2021 State of Computer Science Education

Accelerating Action Through Advocacy

C O D E Advocacy Coalition

CSTA

ECEP Expanding Computing Education Pathways

Thank You for Helping to Build a Movement

The Code.org Advocacy Coalition, Computer Science Teachers Association, and the Expanding Computing Education Pathways Alliance wish to thank the hundreds of thousands of local champions and stakeholders, including teachers, community members, researchers, nonprofits, universities, corporations, and government institutions who have supported the vision that every student in every school deserves the opportunity to learn computer science. Thank you for your support of this movement:

And to all the members of the Code.org Advocacy Coalition:

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Executive Summary

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 inadequate that half of schools lack even a single course. And new data reveals that disparities exist for who has access to and who participates in computer science education. Policy clearly matters, as states with more computer science policies in place have more schools offering computer science and more students taking it. It is time for policymakers, industry leaders, and advocates to accelerate action by advocating for policies that make computer science a fundamental part of the education system.

This report provides a snapshot of K–12 computer science education policy and implementation across the U.S. and in each state. It includes:

- a summary of national trends,
- a description of nine state policies prioritizing computer science education,
- data on disparities in students' access to and participation in computer science, and,
- for the first time, K–12 computer science enrollment data and preliminary K–8 access data.

Highlights related to access and participation in foundational computer science include:

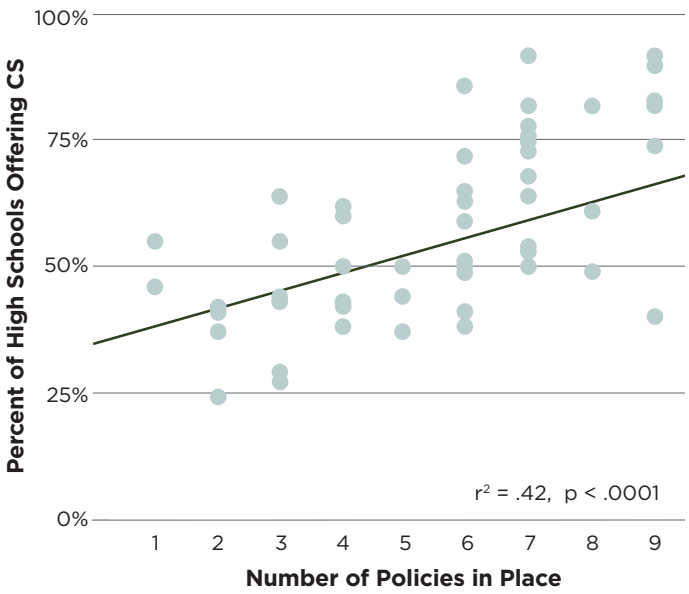
- **51% of U.S. high schools offer foundational computer science**[1] (up from 47% last year), **but disparities in access persist**. Rural schools, urban schools, and schools with high percentages of economically disadvantaged students continue to be less likely to offer computer science; and Black/African American students, Hispanic/Latino/Latina/Latinx students, and Native American/Alaskan students are less likely to attend a school that offers it.
- Across 37 states, only **4.7% of high school students** are enrolled in foundational computer science.
- Nationally, Black/African American, Native American/Alaskan, and Native Hawaiian/Pacific Islander students **are represented in computer science courses at similar rates** as their overall population, but disparities differ by state. **Hispanic/Latino/Latina/Latinx high school students are 1.4 times less likely** than their white and Asian peers to enroll in foundational computer science, even when they attend a school that offers it.
- **English language learners, students with disabilities, and economically disadvantaged students are underrepresented** in high school computer science relative to their state populations.
- **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 enrolled in foundational computer science.
- Across 19 states, at least **30% of K–8 schools offer foundational computer science**.
- Across 17 states, 3.9% of middle school students enrolled in foundational computer science and across eight states, 7.3% of elementary school students enrolled in foundational computer science.

[1] *Foundational computer science* is defined as a course offered during the school day that includes a minimum amount of time applying learned concepts through programming or coding. See National Momentum: Access and Participation for more details.

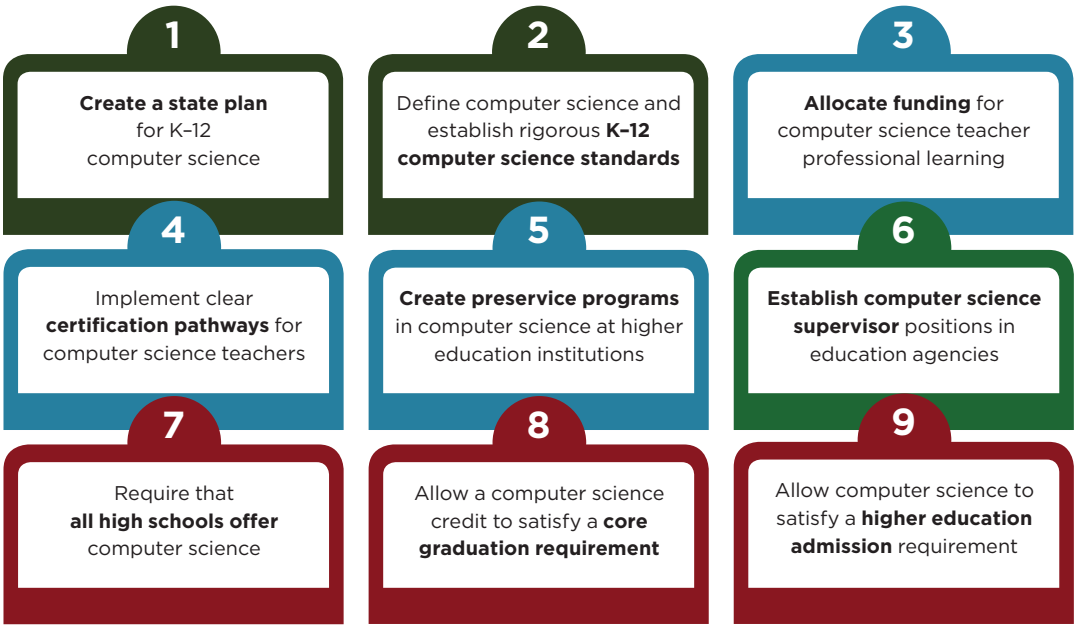
Highlights related to state policy adoption include:

- States that adopt more of the nine policies (see graphic below) have a greater percentage of high schools offering computer science.
- During the past 12 months, **31 states have adopted 50 computer science education policies**, including 21 states that continued funding for computer science education.
- Three states (Illinois, Mississippi, and Oklahoma) require **all high schools to offer** computer science, bringing the total number of states with this policy to 23.
- **All 50 states and DC** now allow computer science to count towards a graduation requirement.
- Three states have adopted a high school graduation requirement in computer science (Arkansas, South Carolina, and Nevada).
- Alabama **adopted all nine policies**, joining Arkansas, Idaho, Indiana, Maryland, and Nevada.
- **More than $65M** was allocated by states for K–12 computer science education in FY 2022, more than any previous year.

Policy Adoption and Access to Foundational CS



Although we see progress in access from last year, disparities have continued. Many students still do not have any opportunities to learn computer science, and even when it is offered in a school, participation is not representative of the student population. We can accelerate the narrowing of these gaps by following the data, trends, and recommendations in the *2021 State of Computer Science Education*.



Policy Principles

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

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

Introduction

The *2021 State of Computer Science Education: Accelerating Action Through Advocacy*, now in its fifth year, provides an update on national and state-level computer science education policy, access, and participation. The report is a collaboration of the Code.org Advocacy Coalition, the Computer Science Teachers Association (CSTA), and the Expanding Computing Education Pathways (ECEP) Alliance.

This report reflects on the past year's progress in K–12 computer science education, including:

- Updated data on access to computer science courses in high schools across the U.S., including participation rates by demographic groups;
- A description of nine recommended state policies to expand computer science education equitably; and
- Summaries of policy, access, and participation data for each state.

The CSTA and the K–12 Computer Science Framework define K–12 computer science as *"the study of computers and algorithms, including their principles, their hardware and software designs, their implementation, and their impact on society."*[2] Learning computer science means becoming creators of technology rather than just consumers.

[2] K–12 Computer Science Framework (2017), Defining computer science.

New This Year

This year's report includes, for the first time:

- Participation data from foundational high school computer science courses for 37 states, by demographic groups including gender, race/ethnicity, students with disabilities, English language learners, and economically disadvantaged students;
- K–8 computer science access and participation data from some states; and
- An accompanying online toolkit with:
  - Downloadable handouts, slides, graphics, and data sets; and
  - An interactive data visualization of computer science course access by state, district, and school.

The State of K–12 Education Over the Past Year

This report covers a year during which U.S. students, teachers, and families faced unprecedented challenges. The pivot to remote or hybrid learning generated an increase in student access to devices but also brought the lack of internet connectivity into focus for many regions.[3] Economically disadvantaged students, Black/African American, and Hispanic/Latino/Latina/Latinx students were the most likely to experience a disruption in their remote learning experience due to insufficient broadband or lack of access to a computer.[4]

It is more important than ever that computer science becomes a sustained part of the education system. In spring 2020, 18% of surveyed K–12 computer science teachers reported temporary suspension of computer science instruction, disproportionately affecting high-poverty schools, rural schools, and schools serving large populations of Black/African American, Hispanic/Latino/Latina/Latinx, and Native American students.[5] Yet computer science has been shown to support the development of problem-solving, creativity, mathematical abilities/skills, mathematics, metacognition, spatial skills, reasoning skills, and improvements in reading, writing, mathematics, and science test scores.[6] Increasingly, computer science is recognized as a core literacy for students, alongside reading, writing, and mathematics.

> *"Learning computer science fosters curiosity and imagination. It provides opportunities to think critically, solve problems, take risks, make mistakes, learn from them, and to help others to do the same."*
>
> **Lilibeth Mora, District Equity Teacher Leader, Vallejo City Unified School District, California**

[3] EdWeek Research Center (2021), Parents and schools during a pandemic.
[4] New America (2021), Learning at home while under-connected.
[5] Kapor Center & CSTA (2020), Teacher perspectives on COVID-19's impact on K–12 computer science instruction.
[6] Code.org (2020), CS helps students outperform in school, college, and workplace.

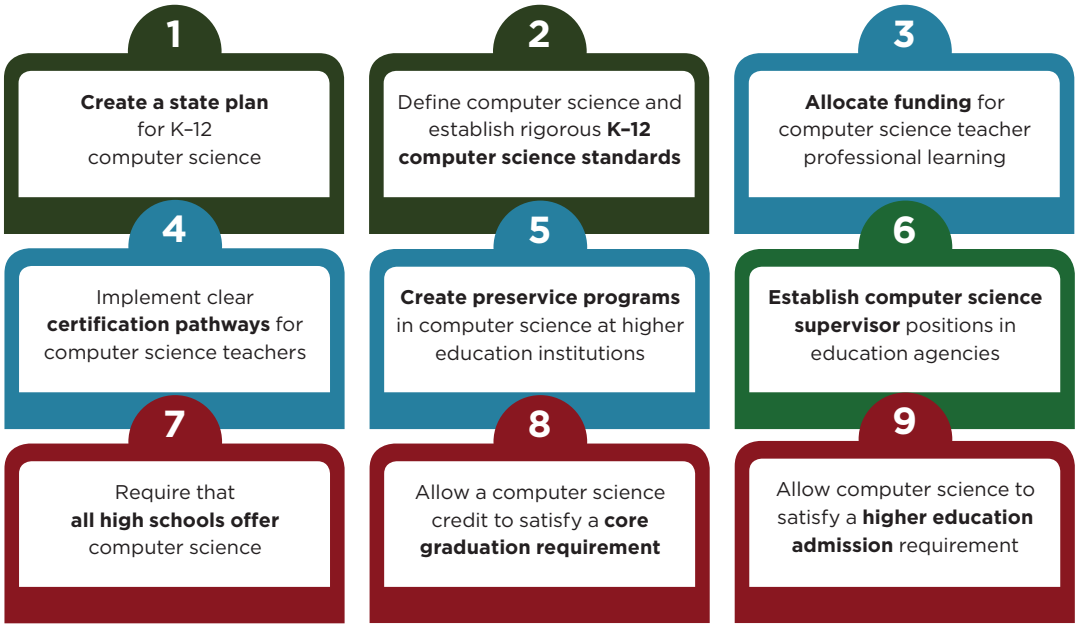
Nine Policies to Make Computer Science Fundamental

The Code.org Advocacy Coalition developed nine policy recommendations to make computer science a fundamental part of the state education system.[7] The policies support a vision built on five principles: Equity and Diversity, Clarity, Capacity, Leadership, and Sustainability. All nine policies promote access to and equity within rigorous and engaging computer science courses. The *Computer Science Education Policy* chapter describes each policy in detail.

State efforts to expand access to computer science are strengthened by **clarity** around the definition of computer science, shared goals, and strategies for expanding access. School **capacity** for offering computer science courses is dependent on the availability of qualified teachers and thus reliant upon state-level resources to prepare preservice and inservice computer science teachers. State, district, and school-level **leadership** are essential for guiding implementation. Creating space for computer science in schools—by requiring schools to offer it or allowing students to apply the course towards graduation requirements—ensures the **sustainability** of computer science initiatives.

Prioritizing **equity and diversity** requires advocates and policymakers to consider the systemic factors influencing the diversity of students in computer science education. Students from marginalized groups are less likely to have access to high-quality computer science courses. If disparities are unaddressed, we will miss out on the innovations and contributions from diverse creators. Equity and diversity are overarching values reflected in each of the nine policies and must be specifically addressed in policy development to avoid perpetuating disparities.

These nine policies contribute to building and sustaining a comprehensive state policy framework that expands the teaching and learning of computer science. Yet we do not intend for all states to enact the policies in the same way. We encourage state policymakers, advocates, and local education leaders to reflect on these policies within the context of their state while maintaining a strong focus on implementation fidelity and equitable outcomes for every student.



[7] Code.org (2020), Nine policy ideas to make computer science fundamental to K–12 education.

"Computer science is the most fun I've had in a class. Most people have the idea that computer science is clicking away at a keyboard for hours, but in reality, it's a creative outlet that's all about problem-solving."

Stellaluna, high school senior, California

How to Use This Report

Data plays a vital role in school, district, and statewide computer science advocacy. This report is intended to serve as one component of your toolkit for change efforts and strategic planning. Pairing the data in this report with the perspectives of diverse stakeholders with the local context is a powerful way to develop or revise your state advocacy plan. As you review your state's data in this report, we suggest that you consider the following questions:

- **Audience:** Educators, policymakers, industry leaders, and community members have different roles in expanding computer science education.
  - How will you tailor your message to each audience?
  - Who needs to know about this data and why?
  - How will you share the data with specific audiences in a manner that recognizes their unique contributions and invites them to participate in computer science equity efforts?

"Elementary students are incredible—they are inquisitive and care about fairness and justice. I develop lessons that affirm my students' identities and let them see themselves in the curriculum."

Shiela Lee, STEM Teacher, PS 59 Beekman Hill International School, New York

"Computer science is fun and it applies to everything we use every day. Don't you want to be part of that?"

Sydney, high school student, Maryland

- **Advocacy:** Consider the opportunities that all students have to access computer science and ways to broaden participation for all students. Increasing diversity in computer science requires that advocates have a comprehensive understanding of which students are underrepresented and the root causes for these disparities.
  - How will you use the data in this report to make sense of disparities in computer science? What actions will your team take to address the disparities highlighted in the data?
  - How will you engage individuals from underrepresented populations to help develop strategies for mitigating disparities in access and participation?
  - How might the data in this report advance policy adoption and implementation in your state?

