implement clear certification pathways for computer science teachers
5. Create computer science preservice programs at IHEs
6. Establish dedicated state computer science positions
7. Require that all secondary schools offer computer science
8. Allow computer science to satisfy a core graduation requirement
9. Allow CS to satisfy admission requirements at IHEs

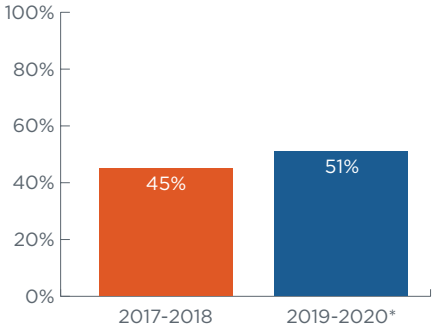
North Carolina Computer Science Policy

State Plan Yes	The North Carolina Department of Public Instruction developed—and presented to the legislature—a state plan for expanding computer science in 2018. The plan includes strategies to engage students from marginalized racial and ethnic groups underrepresented in computer science, female students, and low-income students.
Standards Yes	North Carolina adopted K–12 computer science standards in August 2020, as required by HB 155 (2017). Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.
Funding Yes	SB 99 (FY 2019, continued in FY 2020) allocated $500K annually for implementation of the Computer Science Education Plan, which focuses on increasing participation for underrepresented student groups, including female students, low-income students, and students from marginalized racial and ethnic groups. Additionally, SB 99 (FY 2019) and SB 257 (FY 2018) allocated $400K annually for the Coding and Mobile Application Grant Program, which could be used for teacher professional development in computer science.
Certification Yes	In North Carolina, teachers with existing CTE licensure can obtain a 9–12 CTE computer programming endorsement through academic coursework.
Preservice No	North Carolina has not yet established programs at institutions of higher education to offer computer science to preservice teachers. The computer science teacher shortage can be addressed by exposing more preservice teachers to computer science during their required coursework or by creating specific pathways for computer science teachers.
CS Supervisor Yes	The North Carolina Department of Public Instruction has a Director of Computer Science and Technology.
All HS Offer No	North Carolina does not yet require that all secondary schools offer computer science. The state can support the expansion of computer science courses by adopting policies that require schools to offer a computer science course based on rigorous standards, with appropriate implementation timelines and allowing for remote and/or in-person courses.
Grad Credit Yes	In North Carolina, computer science can count as the fourth mathematics credit for graduation in the Future-Ready Core track.
IHE Admission No	North Carolina does not yet allow computer science to count as a core admission requirement at institutions of higher education. Admission policies that do not include rigorous computer science courses as meeting a core entrance requirement, such as in mathematics or science, discourage students from taking such courses in secondary education. State leaders can work with institutions of higher education to ensure credit and articulation policies align with secondary school graduation requirements.

North Carolina is a member of the ECEP Alliance, has a CSTA chapter, and Governor Roy Cooper is a member of the Governors' Partnership for K–12 Computer Science.

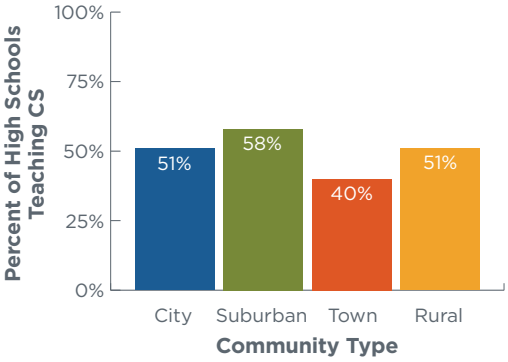
Computer Science Access and Participation in North Carolina

