



Virginia

2020 State of Computer Science Education: Illuminating Disparities

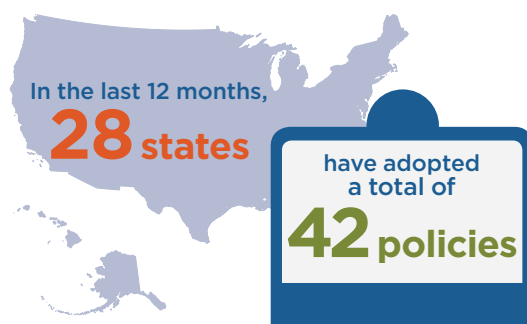
Computer science education is more important than ever. The COVID-19 pandemic has highlighted our society's reliance on computing and its power to help businesses innovate and adapt, yet at the same time has surfaced greater disparities for students studying computer science. Computing is the number 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

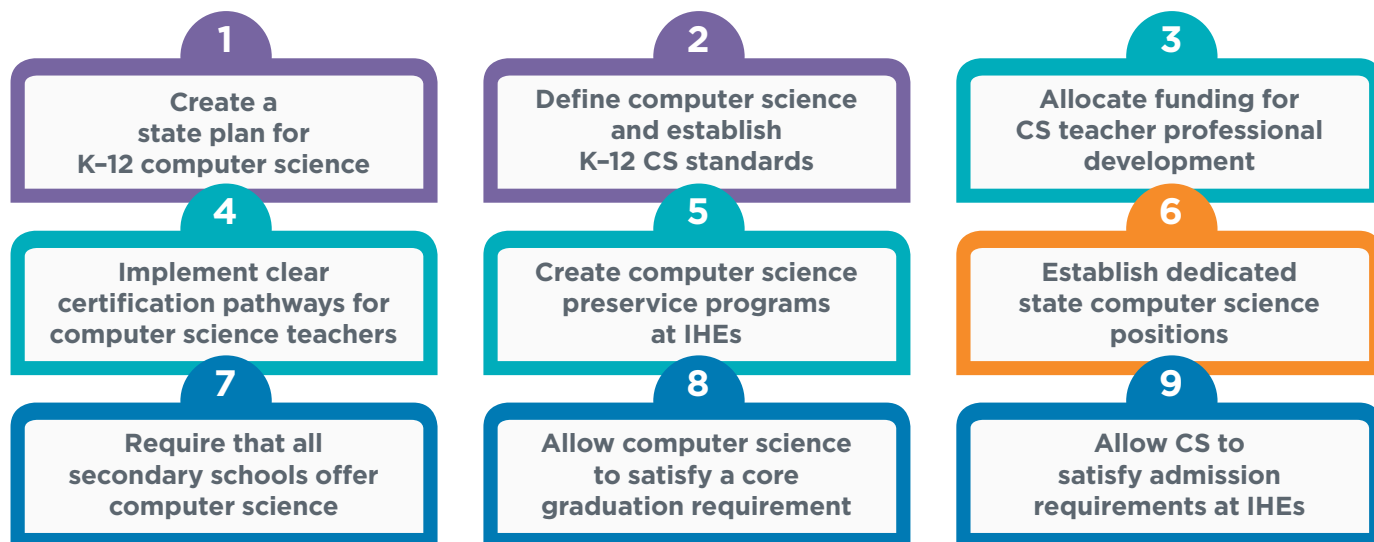
computer science education, supporting teachers and students, and providing leadership and guidance.

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





Virginia Computer Science Policy

State Plan

No

Virginia has not yet created a state plan for K-12 computer science. A plan that articulates the goals for computer science, strategies for accomplishing the goals, and timelines for carrying out the strategies is important for making computer science a fundamental part of a state's education system.

Standards

Yes

Virginia added mandatory K-12 computer science standards to the state Standards of Learning in 2017, effectively requiring all K-12 schools to offer instruction in computer science. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

Funding

Yes

HB 30 (FY 2021 and 2022) allocated \$1.35M annually to support computer science education and implementation of the standards, including professional development. HB 30 (FY 2021 and 2022), HB 1700 (FY 2019 and 2020), and HB 1500 (FY 2017 and 2018) also allocated \$550K annually for K-12 computer science professional development with CodeVA.

Certification

Yes

In Virginia, teachers with existing licensure can obtain an endorsement through academic coursework or passing the Praxis CS exam. An initial license in computer science requires completing a state-approved program or academic coursework. The Department of Education convened a workgroup on micro-credentials for certification in subjects including computer science and is now developing recommendations as authorized by HB 836 (2020).

Preservice

Yes

The Virginia Department of Education has approved teacher preparation programs leading to certification in computer science and lists these programs publicly.

CS Supervisor

Yes

The Virginia Department of Education has a Computer Science and Virtual Learning Specialist.

All HS Offer

Yes

HB 831 (2016) added computer science into the Virginia K-12 Standards of Learning, which all schools must implement.