Resources to Help You Leverage This Report

- The ECEP Alliance and NCWIT Summit Guide
- Code.org and ECEP's State Computer Science Planning Toolkit
- CSTA's Resources and Guidance: CSTA Standards for CS Teachers

Links to resources are in Appendix 4.

National Momentum: Policy and Implementation

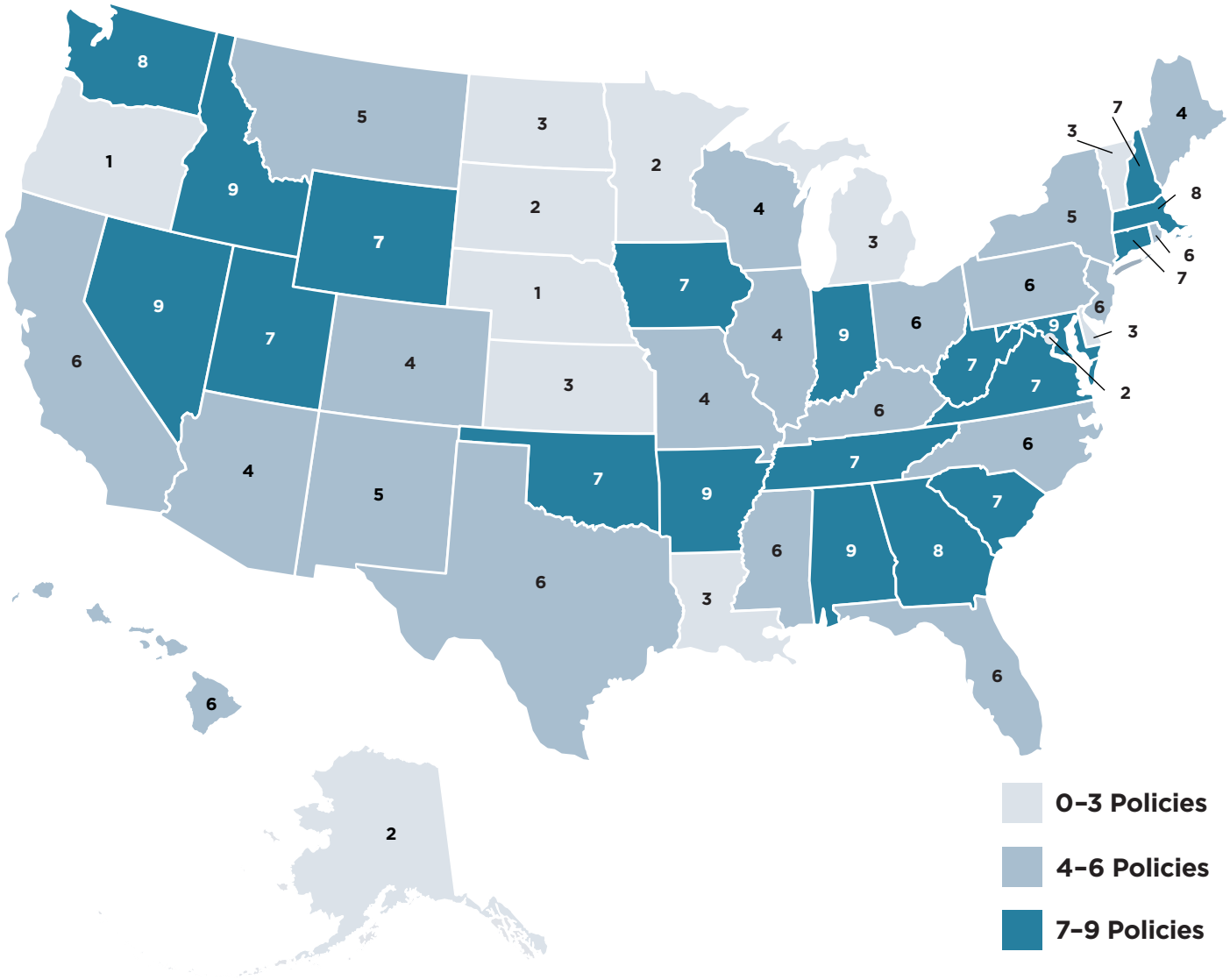
This chapter includes a discussion of support from state governors, policies underway from the federal government, and challenges and opportunities facing computer science education.

Since the *2020 State of Computer Science Education*, 31 states have adopted or revised 50 policies, including 21 states that continued funding for computer science education. As more states have adopted more policies, new adoption has slowed in favor of implementing and revising policies that passed in previous years

Highlights from the past year include:

- **Alabama** has adopted all nine policies, joining Arkansas, Idaho, Indiana, Maryland, and Nevada.
- Several states have adopted seven or eight policies, including **Georgia, Iowa, Massachusetts, New Hampshire, New Jersey, Oklahoma, South Carolina, Utah, Virginia, Washington, West Virginia,** and **Wyoming**.
- Thirty-two states have put over half of the policies into place.
- **Montana, Oklahoma,** and **Tennessee** each adopted two new policies since the last report.
- **All 50 states and DC** now allow computer science to count towards a graduation requirement. Three states now require **all students to take computer science** before graduation (Arkansas, South Carolina, and Nevada).
- **More than $65M** was allocated by states for computer science education in FY 2022, more than any previous year.

Number of Policies



Equitable computer science education encompasses many interrelated components, including capacity, access, participation, and experiences.[8] Measuring all of these components is beyond the current availability of data from the computer science education community. This report focuses on the available data related to capacity, access, and participation.

We define "equitable access" as all students having the opportunity to enroll in computer science courses in their school, regardless of their gender, race or ethnicity, socioeconomic status, disability, or geographic location. By "equitable participation," we mean that enrollment in computer science courses reflects the diverse demographics of the school population where they are offered. Our goal is for participation in computer science education to reflect our nation's diverse student population.

Partnerships among groups such as the Illinois Black Caucus and computer science education advocates have been instrumental in passing computer science education policy to benefit all students.

[8] Fletcher, C.L. & Warner, J. R. (2021), CAPE: A framework for assessing equity through the computer science education ecosystem.

While the policies and data in this report demonstrate that many states have made progress toward this goal, they also highlight the continued disparities in both access and participation for students who have been historically excluded from computer science. The computer science education policies described in this report are designed to mitigate or remove barriers to computer science access and participation at the federal, state, district, and school levels.

This report includes more data on student participation in computer science than ever before. However, the amount of available data varies by state, and generally does not include comprehensive intersectional data, such as Hispanic/Latino/Latina/Latinx students with disabilities who participate in computer science. We are not yet able to report nationally or by state on the student experience, what computer science in elementary schools looks like, or how computer science is integrated into other content areas. Much of the available data focuses on lagging indicators, such as access and participation in high school, rather than leading indicators, such as teacher capacity or elementary student experiences. This presents challenges to describing all efforts happening across the country and in the computer science ecosystem. We encourage state leaders to evaluate their state data systems to improve their ability to measure and track computing education inputs and outcomes over time.

Governors' Partnership for K–12 Computer Science

The Governors' Partnership for K–12 Computer Science is committed to advancing policy and funding to expand access to computer science education for all students. Currently, this bipartisan group of state leaders comprises eight Republican and seven Democratic governors and includes eight former governors (five Republican, three Democratic).

[9] NGA Chairman's Initiative (2021–2022), Computer Science Education.

As part of the partnership, governors commit to promoting three key policies: ensuring **all high schools offer computer science**, providing **funding for teacher professional learning**, and developing a comprehensive set of academic **K–12 computer science standards**. Partnership members are invited to regular meetings where they learn more about developments in computer science and share information about best practices and new initiatives.

Partnership members are noted on the state pages of this report. More information about the partnership can be found at governorsforcs.org.

Arkansas Governor Asa Hutchinson, chair of the National Governors Association, announced computer science education as his chair's initiative for 2021–22.[9]

"[A] strong computer science education can break down barriers and open a world of opportunities for all students."

Pennsylvania Governor Tom Wolf

Federal Policy

Federal education policy over the past year has focused on COVID relief. Three spending bills passed since March 2020—the Coronavirus Aid, Relief and Economic Security Act; the Coronavirus Response and Relief Supplemental Appropriations Act; and the American Rescue Plan—sent states over $190 billion for K–12 education. K–12 computer science is among the many ways states can choose to spend these funds over the next few years.

The Biden Administration released several policy initiatives that mention computer science education, including the American Families Plan, the American Jobs Plan, and the annual budget request. The United States Innovation and Competition Act,

passed by the Senate in June 2021, included a new computer science education program that would fund state efforts to expand access with a focus on equity.

The Department of Education's Education Innovation and Research program continues to prioritize applications that address computer science. In the FY 2021 competition, both early-phase and mid-phase competitions rewarded computer science-focused applications. The National Science Foundation (NSF) continues to invest in computer science via the Computer Science For All initiative, the INCLUDES program, Broadening Participation in Computing Alliances, and others.

Looking Back and Looking Forward

Over the past year, three trends have emerged. Efforts to transition schools to virtual learning resulted in increased access to broadband internet and computers. Schools have leveraged this increased technological capacity to offer computer science starting in the early grades. At the upper end of K–12 pathways, educators are building on foundational computer science experiences by addressing advanced topics such as cybersecurity, data science, and artificial intelligence (AI). For each of these trends, we include a recommendation for advocates and policymakers to consider. Our first recommendation is overarching.

Recommendation 1:

As computer science access and participation increases, work to ensure that it reaches students from the populations that are currently underrepresented.

Remote Learning, Devices, and Internet Access

At some point over the past year, most schools in the U.S. implemented remote or hybrid learning for students. As a result, more students than ever before have access to devices and the internet, and more teachers have adapted to teaching with technology. These factors, which may have previously hindered the implementation of computer science instruction, hold potential for increased computer science access in schools.

Compared to pre-pandemic rates, the percentage of district leaders reporting one-to-one devices (i.e., one device per student) in middle and high school increased from 66% to 90%, and at the elementary level, it increased from 42% to 84%.[10] EducationSuperHighway has now achieved its goal of broadband access in every school and has shifted its focus to the "homework gap," or student access at home.

In the future, virtual offerings could provide a possible solution to some of the challenges with computer science access, particularly for rural or small schools that do not yet have the capacity to offer computer science courses in person. While this

"You [my teacher] created an engaging and welcoming environment in our classroom. You introduced me to so many opportunities regarding my future career. I don't think I would have discovered that I love coding as much as I do without your help. So, thank you for being my teacher, for being there for me, and for helping me realize what I really love about computer science!"

Isha, high school graduate, New Hampshire

[10] EducationWeek Technology Counts (2021), How pandemic tech use is shaping K–12 education.

strategy may provide more students with access to computer science education, virtual courses are not a replacement for teachers in the classroom, particularly for recruiting and encouraging underrepresented students.

Homes in many areas of the country remain underserved or unserved by broadband or devices. Historically, these gaps in access or affordability disproportionately affect Black/African American, Hispanic/Latino/Latina/Latinx, and Native American/Alaskan students, households below the federal poverty level, and people in rural areas.[11] As states and schools consider computer science access in the future, broadband gaps should remain at the forefront.

Recommendation 2:

Leverage student devices, school broadband access, and educator experience teaching with technology to expand access to and participation in computer science.

K–8 Computer Science

States, districts, and advocates are increasingly developing capacity for K–8 computer science as part of full K–12 pathways, seeing elementary and middle school instruction as a vehicle for equity. Foundational courses in K–8 help all students develop confidence in computer science, better preparing them for high school courses. Efforts that only focus on high school computer science courses may not achieve increased or representative enrollment: underrepresented students who experience computer science early are more likely to enroll in subsequent computer science courses.[12] And because elementary courses are often taught to all students, these courses tend to be representative of the overall student population.[13]

40% of all CSforAll NSF grants awarded in 2020–21 focused on preK–8 computer science.

As these elementary students enter secondary school, it is important that they are not blocked from continued study of computer science. Underrepresented populations are disadvantaged if prior experience is conflated with natural aptitude. Boys are more likely to come to school with prior computer science experiences from outside of school[14] and more likely to be encouraged by a teacher or parent to take computer science.[15] Mathematics prerequisites are common for computer science, although research shows that they are not the best predictors of computer science success[16] and they can further disadvantage students who have historically been excluded from advanced mathematics.[17]

District-wide K–12 pathways provide clear progressions through elementary school and leading to secondary courses or experiences. Sustained efforts require a coordinated effort across grades and support from school and district leadership. The Strategic CSforAll Planning Tool for School Districts (SCRIPT) guides groups of school district teams to consider a comprehensive and equitable approach to computer science through collaborative visioning, self-assessment, and goal setting.[18] State funding for

[13] Education Commission of the States (2020), Broadband access and the digital divides.
[14] Google & Gallup (2017), Encouraging students toward computer science learning.
[15] See the National Momentum: Access and Participation chapter of this report.
[16] Google & Gallup (2016), Moving forward: Closing the computer science learning gap: Girls.
[17] Google & Gallup (2017), Encouraging students toward computer science learning.
[18] Prat, C.S., Madhyastha, T.M., Mottarella, M.J., & Kuo, C.H. (2020), Relating natural language aptitude to individual differences in learning programming languages.

local education agency planning grants can support districts in creating comprehensive district-level plans.

For example, BootUp PD's district-wide implementation model involves collaborating with district administrators and elementary teachers to provide professional development over a three-year period, with the goal of developing teacher confidence and capacity within the district to sustain computer science.

> *"If introductory computer science classes were moved to middle school, more students would become aware of computer science opportunities in high school and beyond."*
>
> **Erica Roberts, Computer Science Teacher, Northside College Prep High School, Illinois**

State-level policies have increasingly focused on K–8 computer science education, including:

- Prioritizing or dedicating funding to K–8;
- Requiring all K–8 schools to teach computer science;
- Creating K–8 course codes in computer science;
- Hiring a state employee to focus solely on K–8 computer science implementation;
- Requiring all preservice elementary teacher preparation programs to include computer science and computational thinking content; and
- Replacing K–12 teacher certifications with grade-band-specific certifications.

Recommendation 3:

Create full K–12 pathways for computer science to lay a foundation for more diverse enrollment and retention in high school courses.

Advanced Applications of Computer Science

Over the past year, there has been increased attention to various advanced applications of computer science, including cybersecurity, data science, and AI. Newly launched efforts like AI-4-All, AI4K12, CYBER.ORG and their K–12 Cybersecurity Learning Standards, Data Science 4 Everyone, and the National Q–12 Education Partnership highlight the increased focus on these applications of computer science.

The commonality between these fields is the foundational computer science knowledge that they build upon. High school or postsecondary pathways in AI, data science, or cybersecurity typically begin with a broad computer science or programming course. In elementary and middle school, a broad foundation in computer science and computational thinking prepares all students for advanced study or career fields.

> *"The younger we start teaching students how to create an algorithm in a program, the less it feels like work to them. It becomes part of their thinking process."*
>
> **Shaina Glass, Program Director of Technology Applications & STEM, Aldine ISD, Texas**

Recommendation 4:

Prioritize teaching foundational computer science to ensure all students are prepared for various advanced pathways.

National Momentum: Access and Participation

This section provides nationwide data on student access to and participation in foundational computer science courses, including the updated *K–12 Computer Science Access Report*.

