



2021 State of Computer Science Education

Nationally, just 51% of high schools offer computer science, up from 35% in 2018. This represents tremendous progress by teachers, school leaders, policymakers, and other advocates. But given the significance of computing in today's society, it is not enough for half of schools to lack even a single course. New data reveals disparities in who has access to and who participates in computer science education.

Over the past year, U.S. students, teachers, and families faced unprecedented challenges, making it more important than ever that computer science becomes a sustained part of the education system. Computer science supports the development of problem solving, creativity, metacognition, spatial skills, reasoning skills, and improvements in reading, writing, mathematics, and science test scores. Increasingly, computer science is recognized as a core literacy for students.

Students who attend rural schools, urban schools, or schools with higher percentages of economically disadvantaged students are less likely to have access to computer science.

States are working to broaden access and participation in computer science with policies to make computer science a fundamental part of the K-12 education system.

States that adopt **more of the nine policies** shown below have a greater percentage of high schools offering computer science.

Female students make up 49% of the elementary students enrolled in computer science, **44% of the middle school students,** and **only 31% of high school students.**

Although 78% of U.S. high school students attend a school that offers foundational computer science, **only 4.7% of students are enrolled in a course.**

Pursuing policies that expand access to K-12 computer science provides policymakers a rare opportunity to address equity, workforce, and education issues on a bipartisan basis.

Nine Policies to Make Computer Science Fundamental

The infographic consists of nine numbered policy cards arranged in a 3x3 grid. Each card is color-coded by a Policy Principle: Clarity (black), Capacity (blue), Leadership (green), Sustainability (red), and Equity and Diversity* (white). A legend on the right explains these principles. A note at the bottom right states that Equity and Diversity should be incorporated in each of the nine policies.

Policy Principle	Policy Number	Policy Description
Leadership	1	Create a state plan for K-12 computer science
Leadership	2	Define computer science and establish rigorous K-12 computer science standards
Capacity	3	Allocate funding for computer science teacher professional learning
Capacity	4	Implement clear certification pathways for computer science teachers
Capacity	5	Create preservice programs in computer science at higher education institutions
Leadership	6	Establish computer science supervisor positions in education agencies
Sustainability	7	Require that all high schools offer computer science
Sustainability	8	Allow a computer science credit to satisfy a core graduation requirement
Sustainability	9	Allow computer science to satisfy a higher education admission requirement

Policy Principles

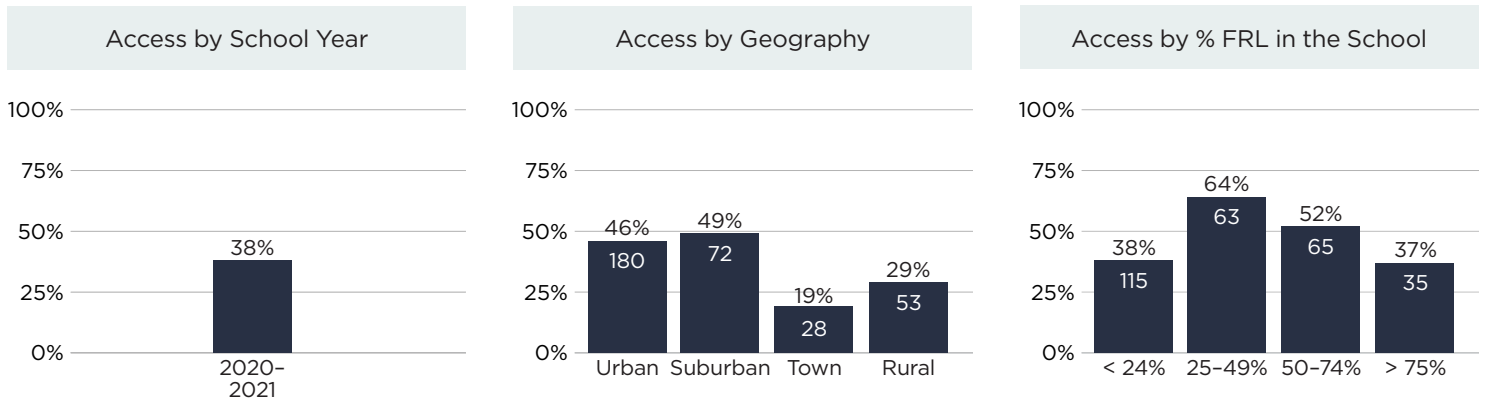
- Clarity
- Capacity
- Leadership
- Sustainability
- Equity and Diversity*