Grad Credit

Yes

In Virginia, a variety of computer science courses can count as a credit for graduation in lab science, career and technical education, or mathematics at or above the level of Algebra II. Students in English as a Second Language programs can add a computer science elective for graduation credit if they test out of their foreign language requirement.

IHE Admission

Yes

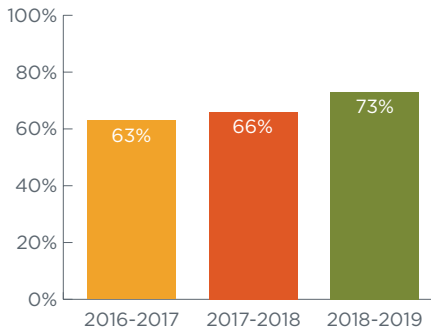
Virginia does not yet allow computer science to count as a core admission requirement at institutions of higher education. Admission policies that do not include rigorous computer science courses as meeting a core entrance requirement, such as in mathematics or science, discourage students from taking 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.

Virginia is a member of the ECEP Alliance, has CSTA chapters, and Governor Ralph Northam is a member of the Governors' Partnership for K-12 Computer Science.

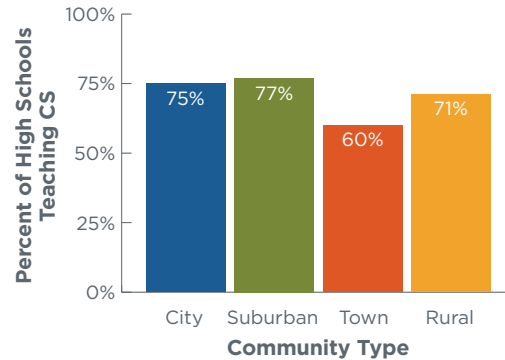


Computer Science Access and Participation in Virginia

High Schools Teaching CS



Percent of High Schools Teaching CS by Community Type



Virginia has averaged

35,164

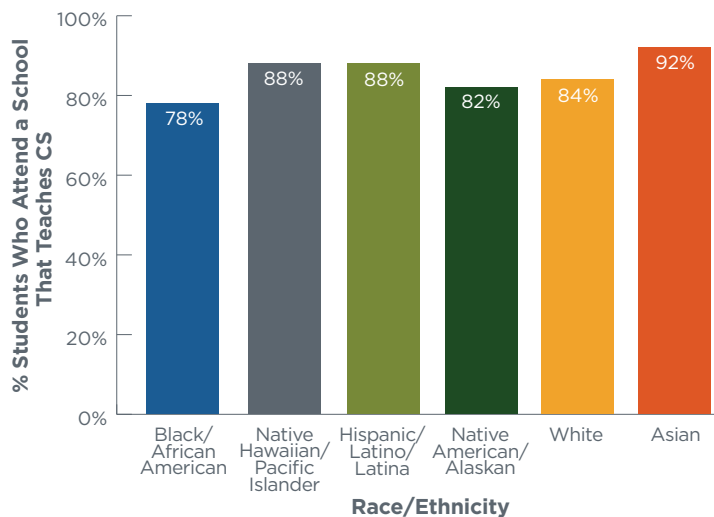
open computing jobs each month*

2,098

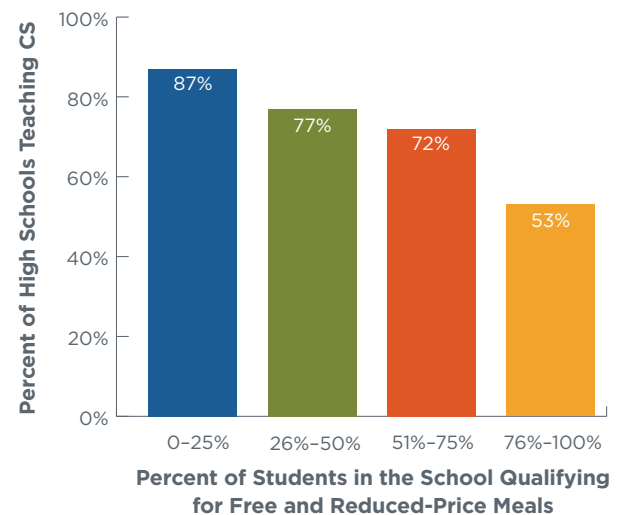
Bachelor's degree in 2018 in Virginia*

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

Race/Ethnicity and Access to Computer Science

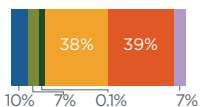


Income Level and Access to CS

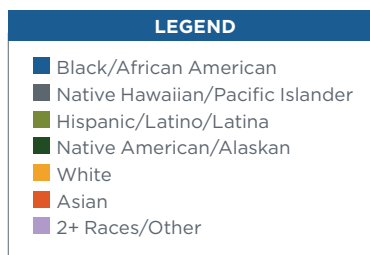
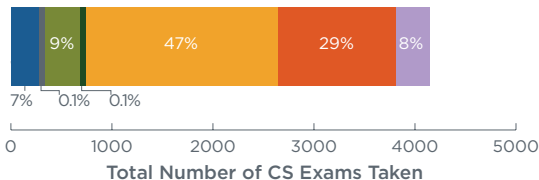