Data described in this section includes:

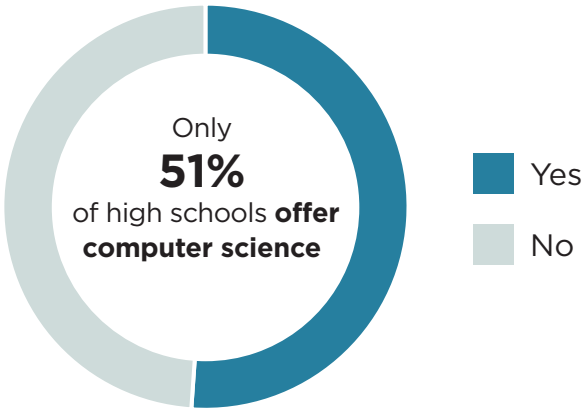
- The percentage of public high schools offering foundational computer science courses overall and by community type/geography, free and reduced-price meals, and student race/ethnicity;
- Participation in foundational computer science courses, disaggregated by gender, race/ethnicity, English language learners, students with disabilities,[19] and economically disadvantaged students;[20]
- Access in schools on Native American reservations supported by the Bureau of Indian Education;
- Preliminary data on foundational K–5 and 6–8 computer science access and participation, disaggregated by gender, race/ethnicity, English language learner status, students with disabilities, and economically disadvantaged students;
- AP computer science access and participation, disaggregated by gender and race/ethnicity;
- Computer science teacher demographics, background, and credentials; and
- The correlation between policy and student access to foundational computer science.

Detailed methodology for data collection, including a description of each data source, is in Appendix 2. Full data tables are in Appendix 3.

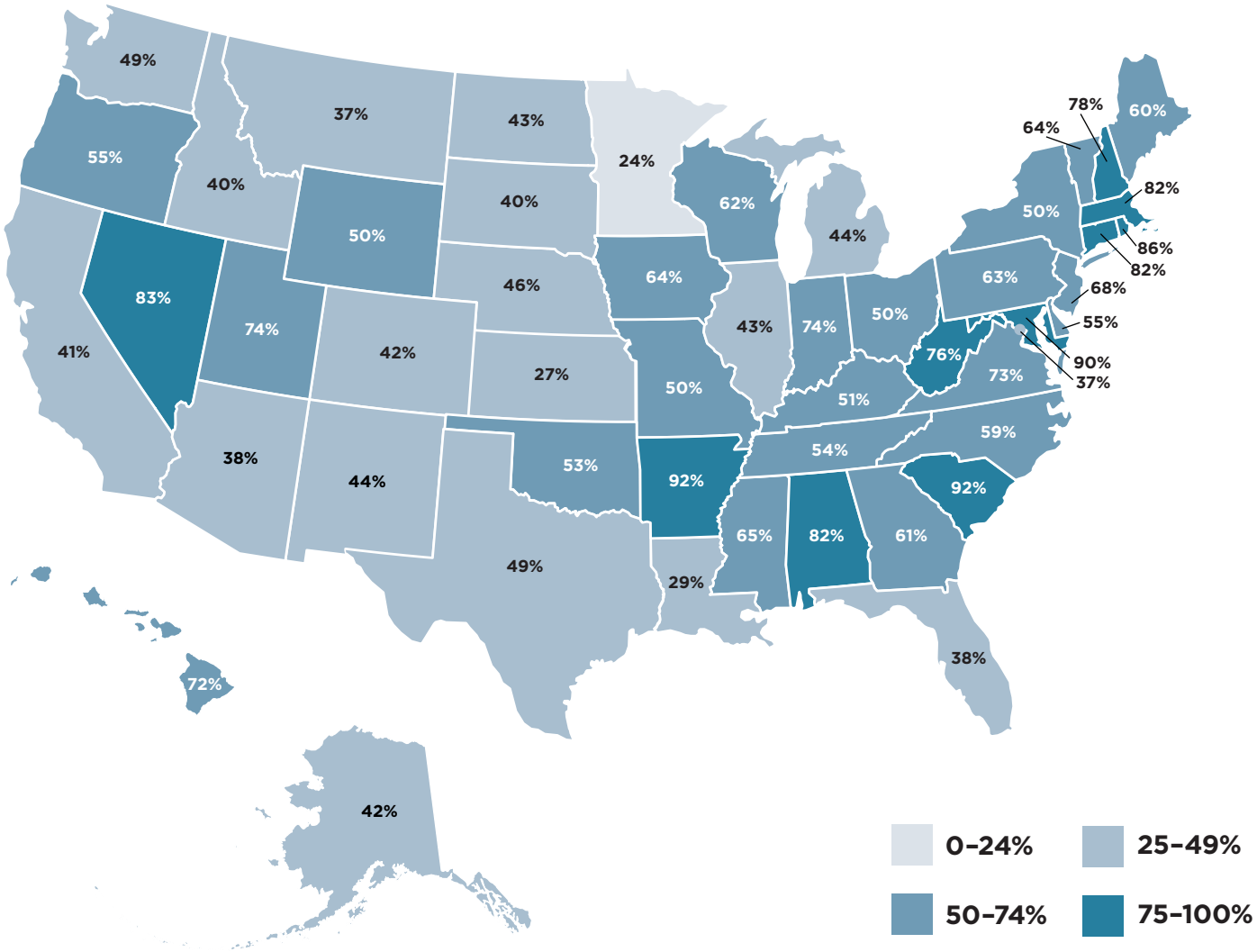
[19] Defined as students who receive services or have IEPs under the Individuals with Disabilities Education Act (IDEA) or Section 504 of the Rehabilitation Act
[20] Defined as students who are eligible for free and reduced-price meals under the National School Lunch Program

K–12 Computer Science Access Report

The K–12 Computer Science Access Report is a collaborative partnership to identify where foundational computer science is offered each year on a school-by-school basis. Based on data from 26,326 public high schools in the U.S., 51% of public high schools offer at least one foundational computer science course.



Percent of Public High Schools Offering Foundational Computer Science



Definition of a Foundational Computer Science Course

Although many schools offer their students some exposure to computer science in a limited capacity, such as an Hour of Code, this report focuses on schools that provide instruction in foundational computer science in a course during the school day. In addition to aligning with the definition of computer science, a course that teaches *foundational* computer science includes a minimum amount of time applying learned concepts through programming (at least 20 hours of programming/coding for grades 9–12). Although computer science is broader than programming, some direct programming experience is integral to learning the fundamental concepts. It is also used as a defining characteristic to differentiate *foundational* computer science courses from general technology courses or those that address other elements of computing.

In South Carolina, 21% of high school students are enrolled, and in Maryland, 13% of students are enrolled.

"Teaching computer science allows me to build a community of learners willing to team up and work hard. Students with more technical experience partner with the storytellers, musicians, artists, and comedians for each to contribute their own little bits of magic."

Jocelyn Humphries, Computer Science Teacher, John Jay Senior High School, New York

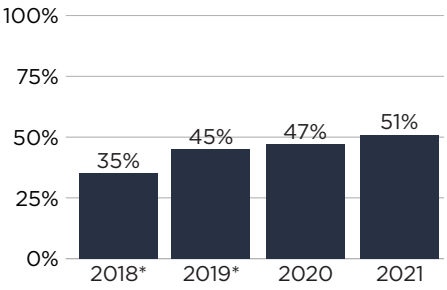
In Mississippi, South Carolina, and Maryland, high school computer science student enrollment by gender is close to parity, with 47%, 46%, and 41% female students, respectively.

United States

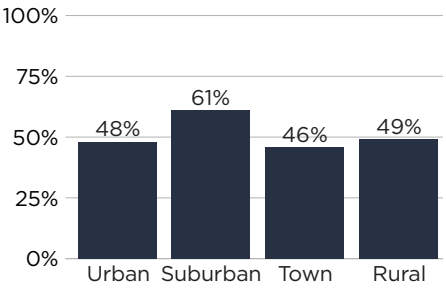
Across the country, only 51% of public high schools offer at least one foundational computer science course. 48% of schools in urban and 49% of schools in rural areas offer foundational computer science, compared to 61% of schools in suburban areas. And in schools with over 75% of the students eligible for free and reduced-price meals (FRL), only 41% of schools offer foundational computer science, compared to 57% in schools with less than 25% of the students eligible for FRL.

Percentage of Public High Schools Offering Foundational Computer Science

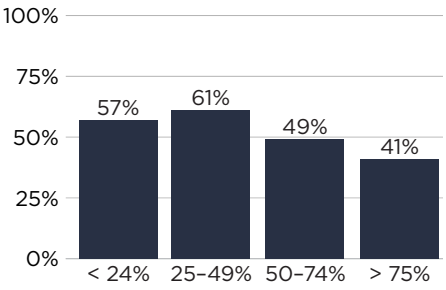
Access by Report Year



Access by Geography



Access by % FRL in the School



*2018: based on 24 states, 2019: based on 39 states

78% of U.S. high school students attend a school that offers a foundational computer science course, but across 37 states with enrollment data, only 4.7% of students are enrolled in a foundational computer science course.

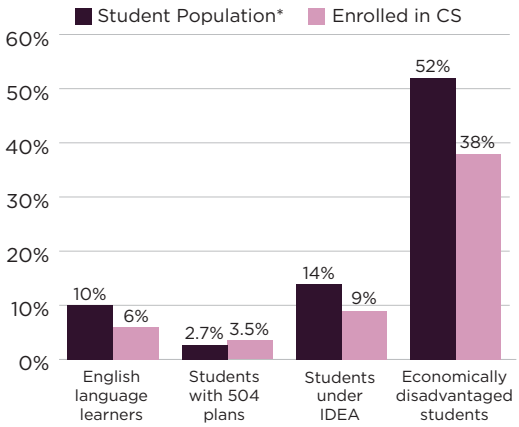
Across 36 states, 31% of students enrolled in computer science courses are female.

Native American/Alaskan students are 1.3 times less likely than their white and Asian peers to attend a school that offers computer science, Nationally, Hispanic/Latino/Latina/Latinx students are 1.4 times less likely than their white and Asian peers to enroll in computer science. Encouragingly, Black/African American, Native American/Alaskan, and Native Hawaiian/Pacific Islander students are represented in computer science courses at similar rates as their overall population. English language learners, students with disabilities, and economically disadvantaged students are underrepresented in high school computer science relative to their state populations.*

*Total states included: 33 states with English language learner, 31 with IDEA, 19 with 504 plans, 34 with economically disadvantaged (measured by FRL), and 35 with race/ethnicity data. See state data in the *State Summaries* chapter and *Appendix 3*.

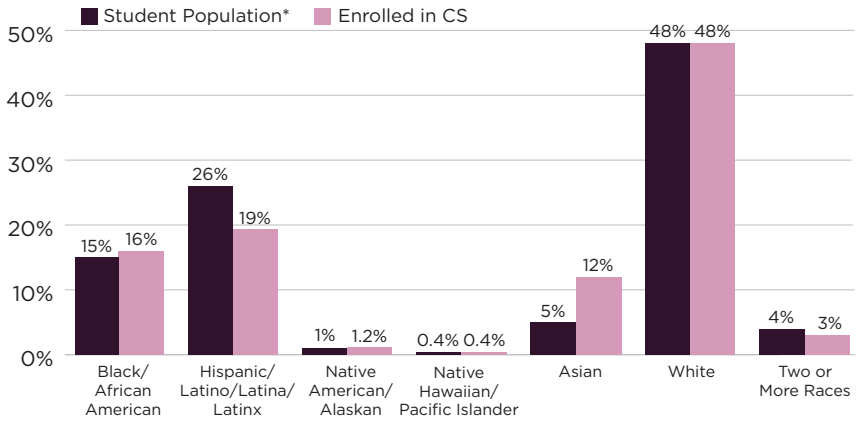
Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



*National K–12 student population

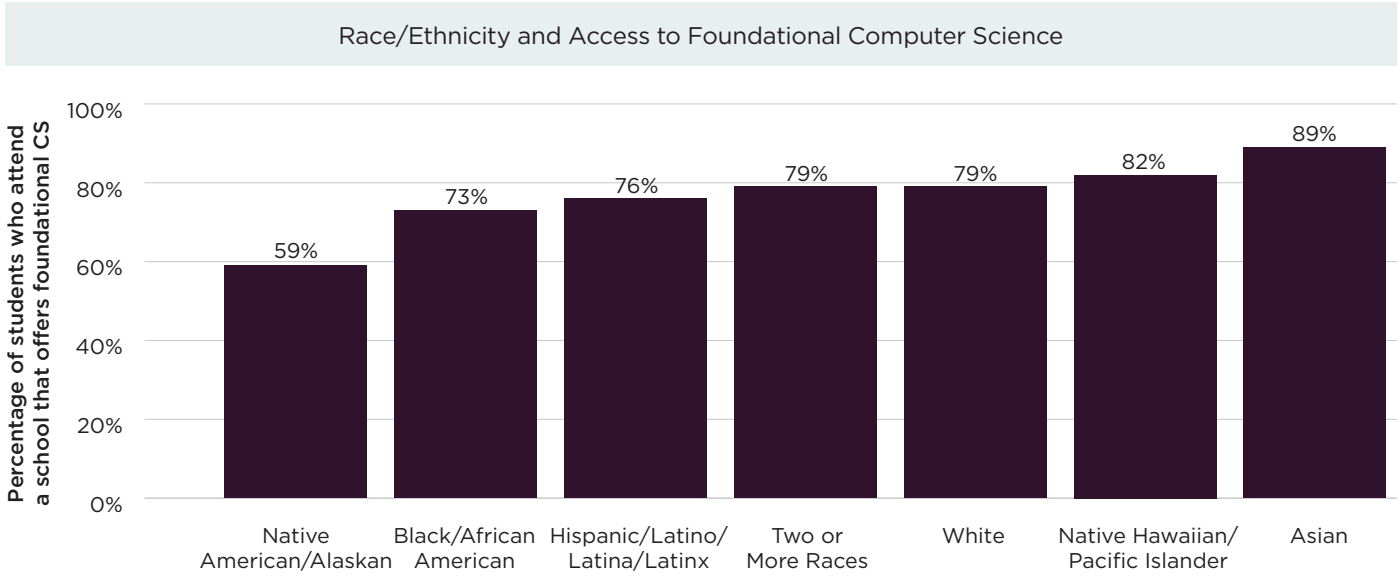
CS Enrollment by Race/Ethnicity



*Grades 9–12 student population across 35 states

Disparities in Access and Participation

Access to Computer Science by Race and Ethnicity



Generally, students from racial and ethnic groups that have been historically excluded from computer science continue to be less likely to attend a school that offers it: Black/African American students, Hispanic/Latino/Latina/Latinx students, and Native American/Alaskan students. In Alabama, Illinois, Indiana, South Carolina, Tennessee, and Utah, students of all racial and ethnic groups are similarly likely to attend a school that offers computer science, and no participation disparities exist for students from underrepresented racial and ethnic groups.

Organizations approach these disparities with different strategies, including policy advocacy, providing professional development for teachers in high-need areas, or developing curriculum to make computer science more accessible and culturally relevant.[21] Several equity-focused computer science curricula have been developed specifically to reduce disparities in participation for underrepresented groups, including the Spanish translation of Exploring Computer Science, English language learner supports for Mobile CSP, and the general curricula from Beauty and Joy of Computing, Bootstrap, and Creative Computing Curriculum.

The Purple Mai'a Foundation in Hawaii is increasing access to computer science education by bridging the gap between indigenous knowledge and technology. According to the foundation, "We are grounded in the knowledge that our ancestors were indigenous innovators who used their skills and perspective to serve their communities and lands. We support Hawaiian values in contemporary tech culture, and we think that by learning to innovate as indigenous technologists, we can be part of a global shift toward growing more sustainable and just societies." Kiane Kanaha, kumu (teacher) at Purple Mai'a and Kanu o ka 'Āina New Century Public Charter School, said, "Never before have I experienced students showing up to class half an hour early and requesting more workshops so that their family members can experience technology in a way that is grounded in Native Hawaiian culture."

