Indiana

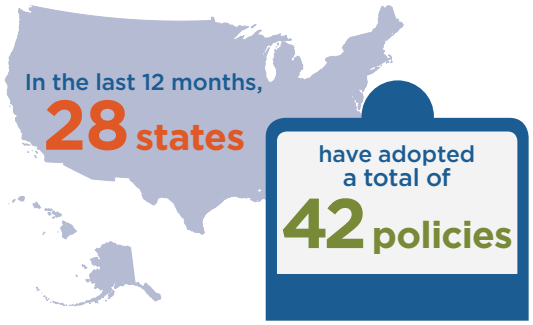
2020 State of Computer Science Education: Illuminating Disparities

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. States should enact or expand on all nine of these education policies in order to provide opportunities for all students regardless of where they live, their race/ethnicity, gender, or socioeconomic status.

Nine Policies to Make Computer Science Fundamental

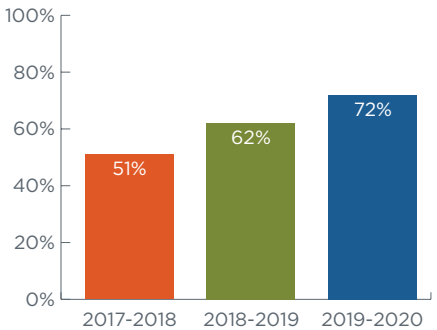
1. Create a state plan for K–12 computer science
2. Define computer science and establish K–12 CS standards
3. Allocate funding for CS teacher professional development
4. Implement clear certification pathways for computer science teachers
5. Create computer science preservice programs at IHEs
6. Establish 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

Indiana Computer Science Policy

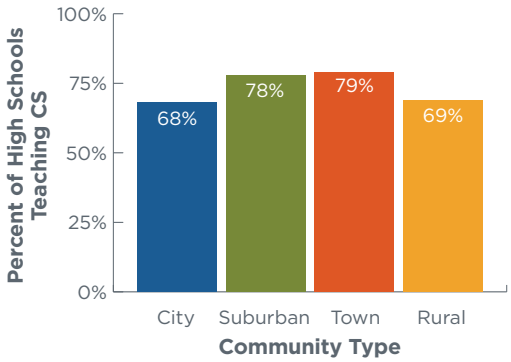
State Plan Yes	The Indiana Department of Education created a state plan for computer science education implementation in 2019. The plan includes a section focused on goals and strategies to increase participation for female students, students with disabilities, rural students, and students from marginalized racial and ethnic groups underrepresented in computer science.
Standards Yes	Indiana published a comprehensive set of K–12 computer science standards in 2018.
Funding Yes	HEA 1001 (FY 2020 and 2021) allocated $3M annually for teacher professional development. SEA 172 (FY 2019) required the Department of Education to contract with a provider to offer professional development.
Certification Yes	In Indiana, teachers with existing licensure can obtain a 5–12 or preK–12 academic endorsement by passing the state-adopted content exam. An initial license in computer science requires completing a state-approved program and passing the exam. The state has a CTE Workplace Specialist license for individuals with occupational experience.
Preservice Yes	The Indiana Department of Education has approved computer science teacher preparation programs leading to certification in computer science and lists these programs publicly. In 2020, Indiana began requiring all preservice K–8 teachers to learn computer science.
CS Supervisor Yes	The Indiana Department of Education has a Computer Science Specialist.
All HS Offer Yes	SEA 172 (2018) required all elementary, middle, and high schools to offer computer science by the 2021–2022 school year. SEA 295 (2020) required the Department of Education to post an annual report on computer science course enrollment disaggregated by race, gender, grade, ethnicity, limited English proficiency, free and reduced lunch status, and eligibility for special education.
Grad Credit Yes	In Indiana, AP Computer Science, IB Computer Science, Cambridge International CS, Industrial Automation and Robotics, or CTE CS I or II can count as a mathematics or quantitative reasoning credit required for graduation. Computer science can also count as the third science requirement.
IHE Admission Yes	Computer science can count as a mathematics credit required for admission at institutions of higher education, which aligns with Indiana's high school graduation policy.

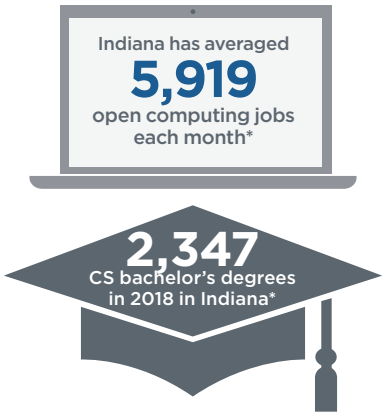
Indiana is a member of the ECEP Alliance, has a CSTA chapter, and Governor Eric Holcomb is a member of the Governors' Partnership for K–12 Computer Science.

