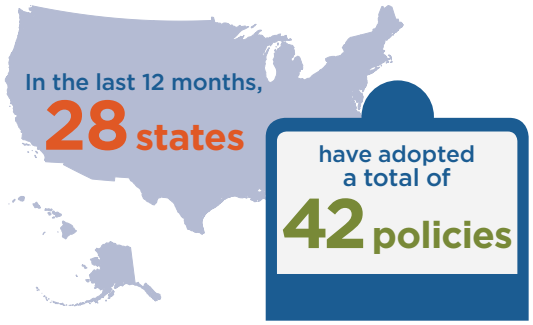
Maryland
2020 State of Computer Science Education: Illuminating Disparities

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. All nine policies can promote access to and equity within rigorous and engaging computer science courses when stakeholders make equity an explicit focus on policy development and implementation monitoring.

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

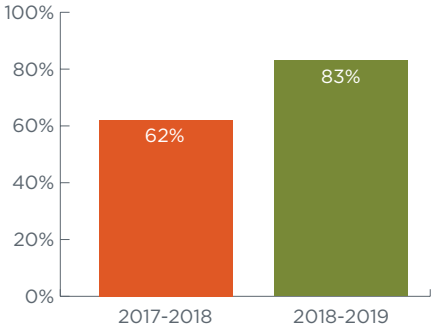
Maryland Computer Science Policy

State Plan Yes	The Maryland Center for Computing Education developed a state plan for computer science in 2018. The plan addresses efforts to increase enrollment in computer science courses for female students, students with disabilities, and students from marginalized racial and ethnic groups underrepresented in computer science.
Standards Yes	Maryland approved K–12 computer science standards aligned to the CSTA standards in 2018. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.
Funding Yes	HB 281 (FY 2020 and 2021) allocated $1M annually, and SB 185 (FY 2019) allocated $5M for the computer science education initiative. The grants prioritize applications that focus on serving areas with high poverty, rural areas, students with disabilities, female students, or students from marginalized racial and ethnic groups.
Certification Yes	In Maryland, teachers with existing licensure can obtain a 7–12 endorsement through academic coursework or passing the Praxis CS exam. An initial computer science licensure requires completing academic coursework and passing the exam. Pathways for CTE, alternative certification, and an accelerated certificate also exist. A stipend is available through the MCCE for teachers who pass the exam.
Preservice Yes	The Maryland State Department of Education has approved teacher preparation programs leading to certification in computer science and lists these programs publicly. The state provides funding for teacher preparation institutions to establish computer science education programs via HB 281 (2018).
CS Supervisor Yes	The Maryland State Department of Education has a Computer Science Education Specialist as well as a Career Programs, STEM, and Computer Science Coordinator who work with the Director of the Maryland Center for Computing Education to oversee computer science education.
All HS Offer Yes	HB 281 (2018) required all high schools to offer at least one computer science course by the 2021–2022 school year and asks each school board to make efforts to incorporate computer science in each elementary and middle school and to increase the enrollment of female students, students with disabilities, and students of underrepresented ethnic or racial groups.
Grad Credit Yes	In Maryland, Foundations of Computer Science or Computer Science Principles can fulfill the technology credit requirement. AP Computer Science A can count as one of the four mathematics credits for graduation.
IHE Admission Yes	AP Computer Science can count as one of the four mathematics credits required for admission at institutions of higher education, as long as computer science is not the final year course, which aligns with Maryland's high school graduation policy.

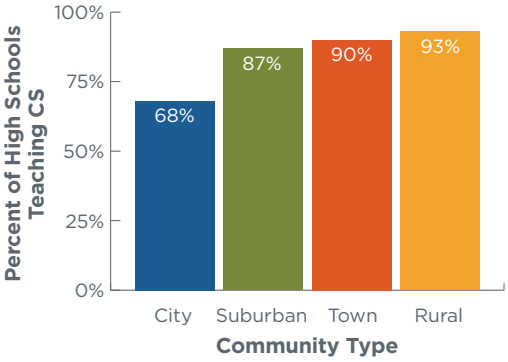
Maryland is a member of the ECEP Alliance, has a CSTA chapter, and Governor Larry Hogan is a member of the Governors' Partnership for K–12 Computer Science.