[21] See the CSTA's Inclusive Teaching Pedagogies, CSforEL, and Equity Fellowship.

Dual or concurrent enrollment courses, generally taught by high school teachers but providing college credit for students, provide an opportunity for students to learn advanced computer science. The National Center for Computer Science Education partnered with Southwest Minnesota State University and Capital Community College in Connecticut to offer Mobile CSP as concurrent enrollment. This version of the course offers an alternative to AP for high schools and their students to earn college credit for Computer Science Principles. The Louisiana STEM Initiative is developing a 9–12 Career and Technical Education (CTE) pathway in Computing and Cyber Security. The program will offer all students statewide courses aligned with state universities to offer college credit and industry certifications.

"So many high school students have never taken a computer science class, but it only takes one course to change a student's future. In 2018, a student new to America and new to our school decided to try programming during her junior year. At the end of the semester, she said that she'd had no idea that programming required so much creativity! She fell in love with it, encouraged her best friend to enroll in AP CSA with her, and is now majoring in computer science in college."

Amy Wright, Computer Science & Engineering Department Chair, The Hun School, New Jersey

"I engage a diverse student population in my computer science classes by teaching within the context of outdoor education. Engagement and achievement have increased for my students of color, special education students, and young women simply by changing the package in which the computer science skills are taught."

Megan Bowen, Computer Science Teacher and Director of Educational Technology, Salem Academy Charter School, Massachusetts

"Greater diversity in computer science is a critical issue throughout this country. It is important to connect female, Black, Hispanic, and Indigenous students with computer science skills early in school to help change this trend. With our grant from Cobb County School District, I initiated a STEM lab to engage underrepresented students and expose them to the interdisciplinary nature of computer science."

Dr. Tamieka Grizzle, Innovation Specialist, Mableton Elementary, Georgia

Schools on Native American Reservations

Foundational computer science is offered in 20% of the 174 schools located on Native American reservations (including those operated by the Bureau of Indian Education and those operated by local tribal school boards). Several initiatives are working to improve access and participation of Native American students in computer science.

The Sisterhood of Native American Coders (SONAC) creates access and exposure to computer science through low-barrier introductory STEM programs for Native American girls ages 9–12. By placing emphasis on creativity, maintaining a strong tie to Native heritage, and creating a supportive community, SONAC has inspired over 120 girls from 82 unique tribal affiliations to start their STEM journeys.

> *"Until Indigenous girls have equal representation in STEM, I don't think our work is done."*
>
> **Elisabeth Holm, Founder, SONAC**

With support from NSF, the Wind River Elementary Computer Science Collaborative is developing a curriculum that integrates Computer Science education standards with Wyoming's Indian Education for All social studies standards for grades 3–5. The goal is to increase teachers' self-efficacy for teaching computer science standards and increase pedagogical and content knowledge while creating culturally relevant projects incorporating tribal traditions and culture.

The Fond du Lac Ojibwe School in Minnesota, with support from NSF and the National Center for Computer Science Education, is developing a K–12 pathway in computer science. The partnership includes the creation of a sustainable teacher professional development program using coaching and within the context of the school's cultural traditions.

Students with Disabilities

Students who receive services under IDEA have Individual Education Programs (IEPs) that specify accommodations and any changes in educational goals. Students who receive services under Section 504 receive accommodations related to their disabilities with no change in their educational goals. Data from 19 states shows that students with 504 plans are slightly overrepresented in foundational high school computer science courses, but students with IEPs are underrepresented in computer science.

> *"Disability is often not included as part of diversity. Disability is often assumed to mean inability. Computer science education has an opportunity to prove that accessibility features help many types of learners. Instead of providing separate activities for students with disabilities, we need to help the general computer science teacher and the special education teacher collaborate to create the computer science experience for all students."*
>
> **Gina Fugate, Lego Engineering & Technology Teacher, the Maryland School for the Blind**

"I teach in an entirely special education setting. There are many different modes of learning, and computer science lends itself well to all of them. Allowing for collaboration, project-based learning, and scaffolding help students focus on content. Every student can take part in computer science given the correct accommodations. We need to work on meeting students where they are and allow them to flourish."

Sarah Ciras, High School CS & Special Educator, Landmark School, Massachusetts

K–8 Computer Science Access and Participation

For the first time, the Access Report includes preliminary data on K–8 computer science access and participation gathered from state education agencies. This data is preliminary because the majority of states do not have K–8 course codes for computer science, and some have course codes but low school reporting rates. Further complicating data collection, computer science is often integrated into other subjects in K–8 rather than being taught as a standalone course.

States that lack computer science course codes have collected data on K–8 computer science implementation in other ways. Some states do a landscape report which may include survey data providing a snapshot in time. Other states send out an annual survey or call every school in the state to learn about access to K–8 computer science instruction each year.

Curriculum and professional development providers can provide some insight into access and participation by reporting the use of their programs.

Code.org has one of the most widely-used computer science learning platforms for elementary and middle schools. For K–5 Computer Science Fundamentals courses in the U.S. during the 2020–21 school year:

- 45,000 teachers set up a course;
- 3,800,000 U.S. students (approximately 13.5% of all U.S. elementary students) started the course; and
- 45% of those students were female.

For the Computer Science Discoveries (grades 6–10) course in the U.S. during the 2020–21 school year:

- 12,000 teachers set up a course;
- 773,000 U.S. students started the course (approximately 6% of all U.S. middle school students);
- 41% of those students were female; and
- 49% of those students were Black/African American, Hispanic/Latino/Latina/Latinx, Native American/Alaskan, and/or Native Hawaiian/Pacific Islander.[22]

Scratch, a free coding language and online community, engages millions of children in creating and sharing interactive stories, animations, and games. During the 2020–21 school year:

- Over 18,000 U.S. teachers created accounts;
- Each teacher, on average, created 20 students accounts; and
- On average, 400,000 new Scratch projects are created every day worldwide.

BootUp PD provides professional development, model teaching, coaching, curricular resources, and professional learning community formation that all prepare teachers to facilitate coding, computational thinking, and computer science instruction for elementary students.

During the 2020–21 school year:

- Eleven school districts across seven states participated in BootUp PD collaborations;
- 563 teachers in 165 schools participated;

[22] Code.org (2020), Annual report.

- 40,000 elementary school students participated;
- 73% of the participating students qualified for free and reduced-price meals; and
- 85% of the students were Asian, Black/African American, Hispanic/Latino/Latina/Latinx, Native American/Alaskan, Native Hawaiian/Pacific Islander, or two or more races.

K–8 Access and Participation Data

Nineteen states provided data on computer science offerings in grades 6–8, and nine of those states provided data on computer science in grades K–5. Combining this course code data with survey and provider data gives insight into access to computer science in grades K–8. For state-by-state data, refer to Appendix 3.

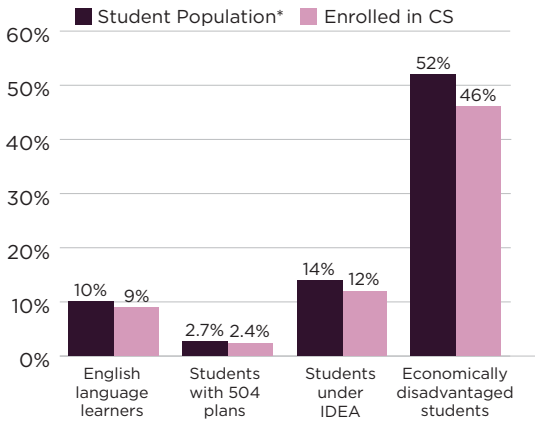
Across 19 states, at least 30% of K–8 schools offer computer science.[23]

Across 17 states, 3.9% of middle school students enrolled in foundational computer science. 44% of middle school students enrolled in computer science are female. 9% are English language learners, 2.4% have 504 plans, 12% receive special education services under IDEA, and 46% are economically disadvantaged. Each demographic group is slightly underrepresented compared to their state population. Hispanic/Latino/Latina/Latinx and Native American/Alaskan students are slightly underrepresented in middle school computer science compared to their state population.

> *"My students are blind or visually impaired. They may or may not have other disabilities. However, my students are energized and excited by computer science, including competing against their sighted peers in First Lego League. Computer science education allows young students to actually create the ideas they imagine. Elementary and middle school students believe that anything can happen and computer science empowers them to be part of it. Computer science is sometimes called 'sneaky' by my students because they are having fun and eventually, they realize that they were working hard and learning the entire time."*
>
> **Gina Fugate, Lego Engineering & Technology Teacher, the Maryland School for the Blind, Maryland**

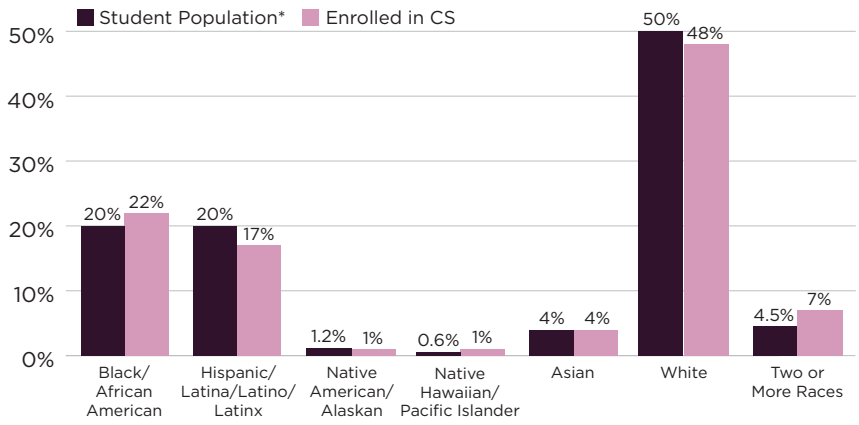
Participation in 6–8 Computer Science by Demographic

CS Enrollment by Subgroup



*National K–12 student population

CS Enrollment by Race/Ethnicity

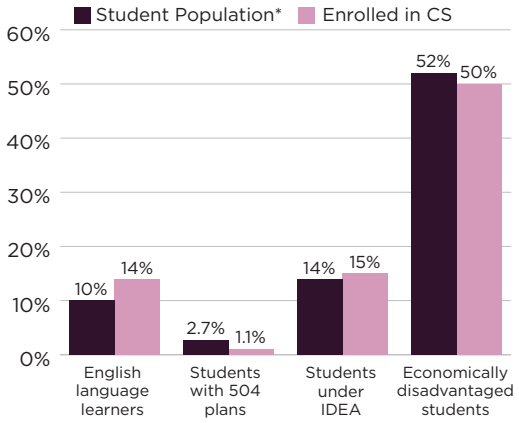


*Grades 6–8 student population across 17 states

[23] Includes data from 41% of schools with K–8 grades across AL, DE, FL, GA, HI, IN, KY, MA, MD, NC, NE, NV, OK, SC, TN, UT, VA, WA, WI

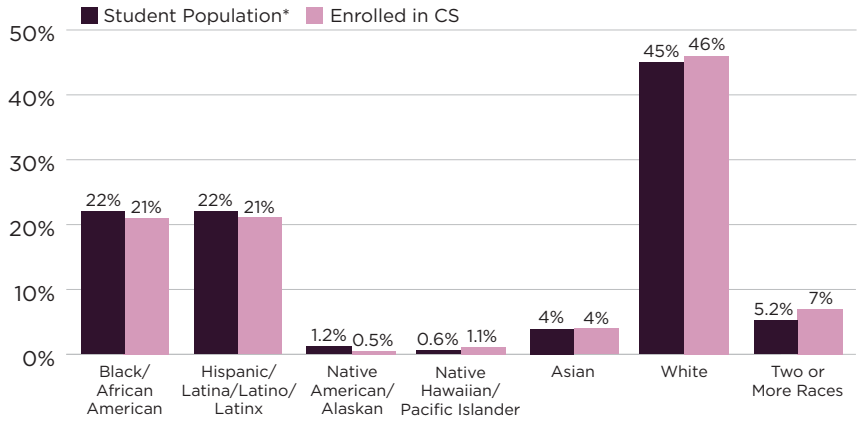
Participation in K–5 Computer Science by Demographic

CS Enrollment by Subgroup



*National K–12 student population

CS Enrollment by Race/Ethnicity



*Grades K–5 student population across 8 states

Across eight states, 7.3% of elementary school students enrolled in foundational computer science. 49% of elementary school students enrolled in computer science are female, 14% are English language learners, 1.1% have 504 plans, 15% receive special education services under IDEA, and 50% are economically disadvantaged. Generally, elementary computer science students are representative of the overall student population in each demographic, including gender and race/ethnicity.

"For elementary school students, computer science is about play and discovery. When we introduce computer science to 3rd through 5th graders, they get to choose between different units such as storytelling, music and sound, or game design. My students collaborate in groups and provide feedback to each other. It helps build connections with their peers and gives them ownership of their work. They are so proud and excited to share what they create with their families."

Cindy Wong, Technology Teacher, P.S.41Q, New York

This data indicates that fewer disparities exist in computer science participation for students in K–8 than in high school and beyond. For example, 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 enrolled in foundational computer science. Longitudinal data is needed to fully understand whether the representation seen in current K–8 grades will continue as these students enter high school.

AP Computer Science Access and Participation

The data in this section describe the College Board AP exam participation across two courses: AP Computer Science A and AP Computer Science Principles. Each is equivalent to an introductory semester college course.

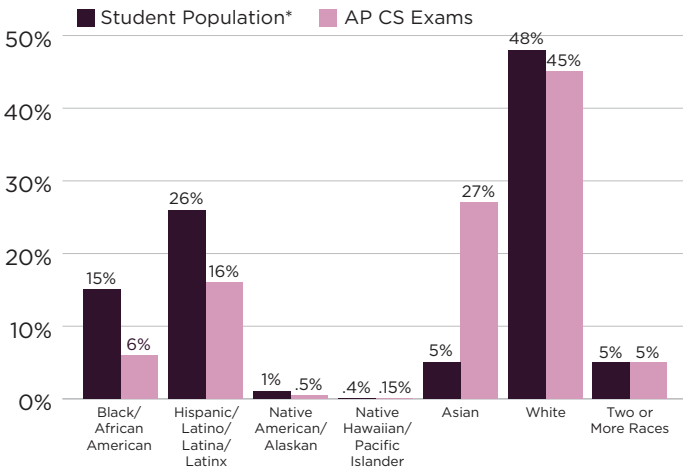
Over the past several years, the number of students taking AP computer science exams has skyrocketed. In the 2019–20 school year, when exams in most subjects decreased, AP computer science exams increased 13% to 179,188 exams in 7,139 schools. The number of female students and students from each underrepresented racial and ethnic group has increased every year since 2016. The College Board recognized 1,119 schools for reaching gender parity in at least one of the computer science exams in the 2019–20 school year.