High Schools Teaching CS



Percent of High Schools Teaching CS by Community Type

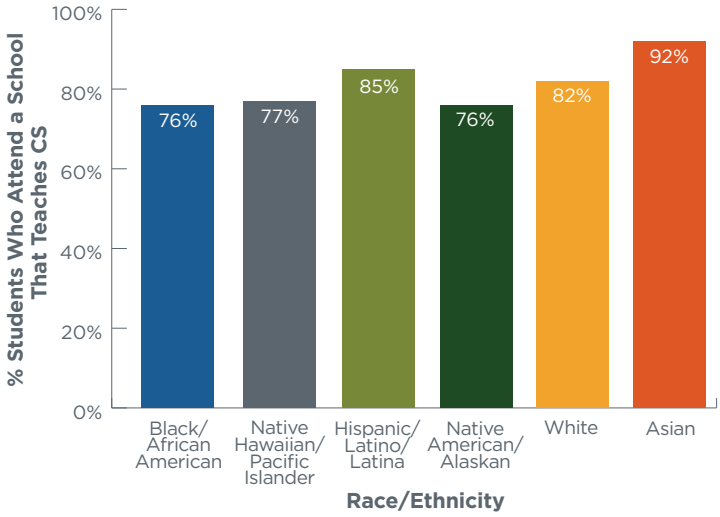




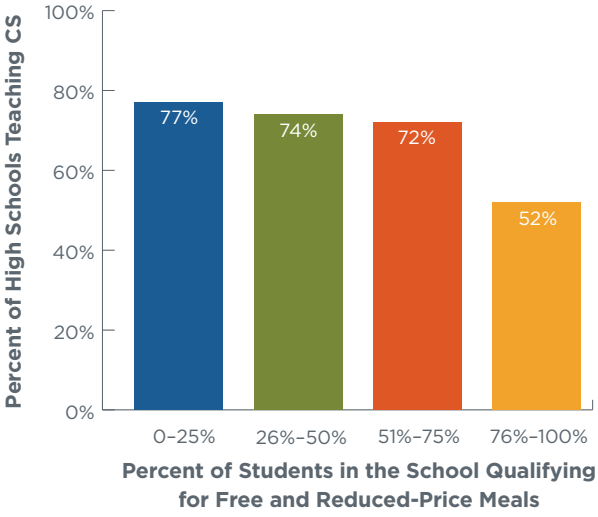
*Sources: The Conference Board and the National Center for Education Statistics

Computer Science Access and Participation in Indiana

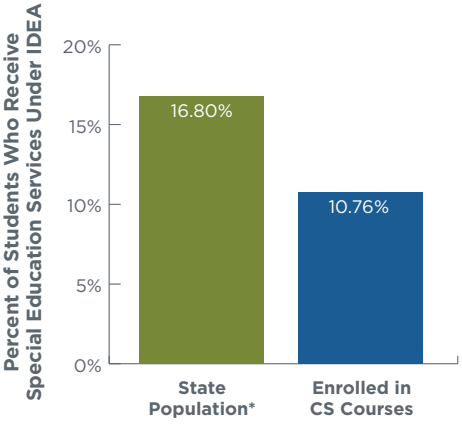
Race/Ethnicity and Access to Computer Science



Income Level and Access to CS

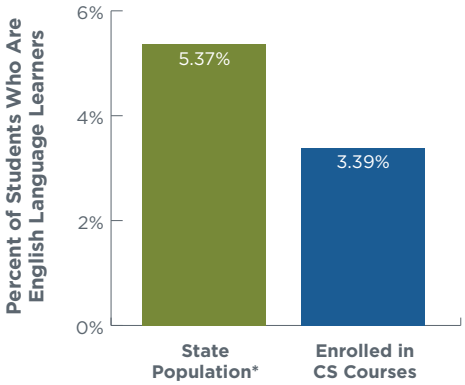


Students with Disabilities and Participation in CS



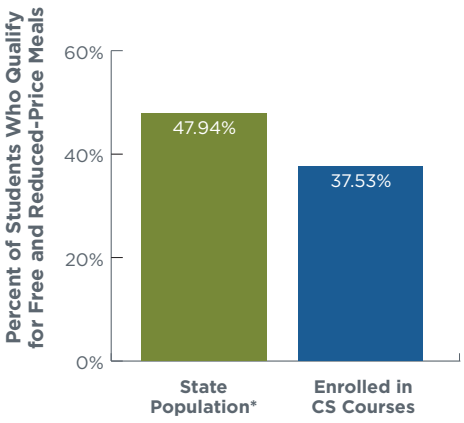
* U.S. Department of Education, Digest of Education Statistics Table 204.70, 2017–2018

English Language Learners and Participation in CS



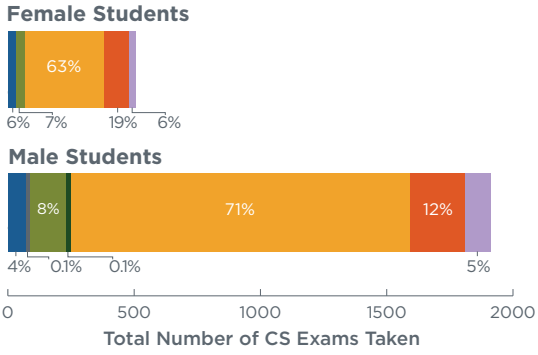
* U.S. Department of Education, Digest of Education Statistics Table 204.20, fall 2017