High Schools Teaching CS



*Data was not collected for the 2018–2019 school year

Percent of High Schools Teaching CS by Community Type

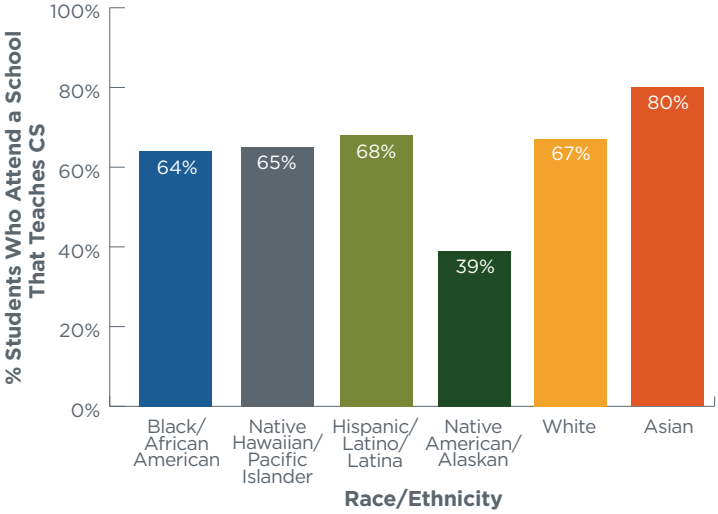


North Carolina has averaged **24,036** open computing jobs each month*

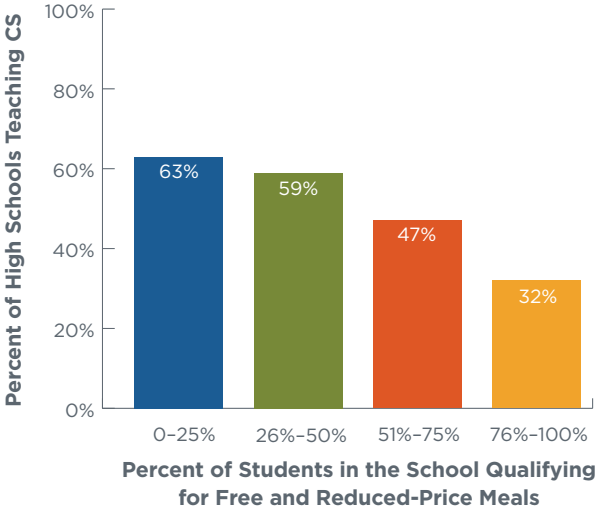
1,992 Bachelor's degrees in 2018 in North Carolina*

*Sources: The Conference Board and the National Center for Education Statistics

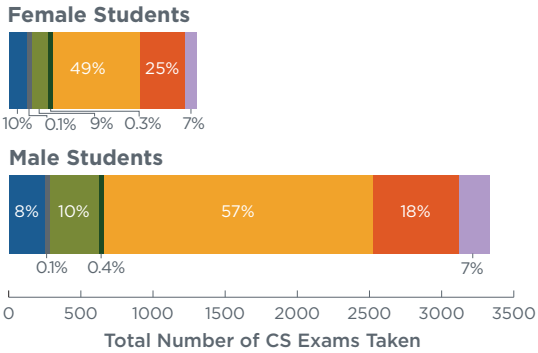
Race/Ethnicity and Access to Computer Science



Income Level and Access to CS



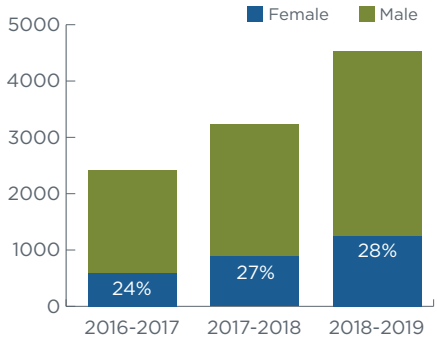
AP CS Participation by Race/Ethnicity and Gender



