



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

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

Policy Principles

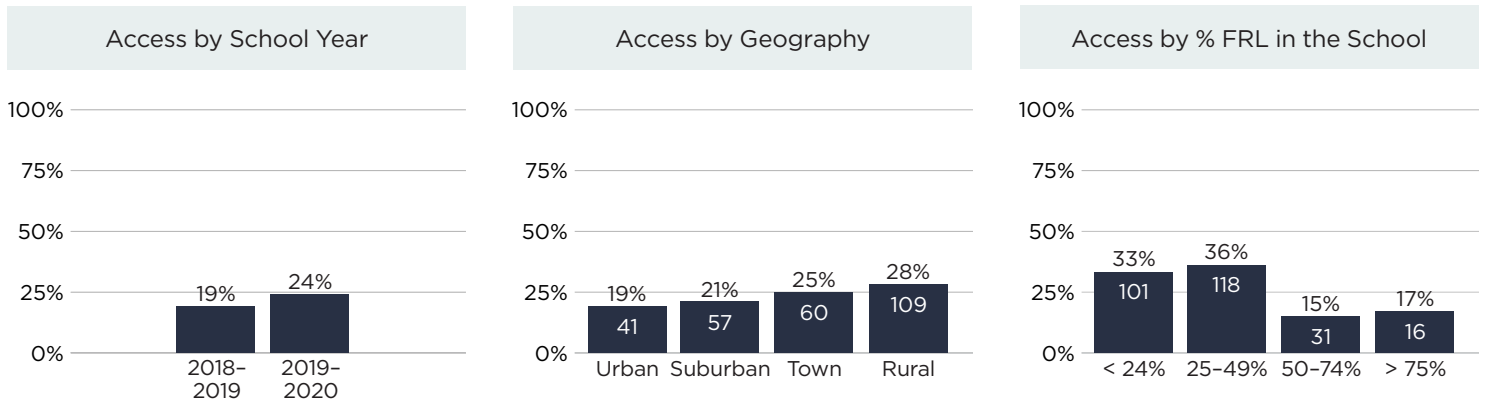
- Clarity
- Capacity
- Leadership
- Sustainability
- Equity and Diversity*

