Montana
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 adopte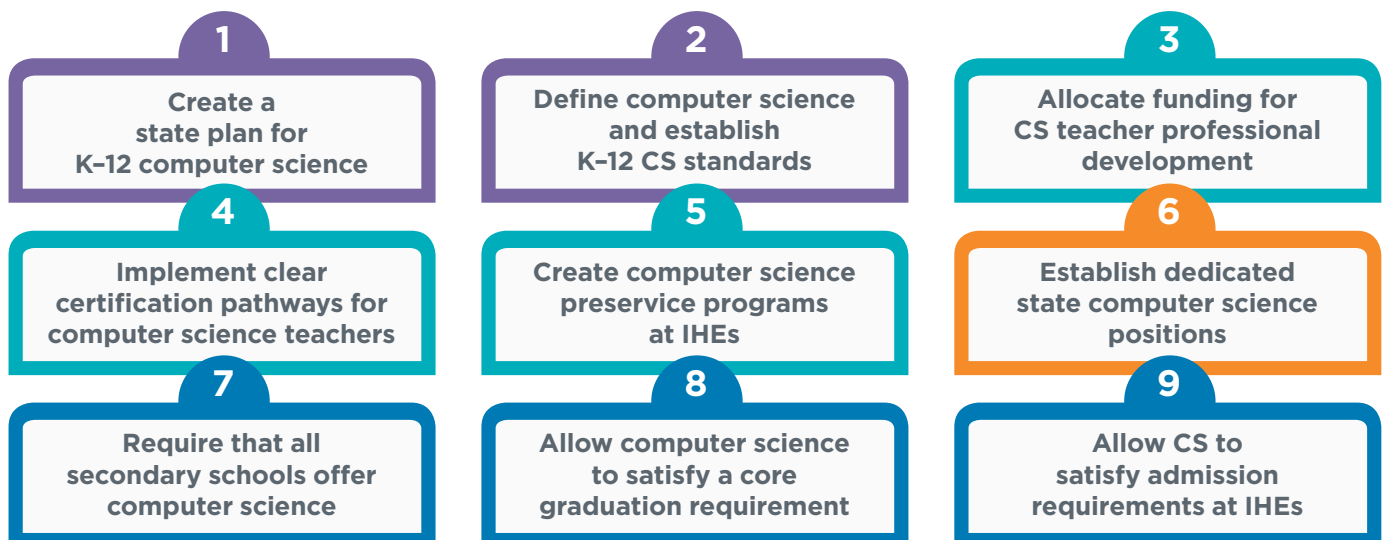d policies: continuing to fund computer science education, supporting teachers and students, and providing leadership and guidance.

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.

In the last 12 months, **28** states have adopted a total of **42** policies

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

Montana Computer Science Policy

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State Plan No	Montana 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 In Progress	Montana is developing K–12 computer science standards; state board approval is anticipated in fall 2020.
Funding No	Montana does not yet provide dedicated funding for rigorous computer science professional development and course support. Although funds may be available via broader programs, the state can strengthen its computer science programs by creating specific opportunities to bring computer science to school districts, such as matching fund programs.
Certification Yes	In Montana, teachers with existing licensure can obtain a K–12 endorsement through academic coursework. An initial license in computer science requires completing a teacher preparation program and passing the Praxis CS exam, or completing a non-traditional teaching program with five years of successful teaching experience.
Preservice Yes	The Montana Office of Public Instruction has approved teacher preparation programs leading to certification in computer science and lists these programs publicly.
CS Supervisor No	Montana does not yet have dedicated computer science positions in state or local education agencies. Creating a statewide computer science leadership position within the state education agency can help expand state-level implementation of computer science education initiatives. Similar positions at the local level could support districts' expansion of course offerings and professional development.
All HS Offer No	Montana does not yet require that all secondary schools offer computer science. The state can support the expansion of computer science courses by adopting policies that require schools to offer a computer science course based on rigorous standards, with appropriate implementation timelines and allowing for remote and/or in-person courses.
Grad Credit District Decision	Montana passed a permissive and encouraging policy to allow computer science to count as a science, mathematics, elective, or CTE graduation requirement, but it is a district decision. Alternatively, a district may increase the local requirements in math, science, or career and technical education and allow a computer science course to fulfill one of the required credits, or establish a stand-alone requirement that all students complete a computer science credit.
IHE Admission No	Montana 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.