AP Computer Science Principles, launched in 2016, covers the big ideas of computer science and computational thinking, including algorithms and programming. This course was designed with support from the NSF with the explicit purpose of engaging students from populations traditionally underrepresented in computer science. Black/African American students who take the course are three times more likely to take AP Computer Science A. All students who take AP Computer Science Principles are more likely to major in computer science in college, with Black/African American, Hispanic/Latino/Latina/Latinx, female, and first-generation students even more likely.[24]

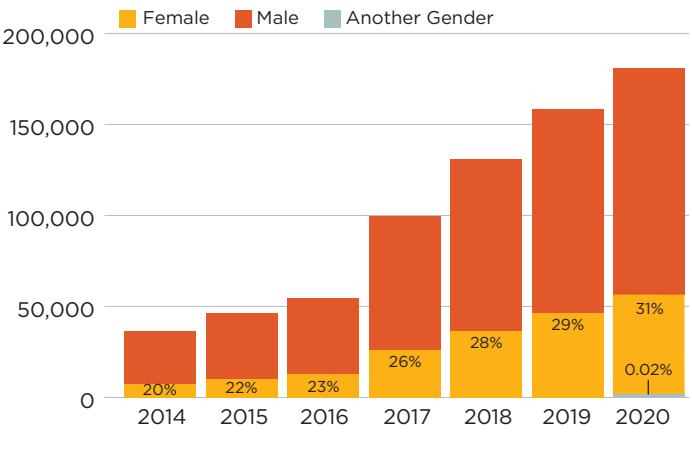
AP Computer Science A focuses on problem-solving and object-oriented programming using the Java programming language. Code.org is working with several state partners to develop a new curriculum for the course with an intentional focus on equity, acknowledging the diversity of students' cultures and experiences to engage every student.

The first graph below compares the percentage of students from each race or ethnicity within the overall student population to the population of students taking AP computer science exams. Although the population of exam-takers is becoming more representative, particularly in AP Computer Science Principles, students from historically excluded racial and ethnic groups are underrepresented in taking AP computer science exams, even when they attend a school that offers it. In 2020, the College Board collected non-binary gender data for the first time. Participation data by gender and over time is shown in the second graph below.

AP Computer Science Exam Participation and State Demographics by Race/Ethnicity (2020)*



AP Computer Science Exam Participation by Gender Over Time*



*Participation data includes students attending both public and private schools.

[24] The College Board (2020), New data: AP Computer Science Principles course bringing more diverse set of students into computer science pipeline.

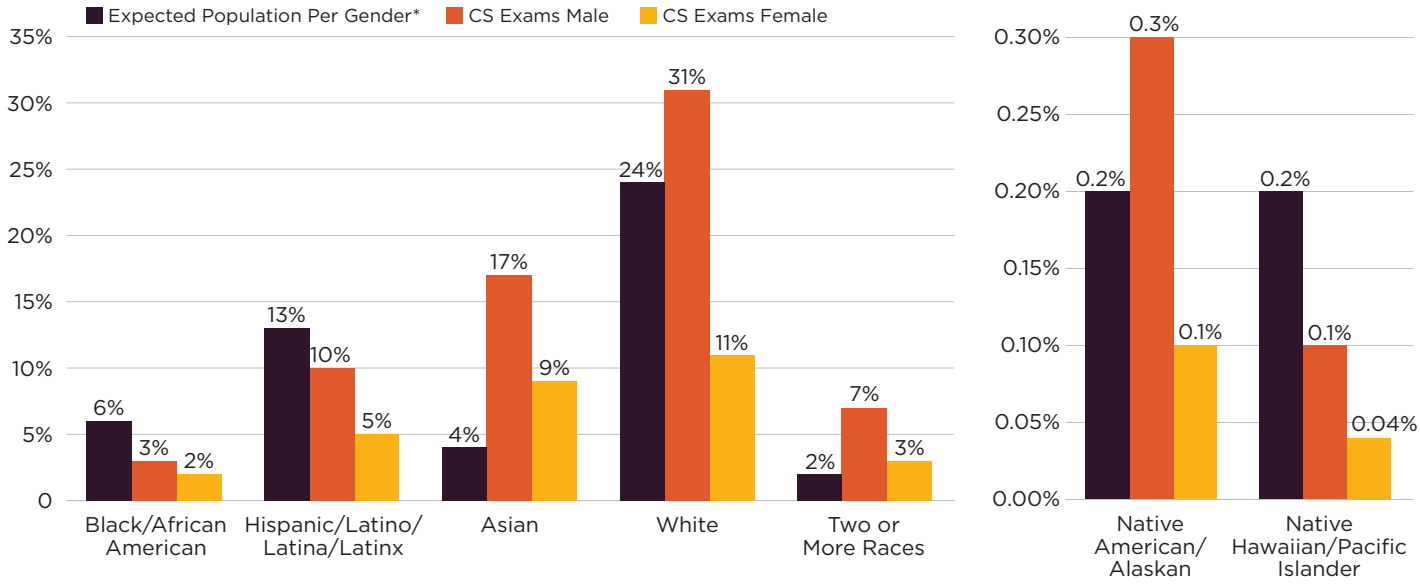
> *"AP Computer Science Principles is one of the most equitable and accessible AP courses. Because of this, teachers can recruit a student population that reflects the diversity of their school."*
>
> **Amanda Lattimore, CS Resource Teacher, Baltimore County Public Schools, Maryland**

Participation data for the AP computer science exams is disaggregated by both gender and race/ethnicity, allowing for a glimpse at intersectional participation. Robust data describing how intersectional identities relate to access, participation, and experience in computer science is not yet available. Yet, it is important to recognize that students bring multiple aspects of their identity to school with them. For example, both female and Black/African American students have been historically underrepresented in computer science. Students who have both identities (e.g., Black/African American female students) may face barriers and challenges compounded in two dimensions.

Afterschool programs or clubs can provide additional support for students from populations that have been historically underrepresented in computer science. They often spark student interest by providing a community for students to explore content. For example, Black Girls CODE chapters offer code clubs, summer camps, workshops, and enrichment activities led by technology professionals. Girls Who Code offers local clubs for elementary and secondary students, summer immersion programs for high school students, and college programs for alumni.

> *"This year I started a Girls Who Code club at the middle school. This has given students a chance to learn about computer science, meet the teacher, and meet other girls who may sign up for computer science in high school so they aren't 'the only one' in a class."*
>
> **Joelle Henry, CTE Computer Science Teacher, Salem High School CTE and Virtual Learning Academy Public Charter School, New Hampshire**

Population of Students in Schools Offering AP Computer Science and Exams Taken by Gender and Race/Ethnicity (2020)*



* Expected Population Per Gender is based on the overall enrollment by race/ethnicity at schools that offer AP CS.
* Participation data includes students attending both public and private schools. For the first time, AP data includes students identifying as another gender. Of students taking AP CS exams who identified as another gender, 16 identified as Black/African American, 45 were Hispanic/Latino/Latina/Latinx, 4 were Native American/Alaskan, none were Native Hawaiian/Pacific Islander, 20 were Asian, 133 were white, 14 were two or more races, and 47 provided no response for race/ethnicity.

Computer Science Teachers

Until recently, little has been known about the computer science teaching population. Most states do not require teachers of computer science courses to hold a certification in computer science. A large survey of computer science teachers reported that 64% were women and 75% were white (compared to 19% who identified as Black/African American, Hispanic/Latino/Latina/Latinx, Native American, or Pacific Islander).[25]

Many computer science teachers are new to computer science, but not new to teaching: 53% of respondents had more than 11 years of classroom experience, but only 16% reported 11+ years of experience in CS classrooms.[26] Most also teach other subject areas (only 38% report 75% or more of their teaching responsibility allocated to computer science). 30% held a degree in computer science, information technology, or a related field, and 6% held a minor in computer science.

Many computer science courses are taught by a teacher who does not hold a computer science teaching credential: only 46% of computer science teachers held a credential in computer science and 23% held a CTE credential. Often, teachers are licensed out of their content area because they are new to teaching computer science and the state either lacks credentialing programs or has inconsistent pathways to appropriate credentials. This highlights the continued need for flexible pathways for existing teachers to add on a computer science teaching credential.

Programs such as WeTeach_CS at the University of Texas at Austin are working to assist teachers in adding a computer science certification across the nation by providing online and in-person professional development in the teacher competencies covered by the computer science Praxis exam. WeTeach_CS has worked with state, university, and nonprofit partners in Alabama, Georgia, Indiana, Maryland, New Jersey, Ohio, Pennsylvania, South Carolina, and Tennessee to implement customized versions of the WeTeach_CS model to prepare teachers for the Praxis exam as well.[27] Since 2018, 1,015 educators outside of Texas have participated in the online certification prep course.

> *"The team at WeTeach_CS worked with our CSinPA team to tailor the course for PA educators for inclusion in our PAsmart professional learning resources. The course provides flexibility for full-time educators to learn computer science content, and it is crucial support towards our goal of 500 certified computer science educators in the state by 2023."*
>
> **Judd Pittman,**
> **Special Consultant to the Secretary of Education,**
> **Pennsylvania Department of Education**

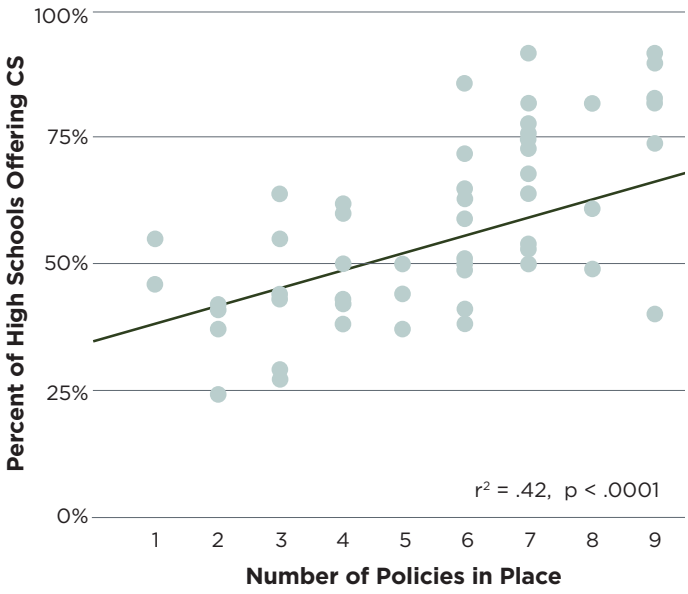
[25] CSTA & Kapor Center (2021), The computer science teacher landscape.
[26] Ibid.
[27] Texas Advanced Computing Center Expanding Pathways in Computing (2021), About WeTeach_CS

Correlation Between Policy and Implementation

Overall, there is a relationship between the number of computer science policies adopted by a state and the percentage of public high schools offering foundational computer science. States that adopt more of the policies have a greater percentage of high schools offering computer science. The correlation between policies and schools offering does not imply causation.

> *"AP Computer Science Principles has helped me to recruit students with a wider range of interests and backgrounds into computer science. The hands-on and project-based learning that occurs in the classroom helps my students with learning disabilities to be successful."*
>
> **Blythe Samuels, CS and Mathematics Teacher, Powhatan High School, Virginia**

Policy Adoption and Access to Foundational CS



> *"Physical computing has turned on so many 'lightbulbs' in the computer science classroom because students experience the mechanical and physical effect of their programming."*
>
> **Leon Tynes, Computer Science Teacher, Xavier College Preparatory, Arizona**

Computer Science Education Policy

This section presents the most reliable data currently available on the nine state policies developed by members of the Code.org Advocacy Coalition for expanding computer science education.

Each policy page includes:

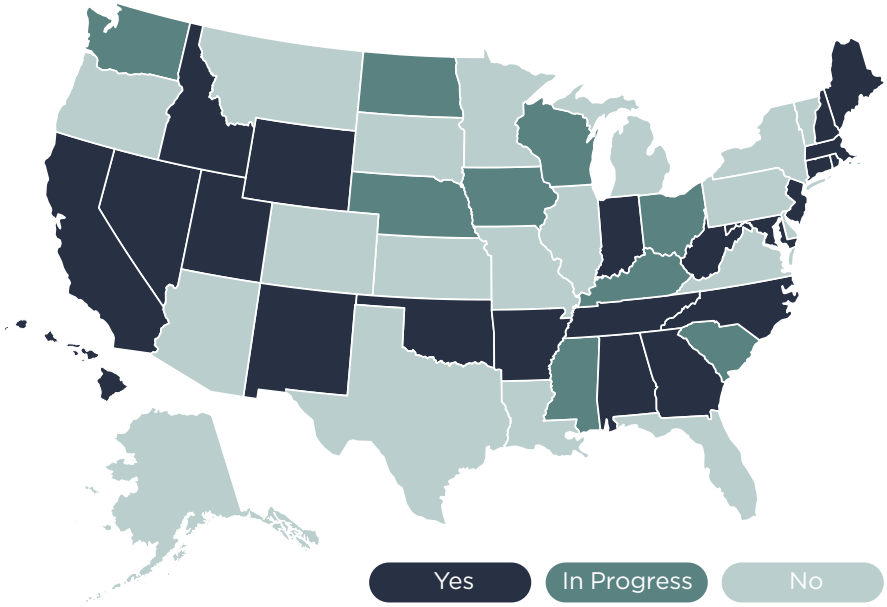
- A description of the policy;
- Highlights describing best practices related to the equitable implementation of the policy;
- A map capturing seven years of state policy enactment (2014–2021);
- The number of states with the policy each year since 2017; and
- A graphic depicting the difference in the percentage of high schools offering a foundational computer science course in states that have implemented the policy versus states that have not.

All nine policies can promote access to and equity within rigorous and engaging computer science courses when stakeholders make equity an explicit focus of policy development and implementation monitoring.

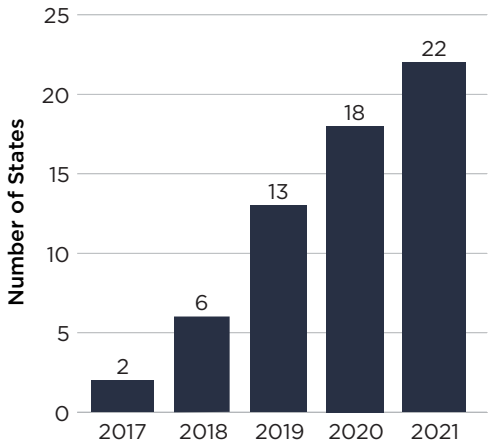
The rubric used to determine each state's status for each policy is in Appendix 1. A "no" indicates that a state has not met all rubric criteria. We also note related policy action in states that partially meet the rubric.

For additional information (such as links to state plans) and the most up-to-date policy status, please refer to https://code.org/advocacy/landscape.pdf and bit.ly/9policies.

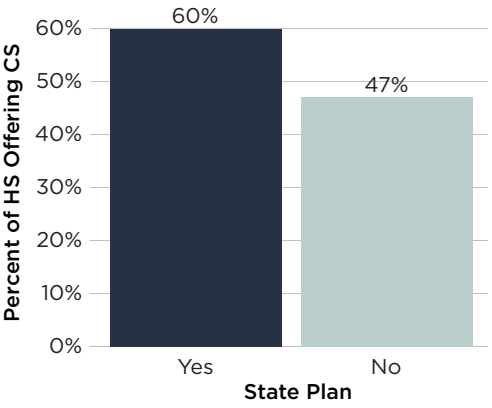
State Plan for K–12 Computer Science Education



Adoption of State Plans Over Time



State Plan and Access to CS



Since the last report, Alabama, Massachusetts, New Mexico, and Oklahoma have adopted state plans, and Iowa, Kentucky, Mississippi, North Dakota, Ohio, Washington, and Wisconsin now have plans in progress. In states with this policy, an average of 60% of high schools offer computer science.