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



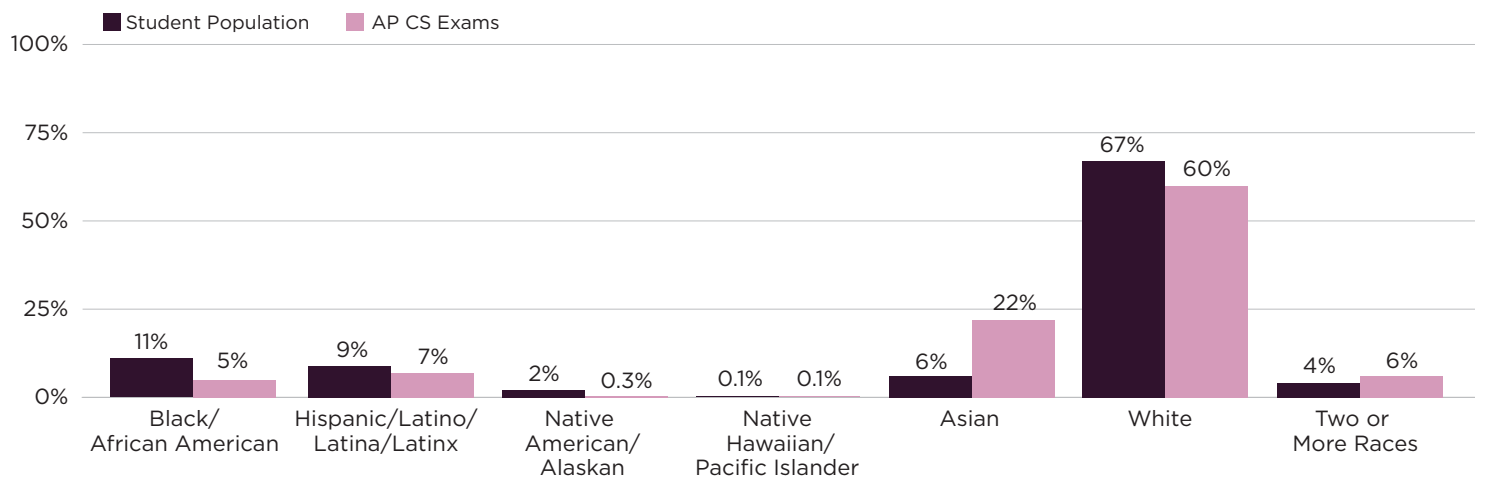
Minnesota

Percentage of Public High Schools Offering Foundational Computer Science

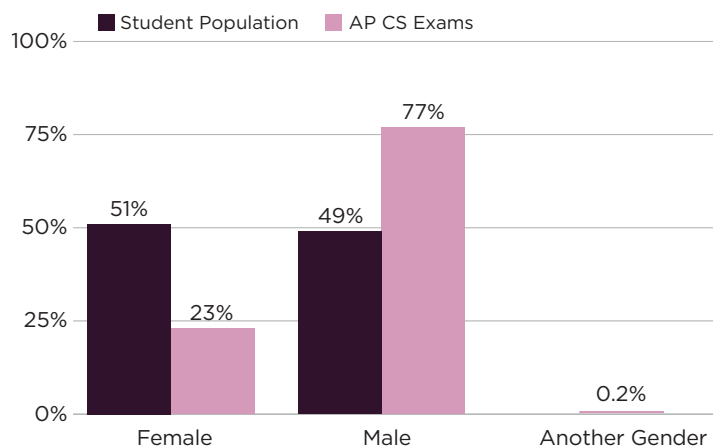


Participation in AP Computer Science by Demographic

Participation in AP CS by Race/Ethnicity



Participation in AP CS by Gender



69% of MN high school students attend a school that offers computer science. Of 1,809 total AP CS exams taken in Minnesota last year, 23% were female and 0.2% identified as another gender. Black/African American students are three times less likely than their white and Asian peers to take an AP CS exam. Only five Native American students and one Native Hawaiian/Pacific Islander student took an AP CS exam.

Access data provided primarily by the Department of Education and school catalogs, based on 1,114 schools with high school grades. Numbers inside the bars represent the total number of public high schools offering computer science in that category. Course enrollment data for all foundational computer science courses is not available from Minnesota. State data on students identifying as another gender is also unavailable.



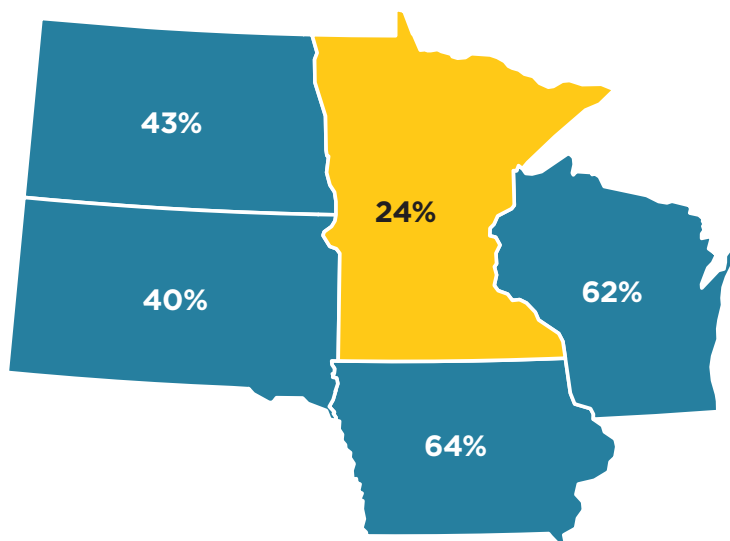
Minnesota

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 | MN | IA | ND | SD | WI |
|------------------------|----|--------|----|----|----|
| State CS Plan | | | | | |
| K-12 CS Standards | | ✓ | ✓ | | ✓ |
| Funding for Teacher PD | | \$2.5M | | | |
| Teacher Certification | | ✓ | ✓ | ✓ | ✓ |
| Preservice Programs | | | | | ✓ |
| State CS Supervisor | ✓ | ✓ | | | |
| All High Schools Offer | | ✓ | | | |
| Graduation Credit | ✓ | ✓ | ✓ | ✓ | ✓ |
| Higher Ed Admission | | ✓ | | | |