Governor Steve Bullock is a member of the Governors' Partnership for K–12 Computer Science.
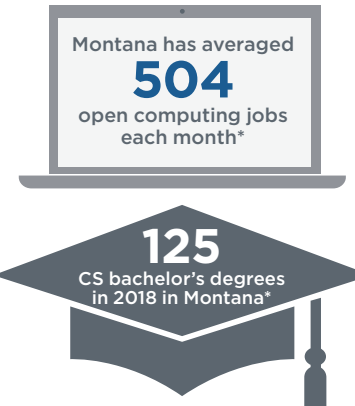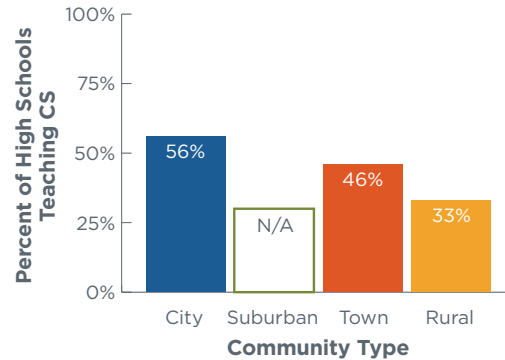
Computer Science Access and Participation in Montana
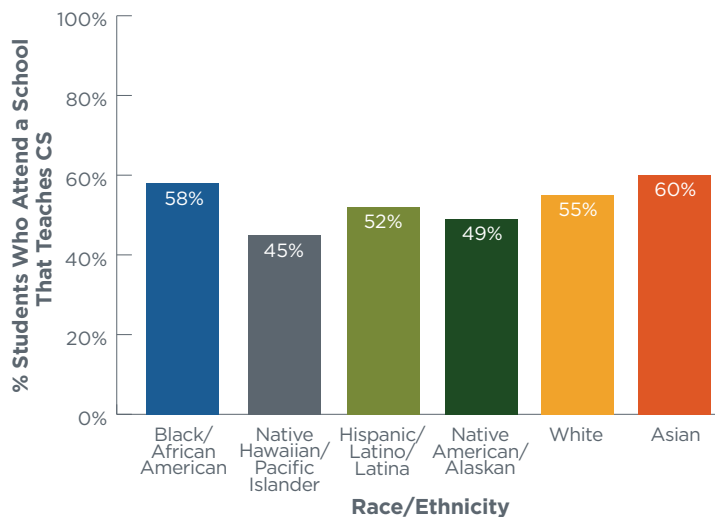
High Schools Teaching CS

- 2017-2018: 25%
- 2018-2019*: 31%
- 2019-2020: 36%
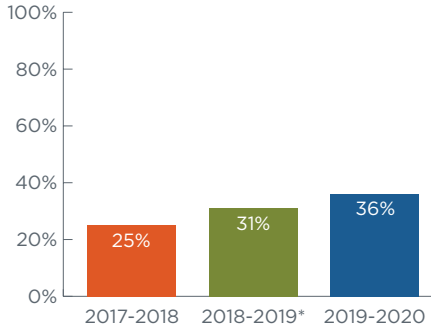
*2018 data reflects a correction of last year's published number