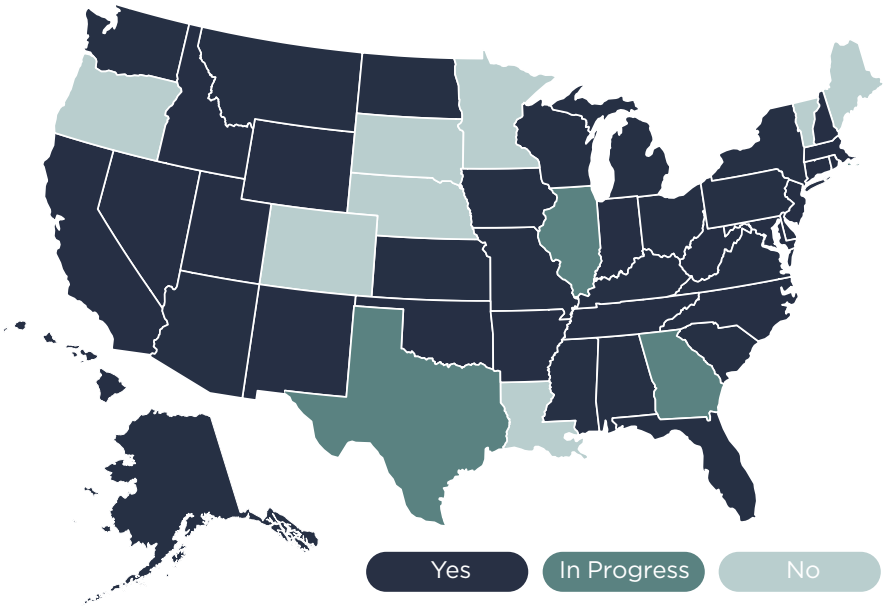
State plans articulate goals for implementing computer science, strategies for accomplishing the goals, and timelines. The development process often includes a wide range of stakeholders, including teachers, parents, students, school administrators, institutions of higher education, nonprofit organizations, and industry partners.

Arkansas's Ongoing Strategic Plan

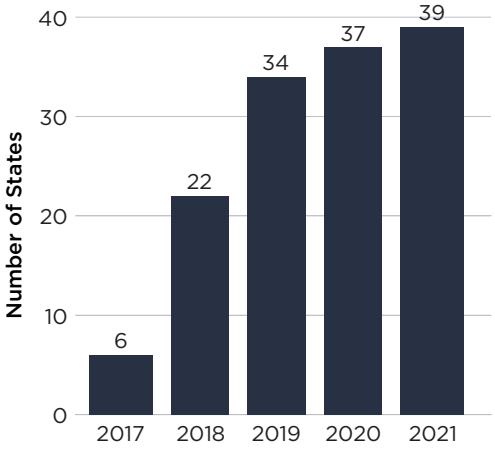
In 2016, the Arkansas Department of Education completed its first state plan for computer science education based on the Computer Science and Technology in Public Schools Task Force recommendations. This comprehensive strategic plan is updated regularly to address the rapidly changing computer science field and to reflect the department's ongoing efforts. In 2020, the Arkansas Computer Science and Cyber Security Task Force convened to review and update computer science and cybersecurity recommendations.[28]

[28] Arkansas computer science and cyber security task force report (2020).

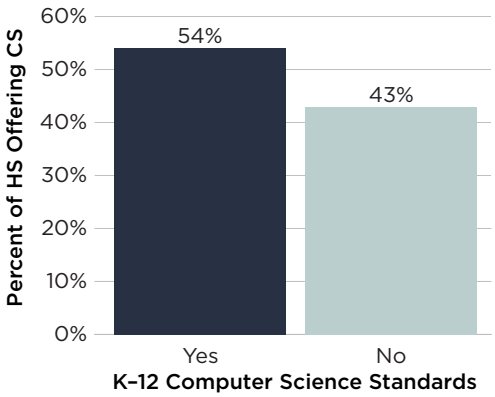
K–12 Computer Science Standards



Adoption of Standards Over Time



K–12 Standards and Access to CS



Since the last report, Montana and New York have adopted K–12 computer science standards. In states with this policy, an average of 54% of high schools offer computer science.

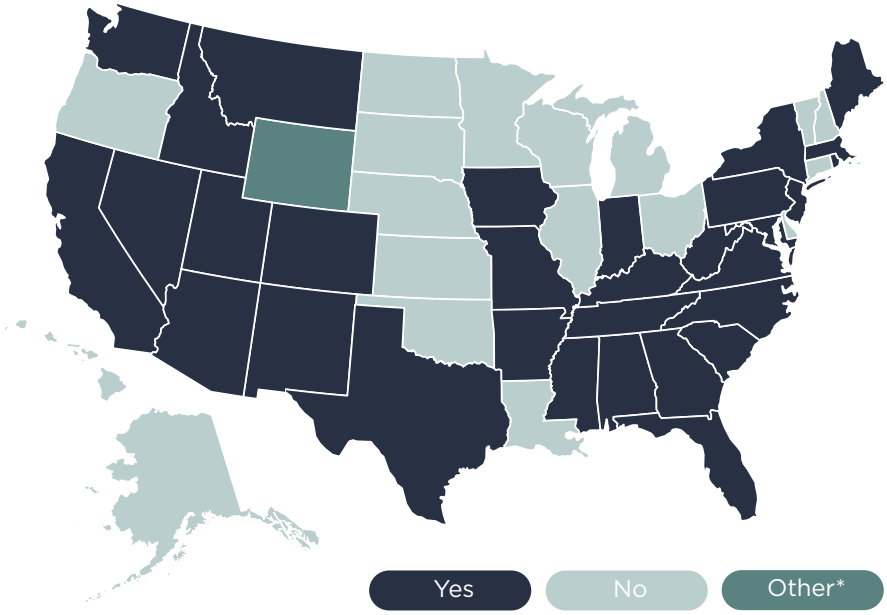
High-quality standards describe foundational expectations for students by providing learning objectives for all students and expectations for advanced study in specialty or elective courses. State standards ensure consistency in student expectations across schools, regardless of student demographics, and are key to equitable learning experiences.

Hawaii's Inclusive Planning Results in Equitable Standards

In 2017, the Hawaii State Department of Education (HIDOE) established a team to develop a statewide Computer Science education program. The HIDOE CS Team convened a Work Group with representatives from schools, industry partners, higher education, nonprofits, and other supporting organizations. The Work Group reviewed and analyzed information from the K–12 Computer Science Framework, the CSTA K–12 Standards, and computer science standards from other states. The Team determined the CSTA K–12 standards provide a comprehensive learning progression that was ultimately approved by the Hawaii Board of Education in 2018. The standards provide the foundation for a complete computer science curriculum while promoting equity, access, collaboration and inclusion to seek diverse perspectives.

> *"Technology is all around us, from smartphones to GPS to medical supplies. I wasn't able to take computer science in elementary and middle school, but taking computer science classes in high school has placed me on a career path that I can't wait to explore deeper."*
>
> **Kaylani, high school senior, Illinois**

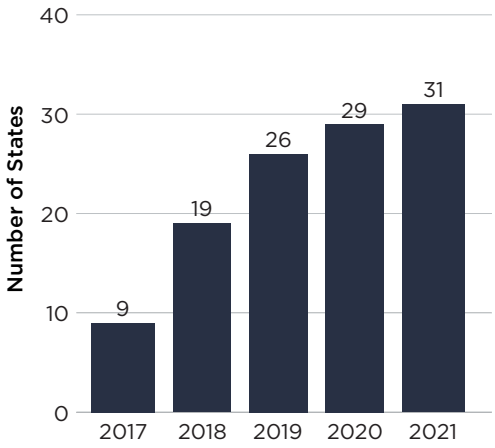
State-Level Funding for K–12 Computer Science Professional Learning



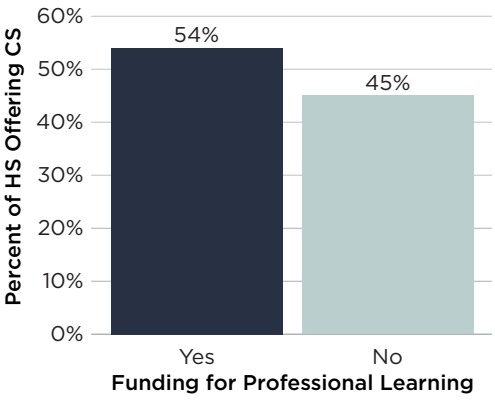
* The state does not specifically dedicate funding to computer science education, but computer science is a competitive grant priority.

Since the last report, California, Maine, Montana, and Texas have begun allocating state-level funding for K–12 computer science professional learning.[29] For FY 2022, 21 states allocated over $65 million for computer science. In states with funding, an average of 54% of high schools offer computer science.

Allocation of Funding Over Time



Funding and Access to CS



California Appropriates $20 Million for Teacher Training

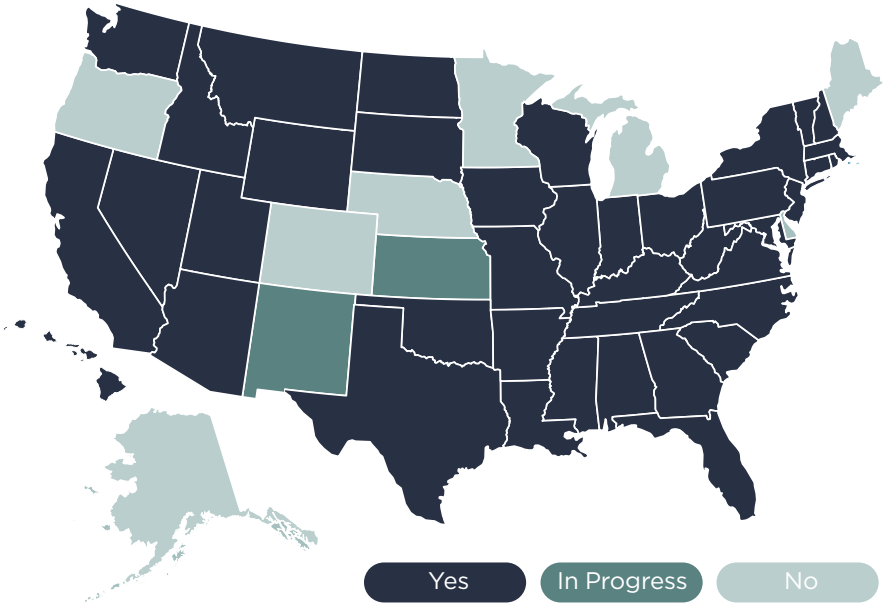
In 2021, California lawmakers appropriated $20 million for computer science:

- AB 128 appropriated $5 million to support professional learning for grades K–12 educators; and
- AB 130 appropriated $15 million for grants to prepare teachers to earn a supplementary authorization in computer science. Priority is given to grant applicants serving rural schools and schools serving English learners, students eligible for free or reduced-price meals, or foster youth.

By prioritizing schools with high populations of underrepresented students and providing teachers with financial incentives, California is creating new opportunities for teachers and students.

[29] Ohio and Hawaii, previously recognized for funding computer science, have not allocated new funds since 2019 and 2020, respectively.

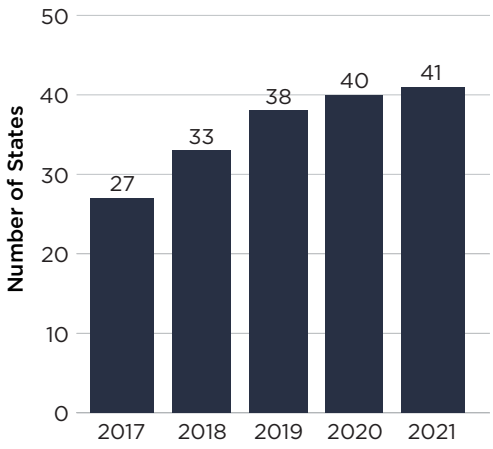
State Computer Science Teacher Certification



Since the last report, Pennsylvania adopted a computer science teacher certification. In states with this policy, an average of 54% of high schools offer computer science.

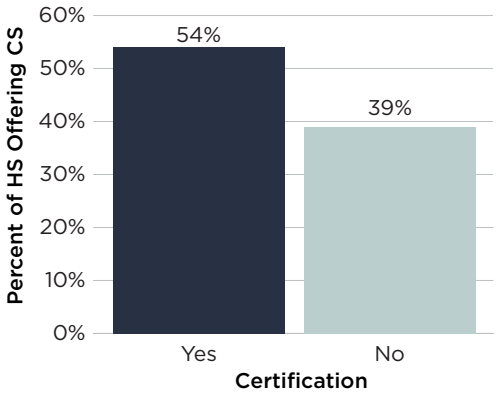
Certifications ensure that teachers have sufficient content knowledge to teach computer science. These credentials should have clear pathways with multiple options for demonstration of knowledge, such as passing an educator content exam or graduate-level computer science courses, or earning a micro-credential. Any new certification requirements should be phased in over time and include financial support for teachers and preparation programs.

Adoption of Teacher Certification Over Time*



*Totals include DC

Certification and Access to CS



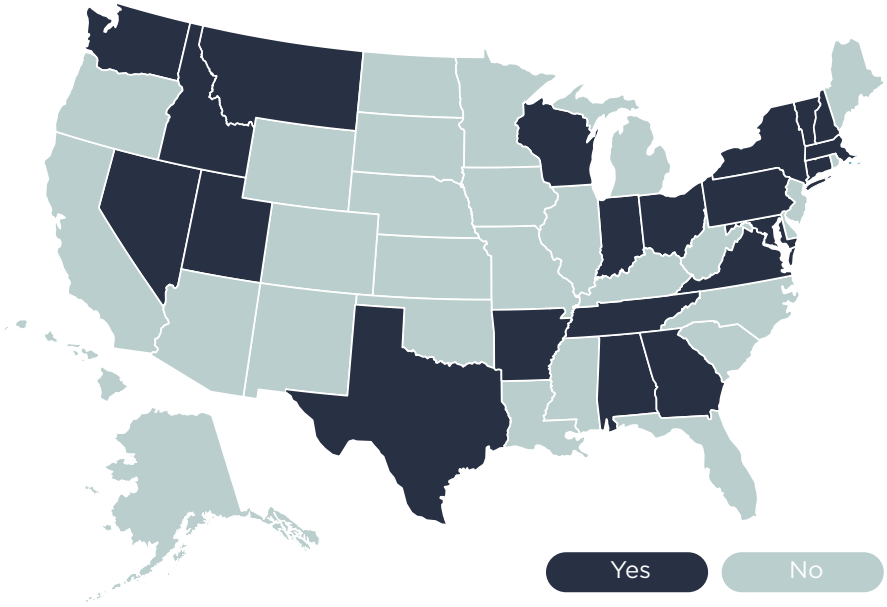
WeTeach_CS Offers Financial Incentive to Texas Teachers

In Texas, teachers with existing certification in another content area must pass a state exam to teach most 8–12th grade computer science courses. The WeTeach_CS program at the University of Texas at Austin has leveraged private and federal grants to prepare teachers for the exam and provides stipends to teachers who pass the exam. Since 2015, the program has assisted 569 Texas teachers in becoming certified in computer science.[30]

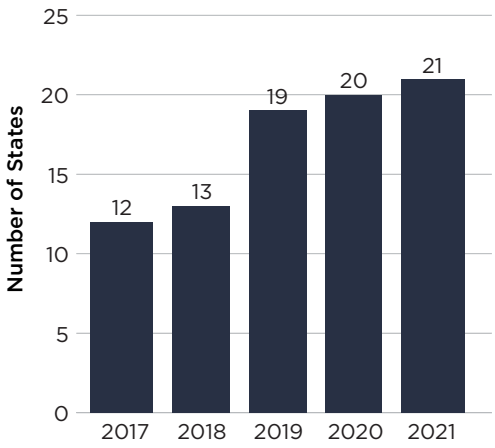
Direct state funding could amplify this model.[31] Funding appropriated by the state in 2021 to expand AP Computer Science Principles could be used to support teacher training and passing the certification exam, especially in small and rural schools.