Computer Science Access and Participation in Maryland

High Schools Teaching CS



Percent of High Schools Teaching CS by Community Type

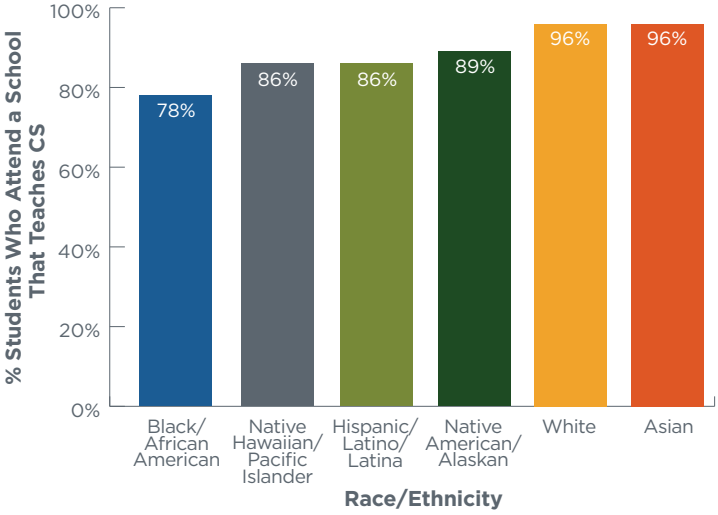


Maryland has averaged **19,085** open computing jobs each month*

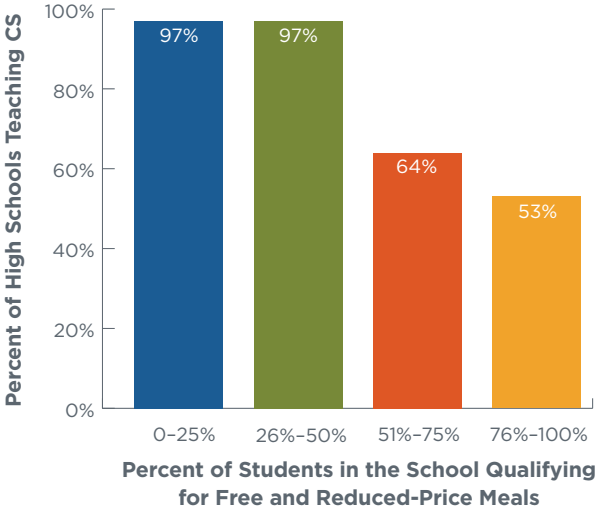
4,153 CS bachelor's degrees in 2018 in Maryland*

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

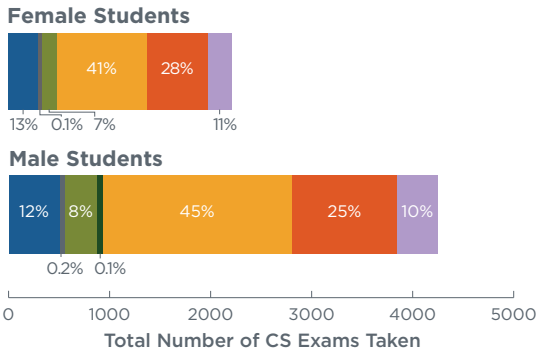
Race/Ethnicity and Access to Computer Science



Income Level and Access to CS



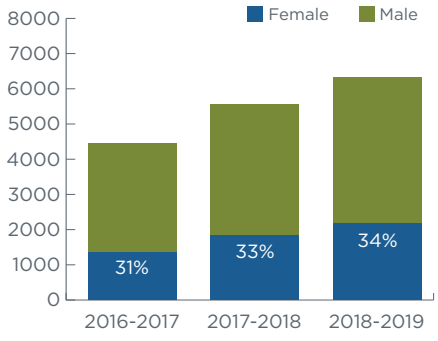
AP CS Participation by Race/Ethnicity and Gender