Percent of High Schools Teaching CS by Community Type

- City: 56%
- Suburban: N/A
- Town: 46%
- Rural: 33%

Community Type

Montana has averaged **504** open computing jobs each month*
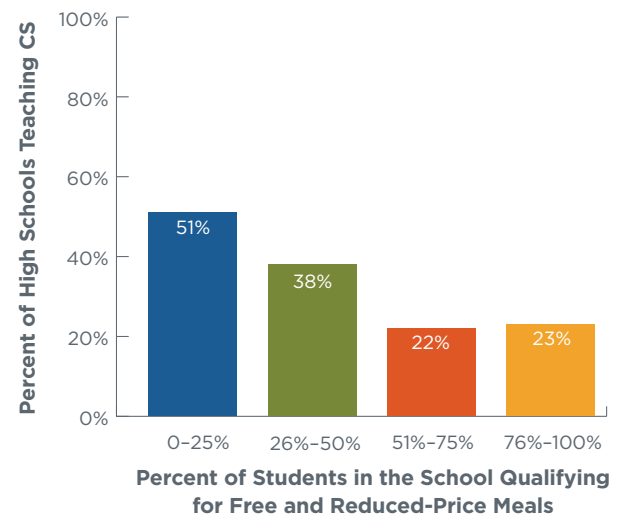
125 CS bachelor's degrees in 2018 in Montana*

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

Race/Ethnicity and Access to Computer Science

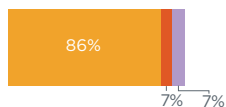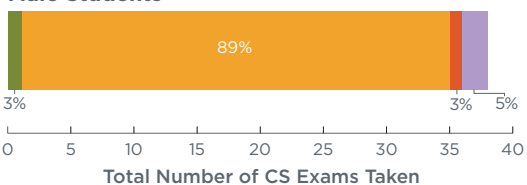% Students Who Attend a School That Teaches CS

- Black/African American: 58%
- Native Hawaiian/Pacific Islander: 45%
- Hispanic/Latino/Latina: 52%
- Native American/Alaskan: 49%
- White: 55%
- Asian: 60%