[30] Texas Advanced Computing Center Expanding Pathways in Computing (2021), About WeTeach_CS
[31] Warner, J. R., Fletcher, C. L., Torbey, R., & Garbrecht, L. S. (2019). Increasing capacity for computer science education in rural areas through a large-scale collective impact model.

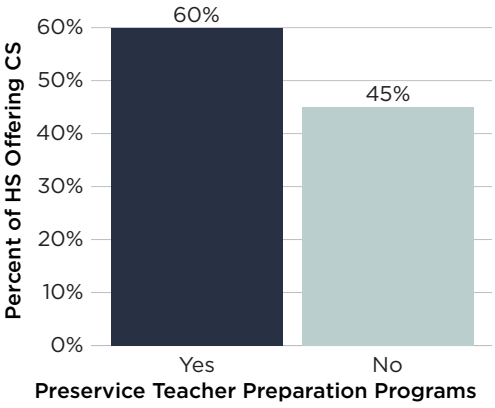
State-Approved Preservice Teacher Preparation at Institutions of Higher Education



Approval of Programs Over Time



Preservice Teacher Preparation Programs and Access to CS



Tennessee is the latest state to approve and list a preservice teacher preparation program in computer science. Other state preservice policies may include:

- Creating standards for the approval of programs;[32]
- Requiring all preservice teachers to receive instruction in computer science; and
- Funding to create preservice programs in computer science or scholarships to potential computer science educators.

In states with a preservice policy, an average of 60% of high schools offer computer science.

Early Adopters Require Teacher Preparation Programs to Teach CS

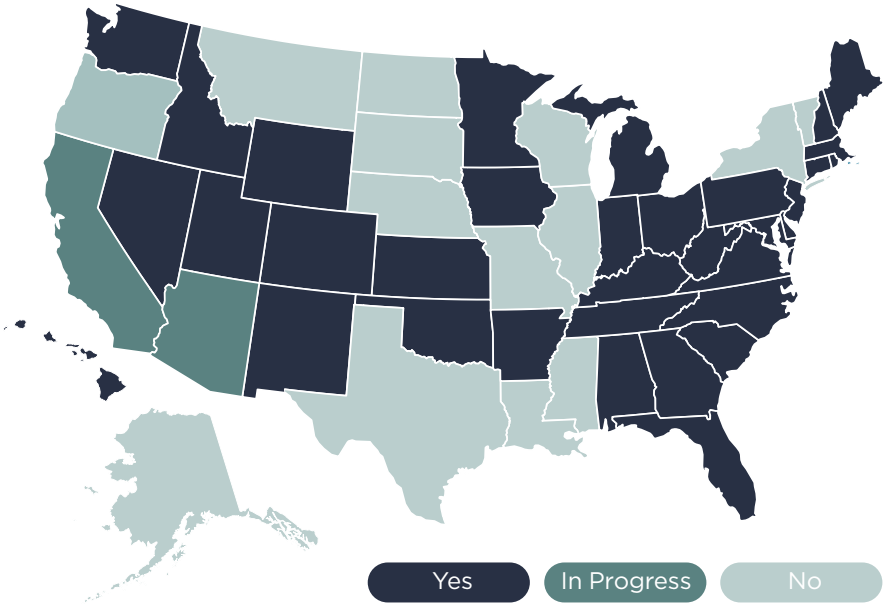
Full preservice pathways leading to an initial endorsement are necessary for growing the teacher pipeline, but programs have low enrollment.[33]

One strategy to prepare computer science teachers is to introduce all preservice teachers across all grade levels and subject areas to the subject. Arkansas and Indiana require all K–6 teacher preparation programs to include instruction in computer science, and Connecticut, Nevada, and Ohio require all programs to include this. In these five states, an average of 67% of high schools offer computer science.

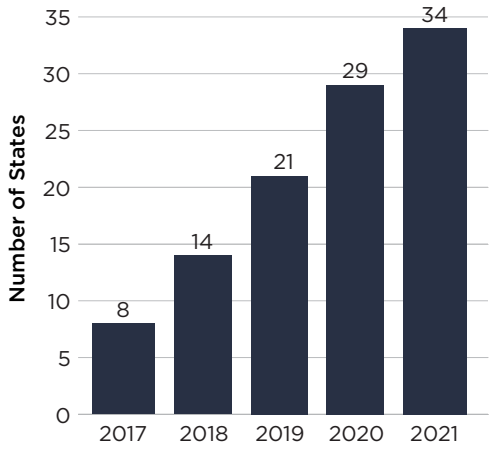
> *"Teachers need a clearer pathway to be prepared and certified in computer science. We cannot do things the same way if we want more certified teachers."*
>
> **Eboni Akpan Zook, Upper School Technology Teacher, Baltimore Leadership School for Young Women, Maryland**

[32] The CSTA Standards for Computer Science Teachers provide one model.
[33] Code.org (2017), Universities aren't preparing enough computer science teachers.

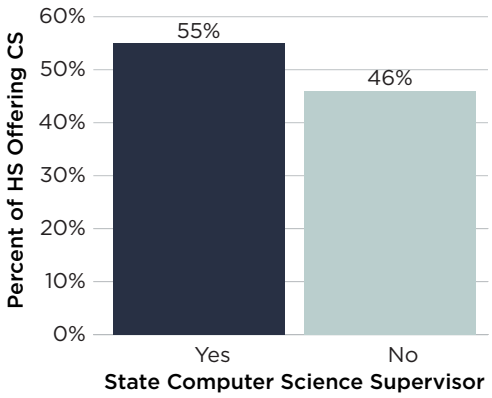
State-Level Computer Science Supervisor



Creation of a Supervisor Role Over Time



State Supervisor and Access to CS



Since the last report, Kentucky, New Jersey, New Mexico, South Carolina, and Tennessee established state-level computer science supervisor positions. In states with these positions, an average of 55% of high schools offer computer science.

Centralized leadership at the state education agency ensures that policies are implemented holistically. A dedicated computer science supervisor can focus on balancing the scaling of computer science education with the quality of implementation and reducing ensuring existing disparities.

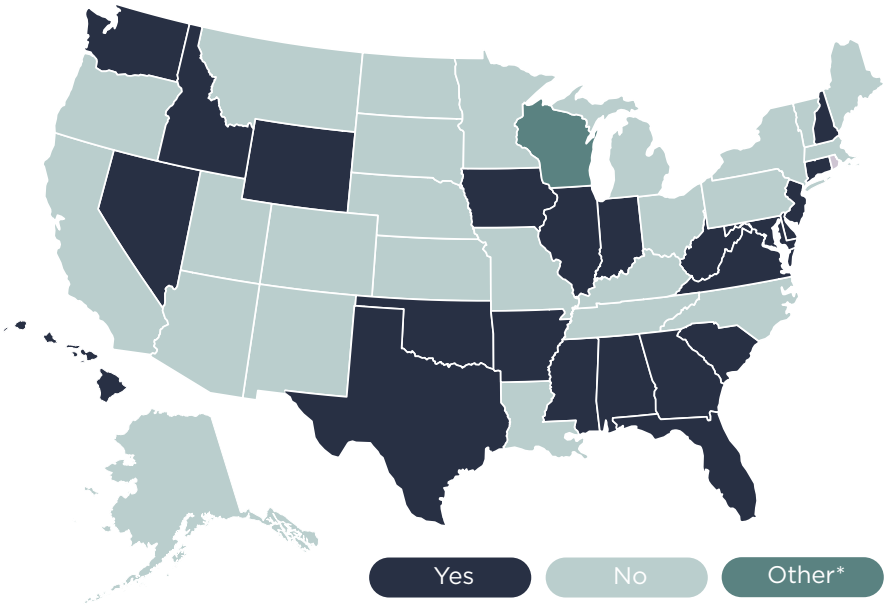
New Mexico Leads with K–8 and 9–12 Positions

Two employees at the New Mexico Public Education Department specialize in computer science education. One position oversees grades K–8 within the Math and Science Bureau and the other position focuses on high school, the computer science task force, and the state plan within the College and Career Readiness Bureau. Other states may consider adopting a similar model to distribute the workload of computer science supervisors between primary and secondary education. This model allows for intentional focus on unique student and teacher needs for the youngest computer science students and those about to embark on college and the workforce.

"Computer science is no longer an elective. It's a vital skill that students need to compete in today's global tech-savvy workforce. Being fluent in programming and computer science will open doors for my students."

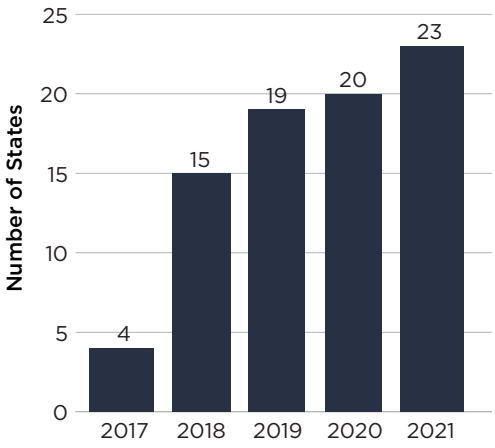
Amanda Gillespie, Computer Science Teacher, STEMM Academy @ Hartford Middle School, Ohio

A Requirement for All High Schools to Offer Computer Science

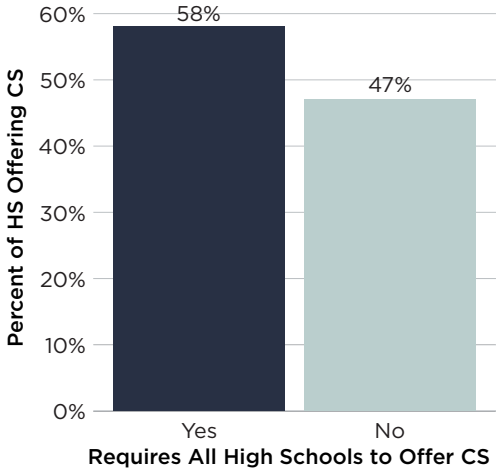


* The state has a written goal, but no requirement for each school.

Adoption of Requirement Over Time



Requiring Schools to Offer Computer Science and Access to CS



Since the last report, Illinois, Mississippi, and Oklahoma established requirements for all high schools to offer computer science. In states with this policy, an average of 58% of high schools offer computer science.

So far, 23 states require all high schools to offer at least one computer science course based on rigorous standards and accessible to all students.

"We are building a PreK–12 computer science program with entry points for students in each grade level and support for special education and multiple language learners. We believe introducing younger students to these concepts will translate into a more diverse program in the upper grades. Teachers, administrators, and the school board review enrollment, curriculum, and student survey data each year to track progress."

Dan Blier, Computer Science Curriculum Specialist, Plano ISD, Texas

"My school requires each 9th grade student to take a nine-week computer science course. Students explore programming, digital citizenship, and career opportunities linked to computer science. We hope this requirement will increase the diversity in our other computer science classes."

Amy Wright, Computer Science and Engineering Department Chair, The Hun School, New Jersey

Requirements for High, Middle, and/or Elementary Schools to Teach Computer Science

State	AL	AR	CT	DE	FL	GA	HI	IA	ID	IL	IN	MD
High school requirement	X	X	X	X	X	X	X	X	X	X	X	X
Middle school requirement	X	X	X		X	X	X	X			X	X
Elementary school requirement	X	X	X				X	X			X	
Deadline for high school requirement	2020–2021	2015–2016	2019–2020	2020–2021	2018–2019	2024–2025	2021–2022	2022–2023	2019–2020	2022–2023	2021–2022	2021–2022

State	MS	NH	NJ	NV	OK	SC	TX	VA	WA	WV	WY
High school requirement	X	X	X	X	X	X	X	X	X	X	X
Middle school requirement	X	X			X			X		X	X
Elementary school requirement	X	X		X	X			X		X	X
Deadline for high school requirement	2024–2025	2020–2021	2018–2019	2022–2023	2024–2025	2018–2019	2014–2015	2016–2017	2022–2023	2020–2021	2022–2023

Many states have extended the requirement to offer computer science to every elementary and middle school (as shown in the table below) or require annual reporting from schools. States can encourage transparency and accountability in addressing participation disparities in computer science courses by displaying demographic enrollment data in public databases.

Mississippi Joins States Implementing K–12 Requirements

In 2021, Mississippi HB 633 required all schools to offer instruction in computer science by the 2024–25 school year and set incremental requirements for each year.

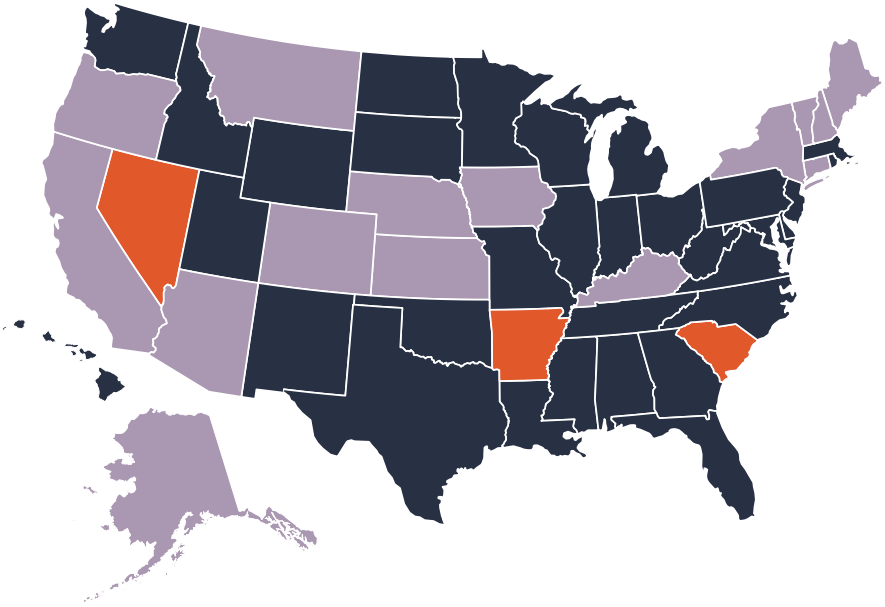
By the 2022–23 school year, all middle schools must offer instruction in foundations of computer science and charter schools that serve middle or high school students must offer a course in computer science; half of all elementary schools in each district must offer at least one hour of computer science instruction per week and all charter schools serving elementary students must offer instruction in computer science.

By the 2023–24 school year, half of all high schools in each district must offer a course in computer science; and all elementary schools must offer at least one hour of instruction per week.

The policies Mississippi has enacted since 2017—including funding, computer science standards, a teacher certification in computer science, and allowing computer science to count towards a graduation requirement and higher education admissions—have built the capacity to ensure this requirement's success. The Mississippi legislature has allocated funding to computer science education since 2019 and appropriated an additional $1 million in 2021 to develop computer science courses and professional development. HB 633 also required the development of a state strategic plan, which is underway with support from an ECEP Alliance co-sponsorship.