**Equity and Diversity should be incorporated in each of the nine policies.*

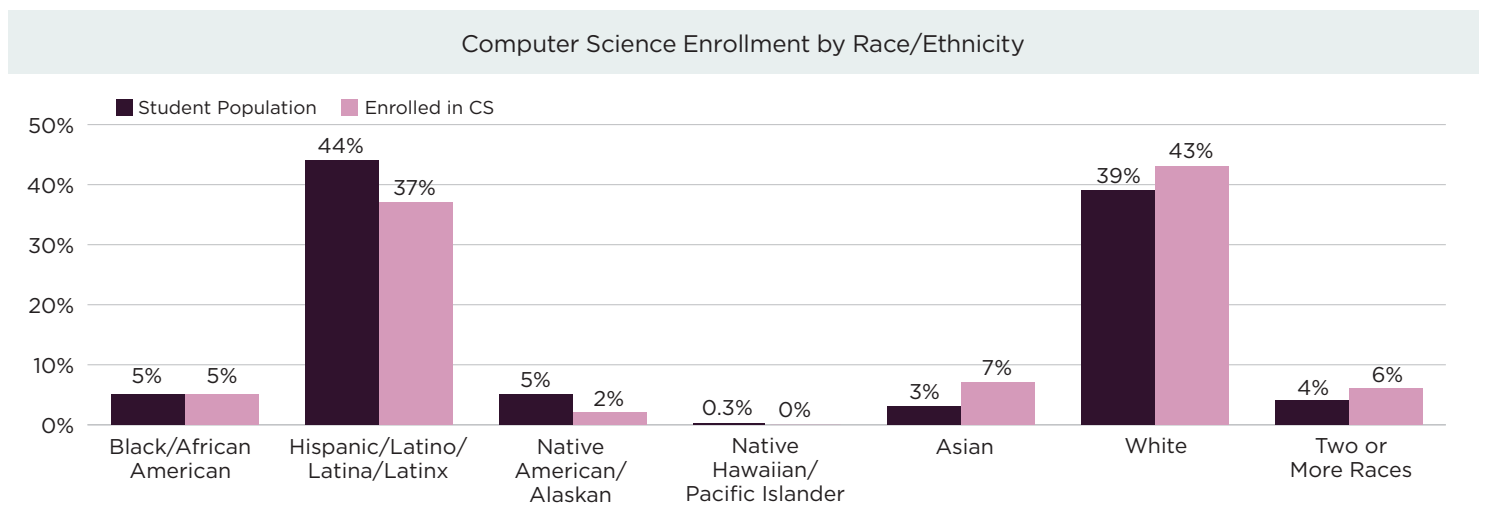


Arizona

Percentage of Public High Schools Offering Foundational Computer Science

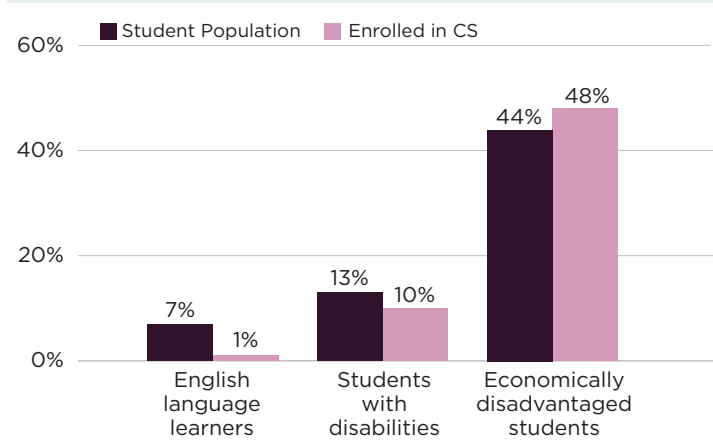


Participation in Foundational High School Computer Science Courses by Demographic