Race/Ethnicity

Income Level and Access to CS

Percent of High Schools Teaching CS

- 0–25%: 51%
- 26%–50%: 38%
- 51%–75%: 22%
- 76%–100%: 23%

Percent of Students in the School Qualifying for Free and Reduced-Price Meals

AP CS Participation by Race/Ethnicity and Gender

Female Students
- 86%, 7%, 7%

Male Students
- 3%, 89%, 3%, 5%

Total Number of CS Exams Taken

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

AP CS Student Participation

Female / Male

- 2016-2017: 15%
- 2017-2018: 18%
- 2018-2019: 27%
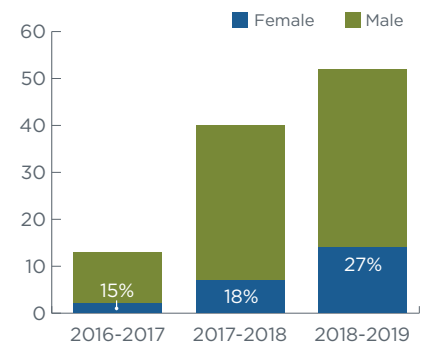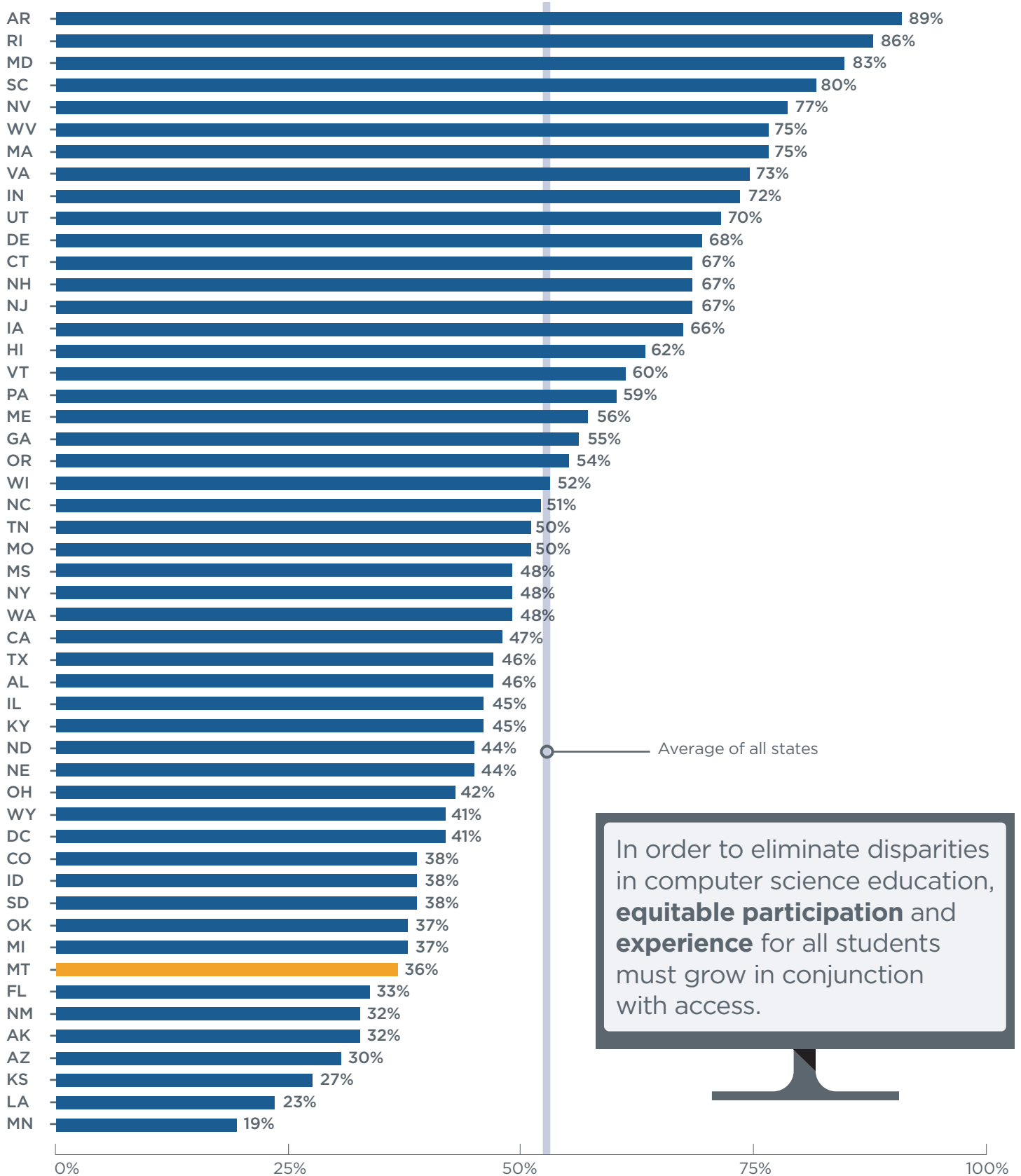
Although Native American/Alaskan students make up 11% of the overall student population, no Native American/Alaskan students took an AP CS exam. Hispanic/Latino/Latina students make up 4.7% of the overall student population, but only 1 Hispanic/Latino/Latina student took an AP CS exam.

Percent of High Schools Teaching Computer Science by State

State	Percent
AR	89%
RI	86%
MD	83%
SC	80%
NV	77%
WV	75%
MA	75%
VA	73%
IN	72%
UT	70%
DE	68%
CT	67%
NH	67%
NJ	67%
IA	66%
HI	62%
VT	60%
PA	59%
ME	56%
GA	55%
OR	54%
WI	52%
NC	51%
TN	50%
MO	50%
MS	48%
NY	48%
WA	48%
CA	47%
TX	46%
AL	46%
IL	45%
KY	45%
ND	44%
NE	44%
OH	42%
WY	41%
DC	41%
CO	38%
ID	38%
SD	38%
OK	37%
MI	37%
MT	36%
FL	33%
NM	32%
AK	32%
AZ	30%
KS	27%
LA	23%
MN	19%

Average of all states

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

CODE Advocacy Coalition

ECEP Expanding Computing Education Pathways

CSTA