Percent of High Schools Offering CS by Region



Minnesota has averaged
14,406
 open computing jobs each month

These open jobs have an average salary of
\$92,494

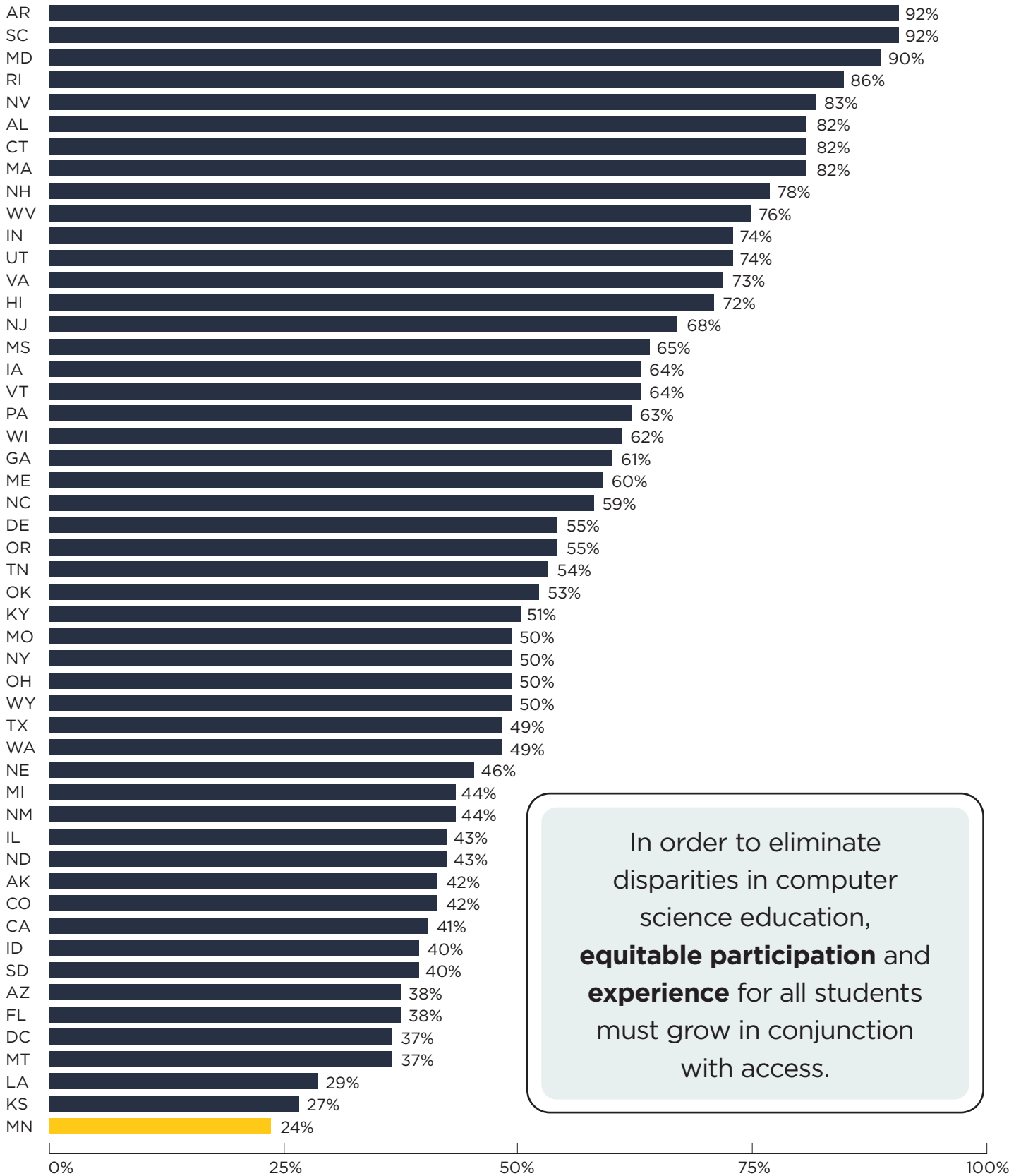
Yet there were only
1,296
 graduates in computer science in 2018

Did you know... 69% of MN high school students attend a school that offers computer science.

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