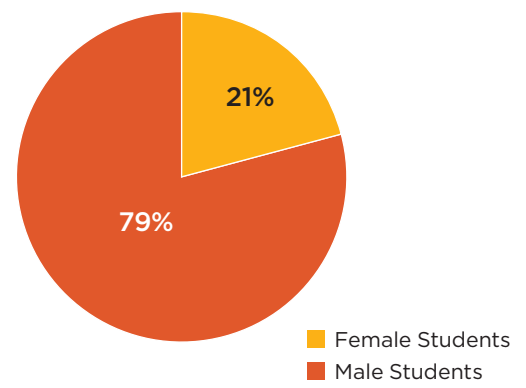


79% of AZ high school students attend a school that offers computer science, but only 2.9% of students are enrolled in a foundational computer science course. 21% of students enrolled in computer science courses are female. Native American students are 1.5 times less likely than their white and Asian peers to attend a school that offers computer science and 2.3 times less likely to enroll in it. No Native Hawaiian/Pacific Islander students enrolled in computer science.

CS Enrollment by Subgroup



Computer Science Enrollment by Gender



Data provided primarily by the Department of Education, based on 867 schools with high school grades. Numbers inside the bars represent the total number of public high schools offering computer science in that category. Participation data was masked at low counts.



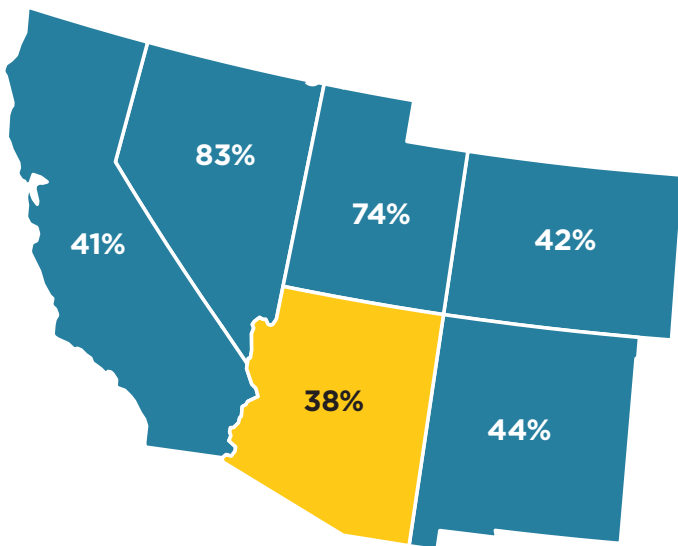
Arizona

State policy should provide clarity, school and state capacity, leadership, sustainability of computer science initiatives, and promote access to and equity within rigorous and engaging computer science courses.

Regional Comparison of Computer Science Education Policy Adoption

POLICY	AZ	CA	CO	NM	NV	UT
State CS Plan		✓		✓	✓	✓
K-12 CS Standards	✓	✓		✓	✓	✓
Funding for Teacher PD	\$4.7M	\$20M	4.2M	\$1.2M	\$4M	\$11M
Teacher Certification	✓	✓			✓	✓
Preservice Programs					✓	✓
State CS Supervisor	In progress		✓	✓	✓	✓
All High Schools Offer					✓	
Graduation Credit	✓	✓	✓	✓	✓	✓
Higher Ed Admission		✓	✓		✓	