Economically Disadvantaged Students and Participation in CS

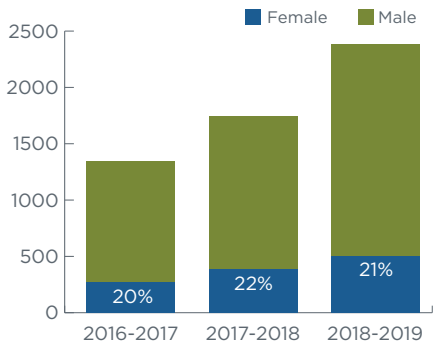


* U.S. Department of Education, Digest of Education Statistics Table 204.10, 2016–2017

AP CS Participation by Race/Ethnicity and Gender

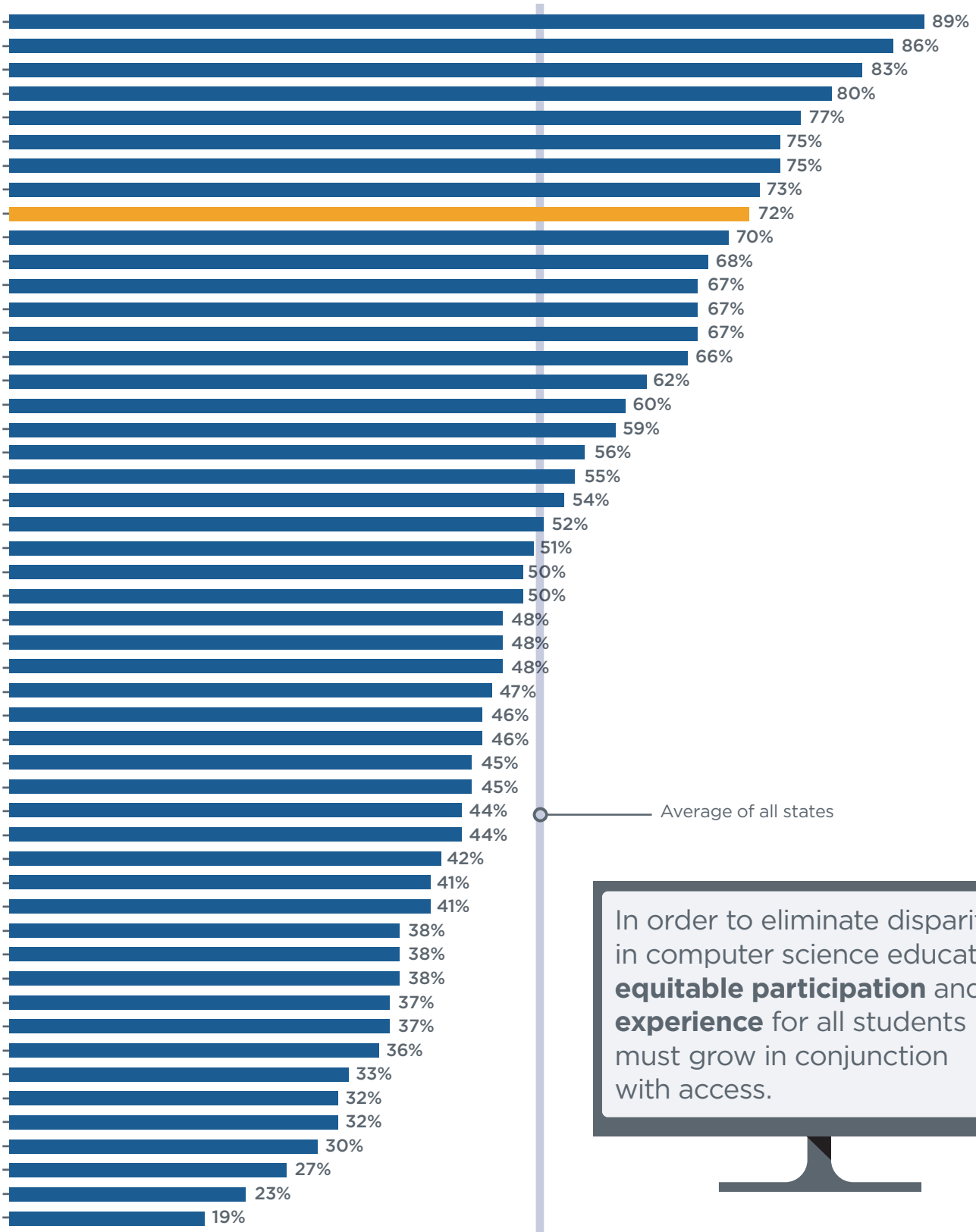


AP CS Student Participation



Hispanic/Latino/Latina students are 2 times less likely, Black/African American students are 4 times less likely, and Native American/Alaskan students are 5 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

Advocacy Coalition

ECEP Expanding Computing Education Pathways

CSTA