AP CS Participation by Race/Ethnicity and Gender

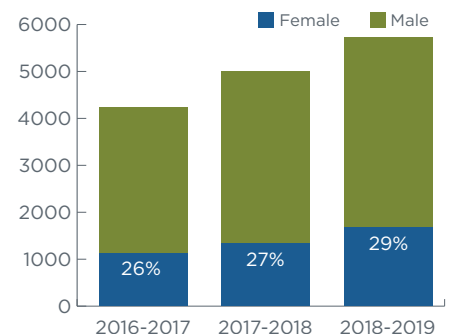
Female Students



Male Students



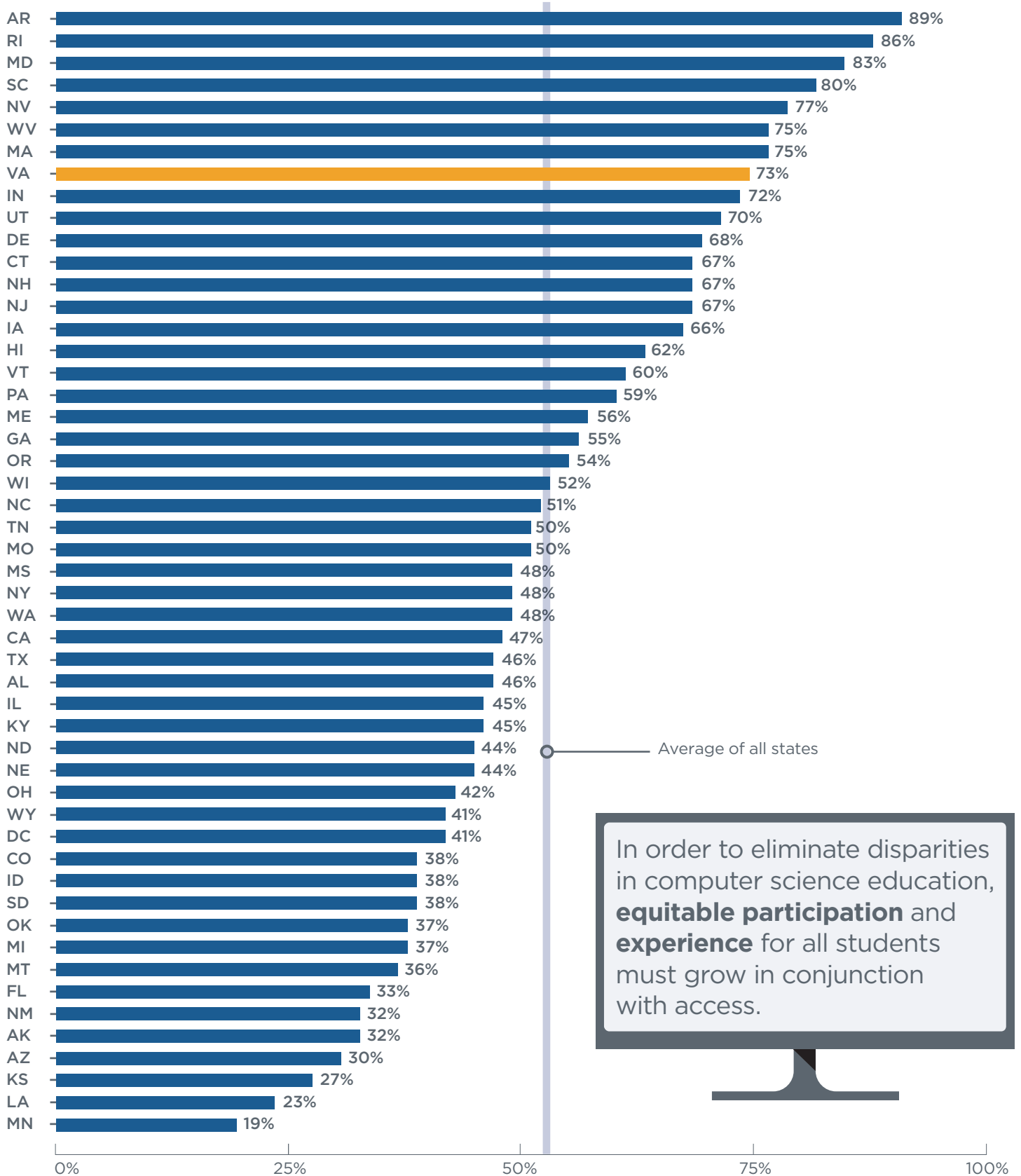
AP CS Student Participation



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

