



Iowa

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



Iowa Computer Science Policy

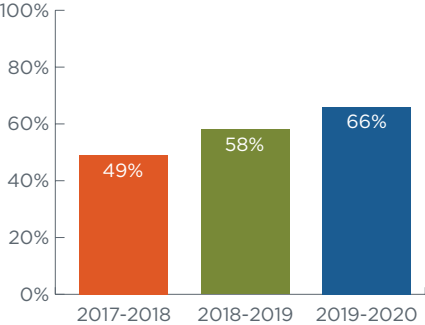
State Plan	Iowa HF 2629 (2020) required the development of a statewide K-12 computer science plan by July 1, 2022. A plan that articulates the goals for computer science, strategies for accomplishing the goals, and timelines for carrying out the strategies is important for making computer science a fundamental part of a state's education system.
In Progress	
Standards	Iowa adopted the CSTA K-12 Computer Science Standards in 2018. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.
Yes	
Funding	HF 2643 (FY 2021), HF 758 (FY 2020) and HF 642 (FY 2019) allocated \$500K annually for computer science professional development. Another \$500K was added to the fund in FY 2019. The grant rubric prioritizes targeted efforts to increase computer science participation by underrepresented groups (including female students, economically disadvantaged students, and students who are Black/African American, Hispanic/Latino/Latina, American Indian/Alaskan, or Native Hawaiian/Pacific Islander).
Yes	
Certification	In Iowa, teachers with existing licensure can obtain a 5-12 or K-8 endorsement by completing a state-approved program or academic coursework in both content and methods. The state waived these requirements in 2018 for teachers who could demonstrate content knowledge and successful teaching experience.
Yes	
Preservice	Iowa 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.
No	
CS Supervisor	The Iowa Department of Education has a Computer Science Education Program.
Yes	
All HS Offer	HF 2629 (2020) required all high schools to offer computer science by July 1, 2022, and required all elementary and middle schools to offer computer science in at least one grade level by July 1, 2023.
Yes	
Grad Credit	Iowa passed a permissive and encouraging policy to allow computer science to count as a mathematics credit for graduation, but it is a district decision.
District Decision	
IHE Admission	Computer science can count towards a core subject area credit required for admission at institutions of higher education in Iowa.
Yes	

Iowa has a CSTA chapter and Governor Kim Reynolds is a member of the Governors' Partnership for K-12 Computer Science.

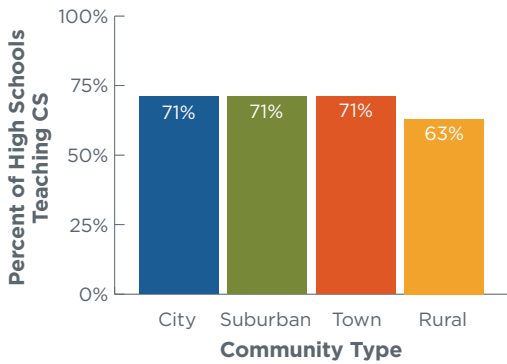


Computer Science Access and Participation in Iowa

High Schools Teaching CS



Percent of High Schools Teaching CS by Community Type

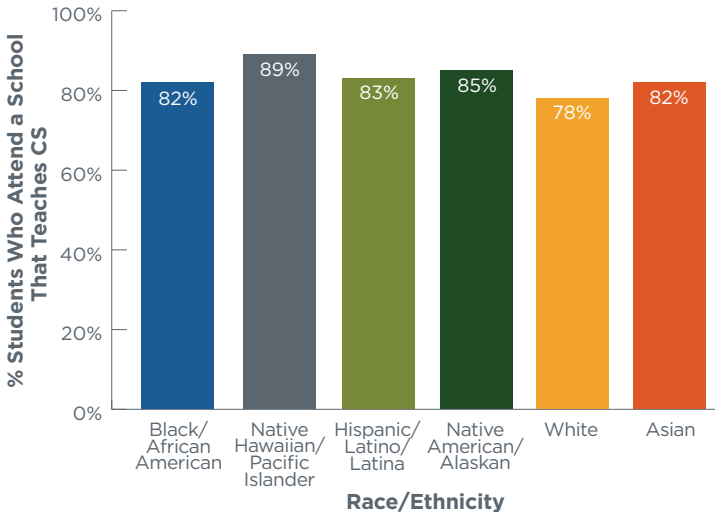


Iowa has averaged
2,984
open computing jobs
each month*

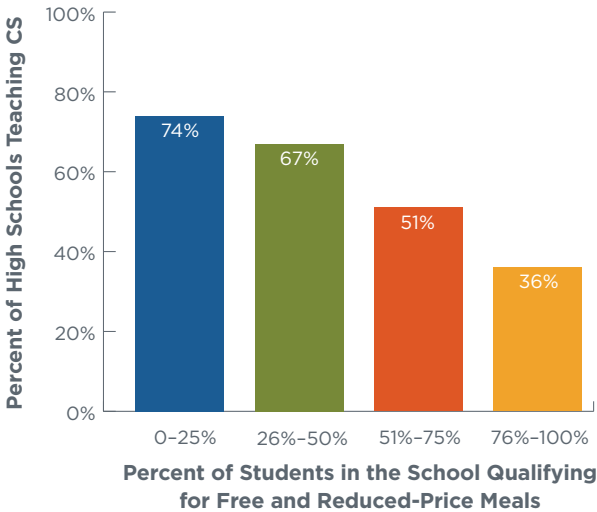
679
CS bachelor's degrees
in 2018 in Iowa*