LEGEND

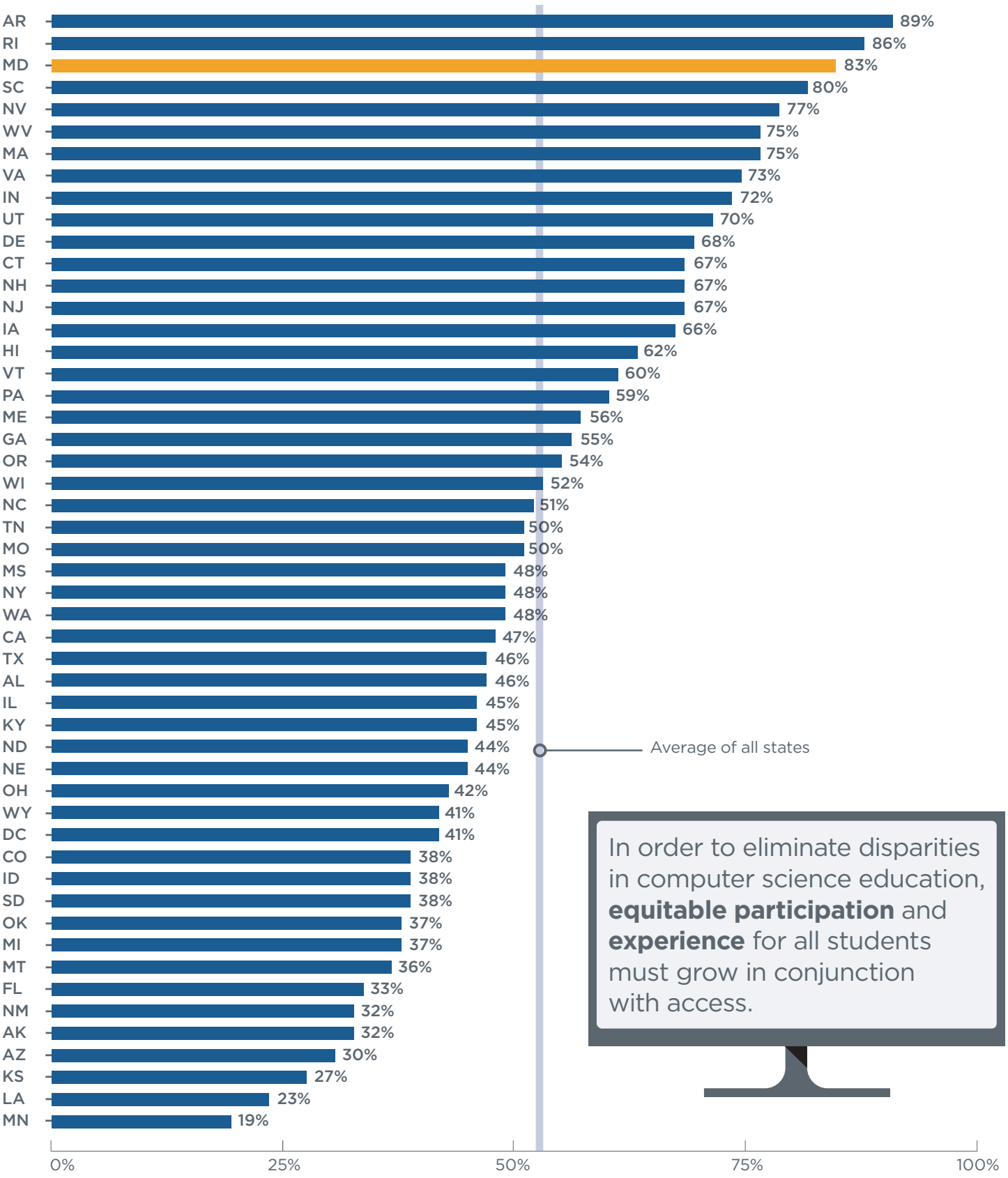
- Black/African American
- Native Hawaiian/Pacific Islander
- Hispanic/Latino/Latina
- Native American/Alaskan
- White
- Asian
- 2+ Races/Other

AP CS Student Participation



Hispanic/Latino/Latina students and Black/African American students are each 3 times less likely, and Native American/Alaskan students are 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