Percent of High Schools Offering CS by Region



Arizona has averaged
14,445
open computing jobs each month

These open jobs have an average salary of
\$87,658

Yet there were only
1,014
graduates in computer science in 2018

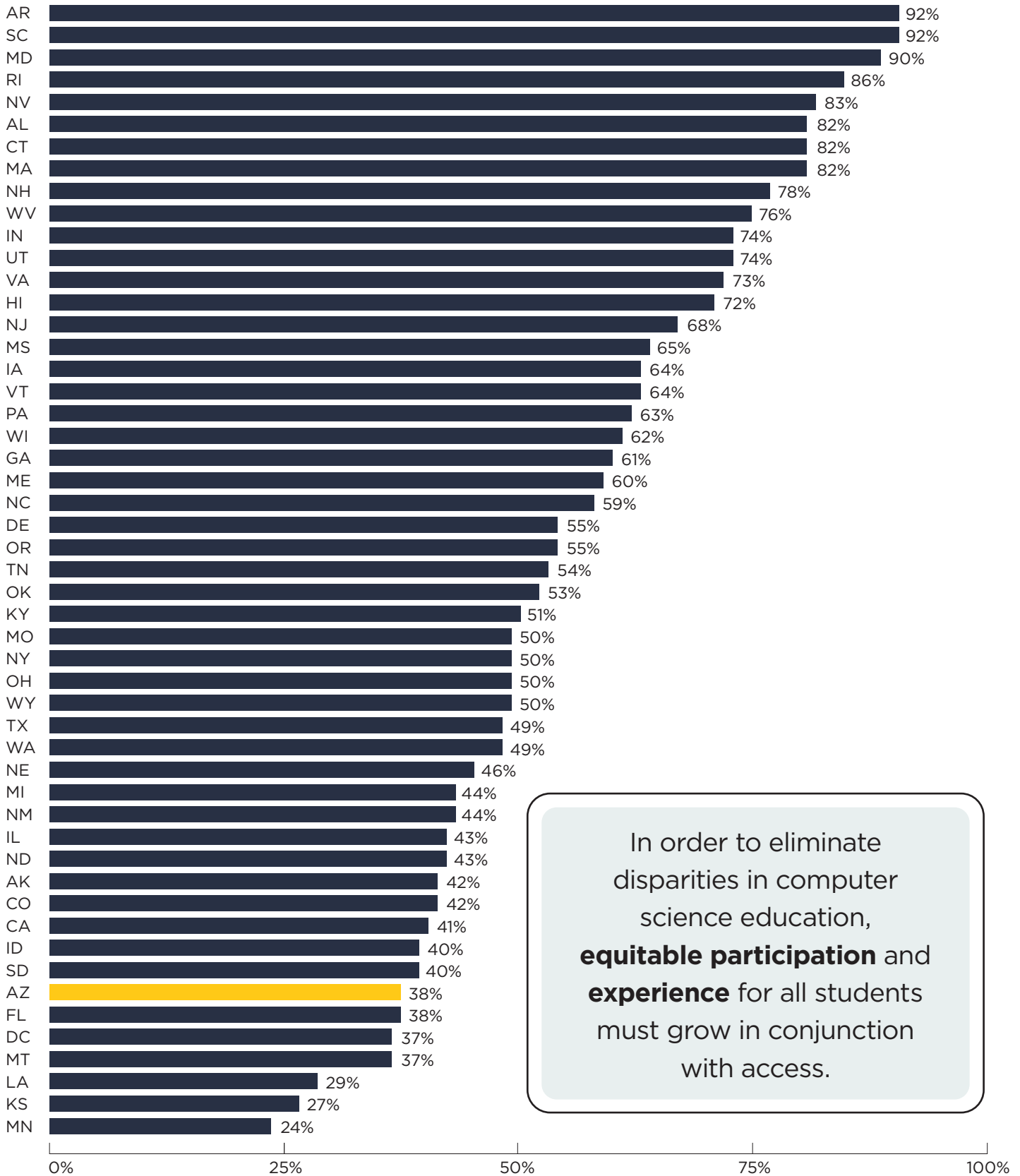
Did you know...

79% of AZ high school students attend a school that offers computer science, but only 2.9% of students are enrolled in a foundational computer science course.

Sources: The percent of high schools offering CS comes from the CS Access Report, open computing jobs come from the Conference Board, salaries come from the Bureau of Labor Statistics, and graduates come from the National Center for Education Statistics.



High Schools Offering 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 2021 State of Computer Science Education report at advocacy.code.org/stateofcs