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

Race/Ethnicity and Access to Computer Science

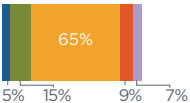


Income Level and Access to CS

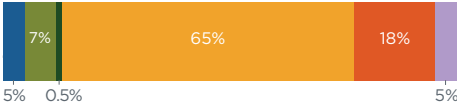


AP CS Participation by Race/Ethnicity and Gender

Female Students



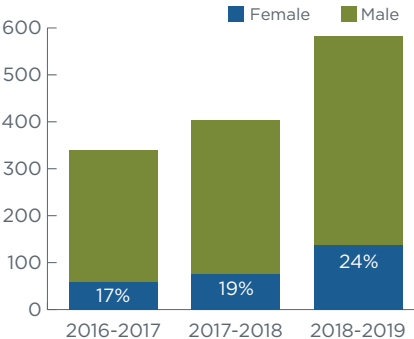
Male Students



LEGEND

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

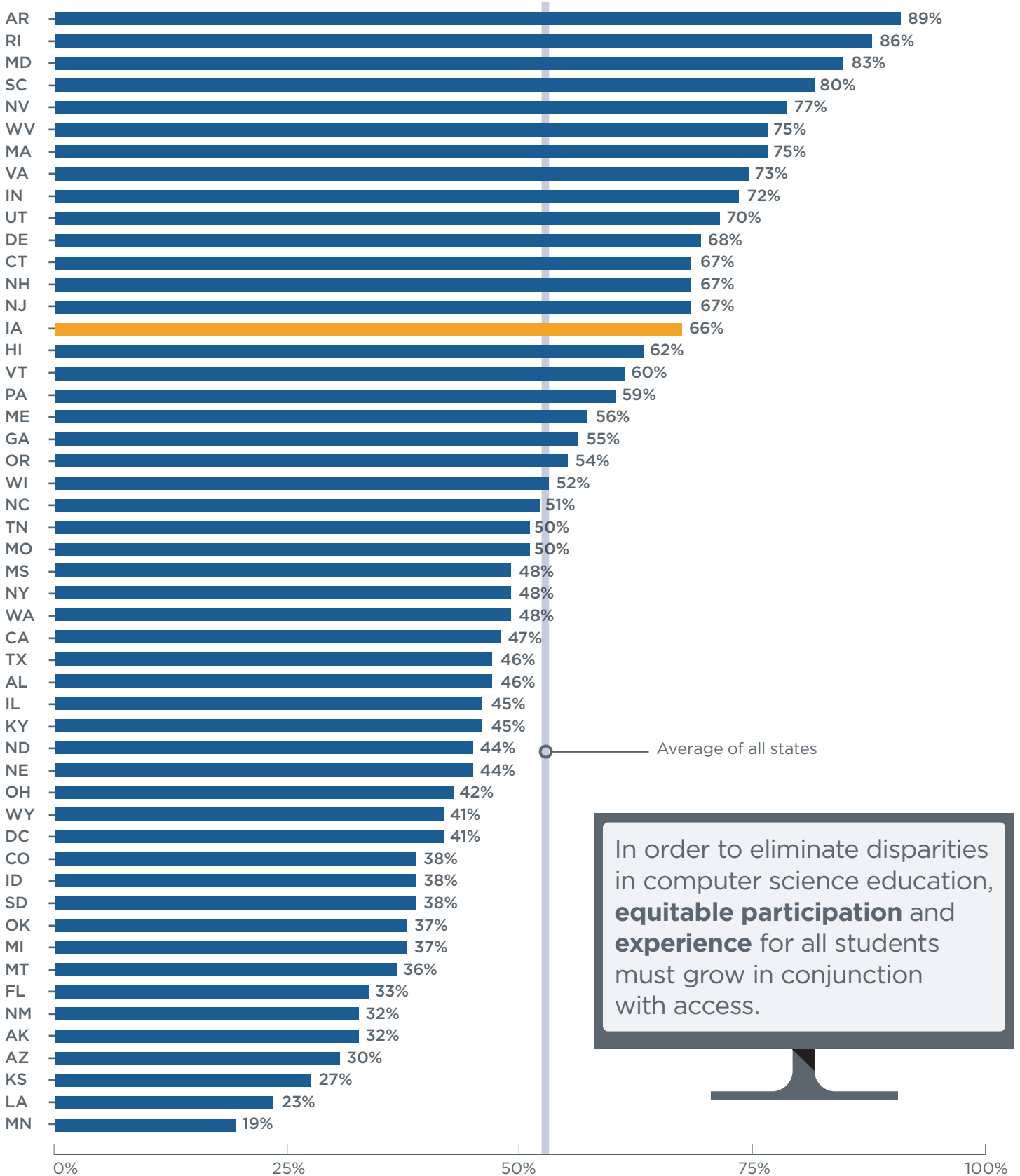
AP CS Student Participation



Hispanic/Latino/Latina students are 1.5 times less likely and Black/African American students are 2 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