LEGEND

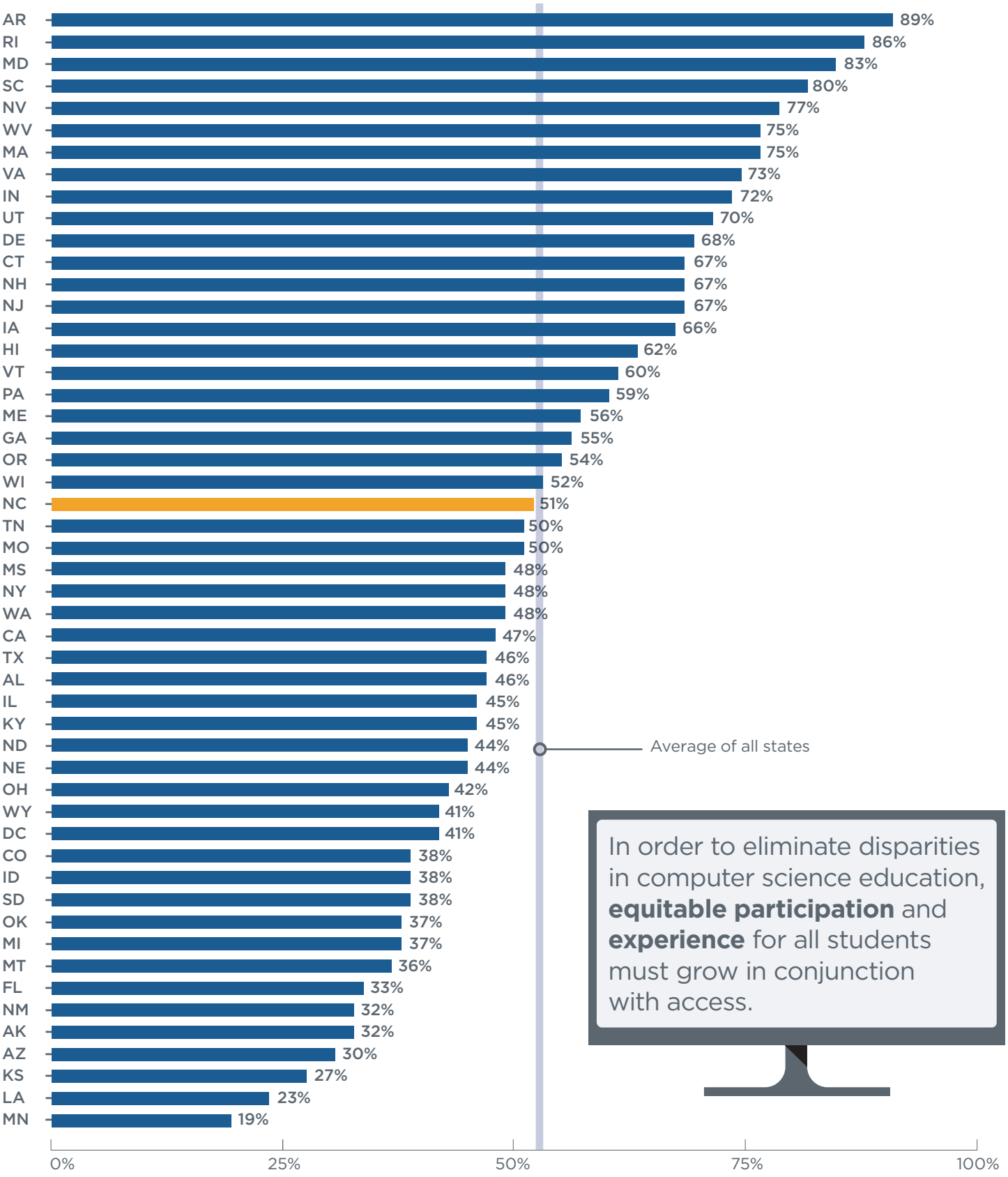
- Black/African American
- Native Hawaiian/Pacific Islander
- Hispanic/Latino/Latina
- Native American/Alaskan
- White
- Asian
- 2+ Races/Other

AP CS Student Participation



Native American/Alaskan students are 2.6 times less likely, Hispanic/Latino/Latina students are 2 times less likely, and Black/ African-American students are 3.5 times less likely than their white and Asian peers to take an AP CS exam when they attend a school that offers it.

Percent of High Schools Teaching Computer Science by State



In order to eliminate disparities in computer science education, **equitable participation** and **experience** for all students must grow in conjunction with access.

For more details on policy, access, and participation, see the full 2020 State of Computer Science Education report at advocacy.code.org/stateofcs

Advocacy Coalition

ECEP Expanding Computing Education Pathways

CSTA