> *"Computer science and cyber education are a crucial part of today's world and it is vital that we each do our part to ensure that our students receive a quality education in these fields."*
>
> **Mississippi Governor Tate Reeves**

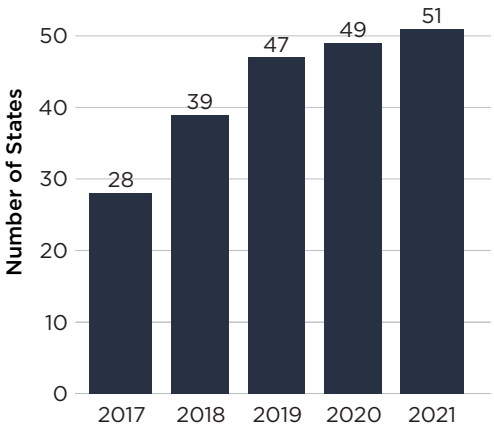
Computer Science Can Satisfy a Core High School Graduation Requirement



CS Grad Requirement | Statewide Policy | District Decision

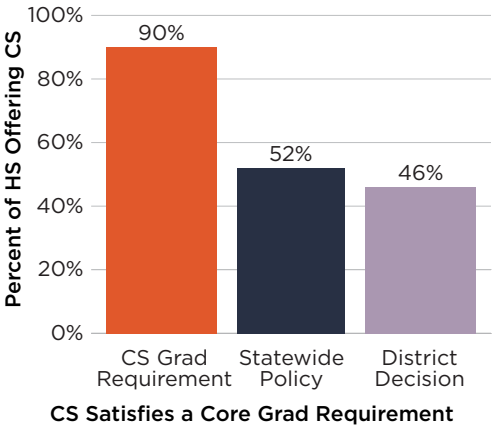
Since the last report, Connecticut and Kansas have allowed computer science to satisfy a core high school graduation requirement, making this the first policy that all states and DC have implemented. In states with a computer science graduation requirement, 90% of high schools offer computer science, compared to 52% in states with statewide substitution policies and 46% in states that allow and encourage school districts to set the policy.

Adoption of Graduation Credit Over Time*



*Totals include DC

Computer Science as a Grad Requirement and Access to CS

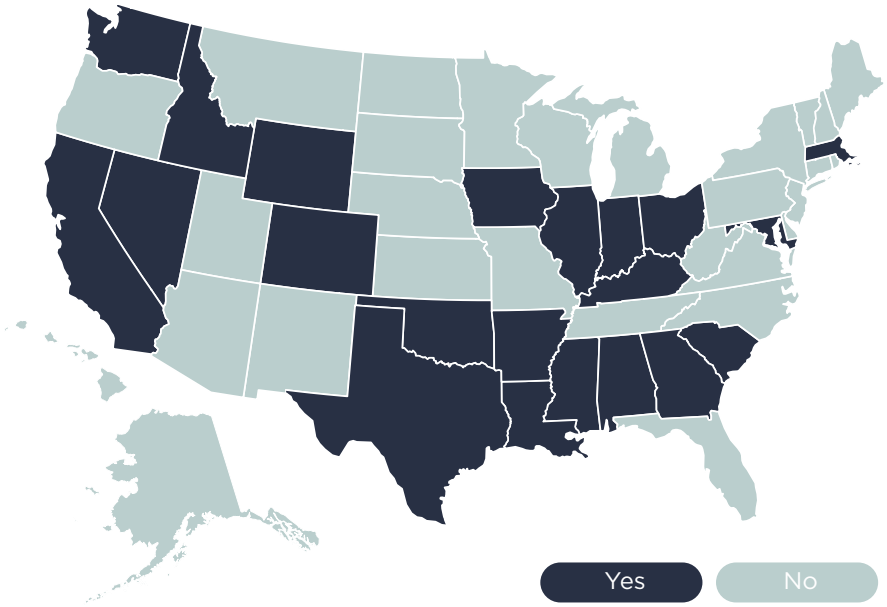


Creating Dedicated Computer Science Graduation Requirements

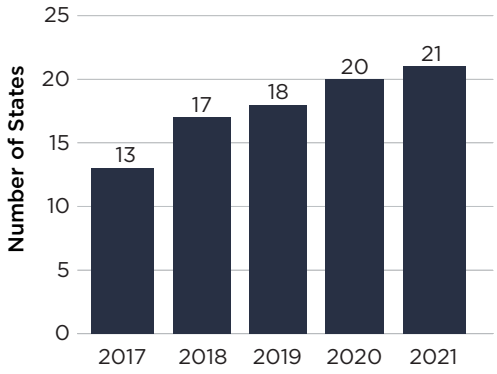
Three states have adopted policies requiring all high school students to learn computer science, intending to eliminate disparities in computer science courses. Since the 1980s, South Carolina has had a computer science graduation requirement with approved courses including computer literacy, keyboarding, and computer applications. In 2016, the state defined computer science and began a review of which courses align to the new definition. The revised list of computer science courses was announced in 2018.[34] In 2021, Arkansas became the second state to require a credit in computer science for graduation, continuing to allow students to apply the computer science credit to existing graduation requirements in mathematics or science. Other states have technology graduation requirements that a computer science course can fulfill. Nevada requires all students to earn one-half credit in computer education and technology, with half of the course dedicated to computer science and computational thinking.

[34] Code.org (2021), South Carolina computer science graduation requirement case study.

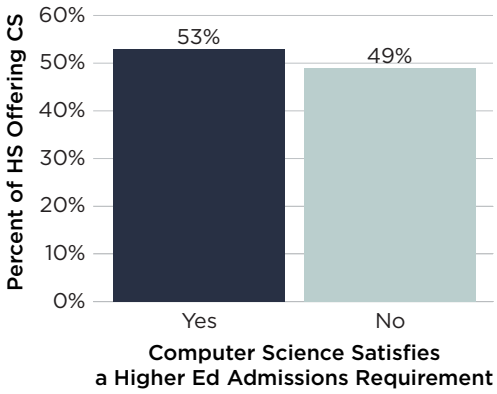
Computer Science Can Satisfy a Core Admission Requirement at Institutions of Higher Education



Adoption of Admissions Policy Over Time



CS Satisfying a Higher Ed Admissions Requirement and Access to CS



Ohio is the latest state to allow computer science to satisfy a core admission requirement at institutions of higher education. In states with this policy, an average of 53% of high schools offer computer science.

Admission policies for colleges and universities should align with high school graduation requirements by allowing rigorous computer science courses to satisfy core admission requirements.

Ohio Aligns Graduation and Admission Policy

In Ohio, computer science can count toward various high school graduation credit requirements. HB 110 in 2021 allowed computer science to count for admission at public institutions of higher education, aligning with the graduation policy.

By aligning high school graduation requirements to higher education admission requirements, college-bound students are incentivized to take a computer science course. States with prescriptive admissions requirements may unintentionally create a conflict for students who want to study computer science in both high school and college. Ohio now provides students a clear pathway to graduation and higher education without having to make compromises to learn computer science.

> *"College recruiters who come to our school are looking for students who took computer science classes in high school. Computational thinking is so important for students to learn—it helps them in all problem solving, not just in their computer science classes."*
>
> **Kathy Effner, Math Lead Teacher, Parsippany High School, New Jersey**

State Summaries

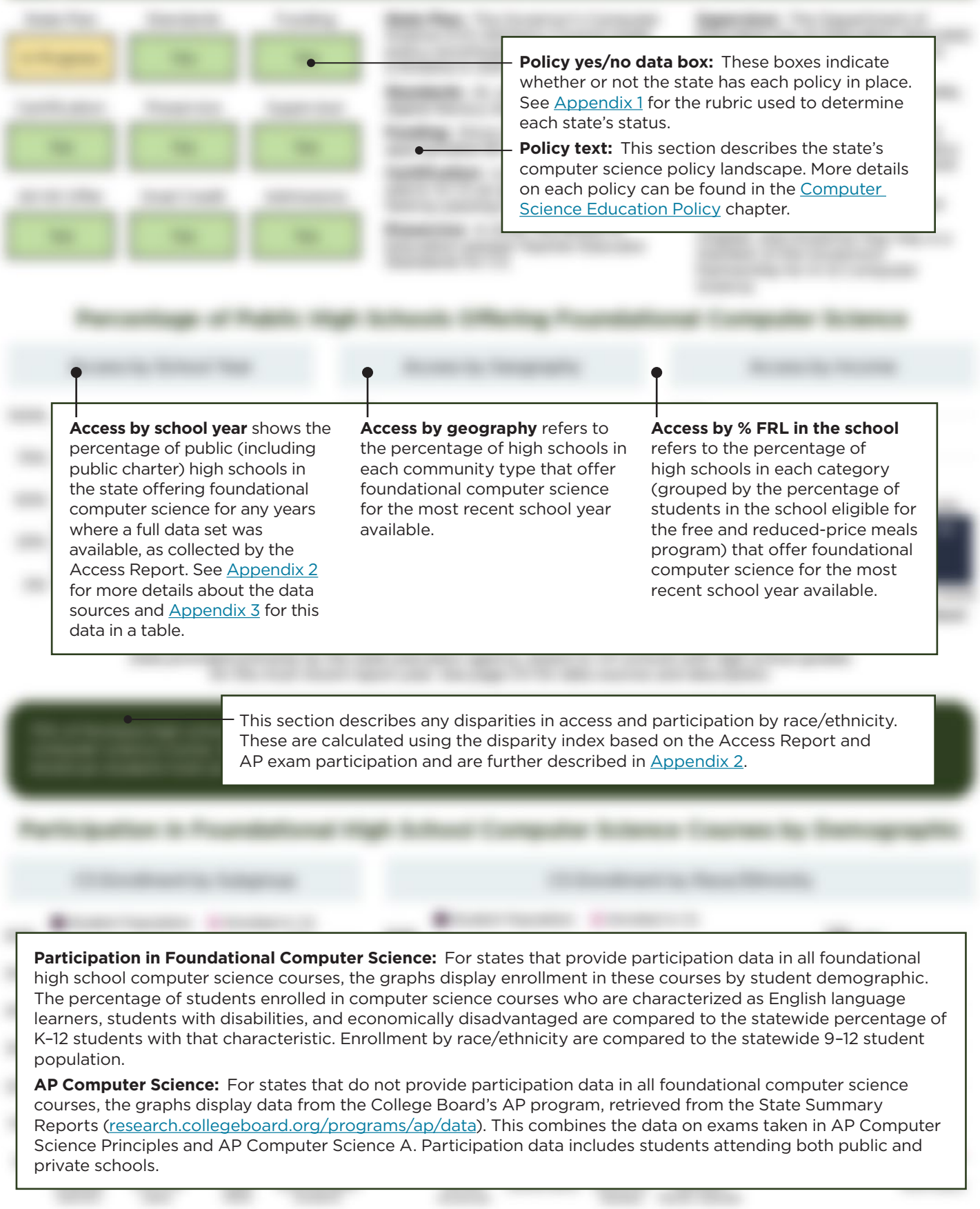
This section provides information for each state in the nation, including:

- **the state's status on each of the nine policies;**
- **a description of significant and updated computer science education policies in the state;**
- **data on high schools that offer foundational computer science;**
- **data on student participation in high school computer science courses by demographic;**
- **membership in the Expanding Computing Education Pathways (ECEP) Alliance, a National Science Foundation-funded Broadening Participation in Computing Alliance;**
- **existence of state CSTA chapters; and**
- **membership in the Governors' Partnership for K–12 Computer Science.**

Further Information

- Up-to-date policy information can be viewed at bit.ly/9policies.
- Refer to governorsforcs.org for more information about the Governors' Partnership for K–12 Computer Science.
- Refer to ecepalliance.org for more information about connecting with a state team and to learn more about how your state can increase the number and diversity of K–12 students in computing and computing-related degrees.
- Refer to csteachers.org/chapters to find your CSTA chapter.
- An interactive data visualization and downloadable data set of computer science course access by state, district, and school can be found at code.org/yourschool/accessreport and AP exam participation can be found at code.org/ap.
- Data sources are described in more detail on the following page and in Appendix 2. All data is included in the tables in Appendix 3.

Guide to State Summaries



Policy yes/no data box: These boxes indicate whether or not the state has each policy in place. See Appendix 1 for the rubric used to determine each state's status.

Policy text: This section describes the state's computer science policy landscape. More details on each policy can be found in the Computer Science Education Policy chapter.

Access by school year shows the percentage of public (including public charter) high schools in the state offering foundational computer science for any years where a full data set was available, as collected by the Access Report. See Appendix 2 for more details about the data sources and Appendix 3 for this data in a table.

Access by geography refers to the percentage of high schools in each community type that offer foundational computer science for the most recent school year available.

Access by % FRL in the school refers to the percentage of high schools in each category (grouped by the percentage of students in the school eligible for the free and reduced-price meals program) that offer foundational computer science for the most recent school year available.

This section describes any disparities in access and participation by race/ethnicity. These are calculated using the disparity index based on the Access Report and AP exam participation and are further described in Appendix 2.

Participation in Foundational Computer Science: For states that provide participation data in all foundational high school computer science courses, the graphs display enrollment in these courses by student demographic. The percentage of students enrolled in computer science courses who are characterized as English language learners, students with disabilities, and economically disadvantaged are compared to the statewide percentage of K–12 students with that characteristic. Enrollment by race/ethnicity are compared to the statewide 9–12 student population.

AP Computer Science: For states that do not provide participation data in all foundational computer science courses, the graphs display data from the College Board's AP program, retrieved from the State Summary Reports (research.collegeboard.org/programs/ap/data). This combines the data on exams taken in AP Computer Science Principles and AP Computer Science A. Participation data includes students attending both public and private schools.

Alabama

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: The Governor's Computer Science (CS) Advisory Council made policy recommendations in 2019 and a timeline in 2021.

Standards: AL adopted K–12 CS and digital literacy standards in 2018.

Funding: Since 2017, AL has appropriated $11.9M for CS.

Certification: Licensed teachers can add 6–12 CS as an additional teaching field by passing the Praxis exam.

Preservice: In 2019, the Board of Education passed Teacher Educator Standards for CS.

Supervisor: The Department of Education has an Education Specialist and an Educator Administrator for Digital Literacy and CS.

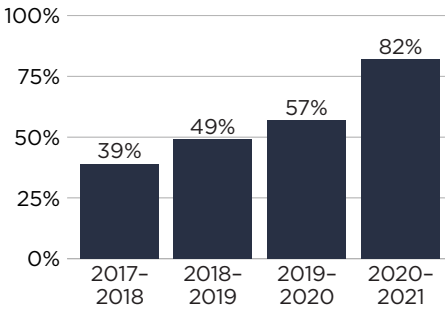
All HS Offer: All elementary, middle, and high schools must offer CS.

Grad Credit and Admissions: Some CS courses can count as a math or science credit for graduation and for higher ed admissions

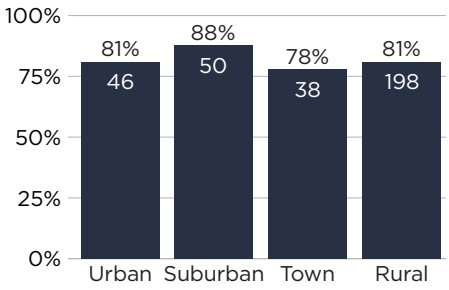
Alabama is a member of the ECEP Alliance, has a statewide CSTA chapter, and Governor Kay Ivey is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

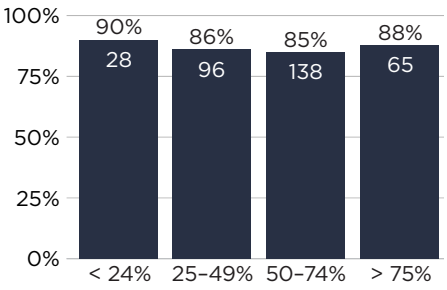
Access by School Year



Access by Geography



Access by % FRL in the School

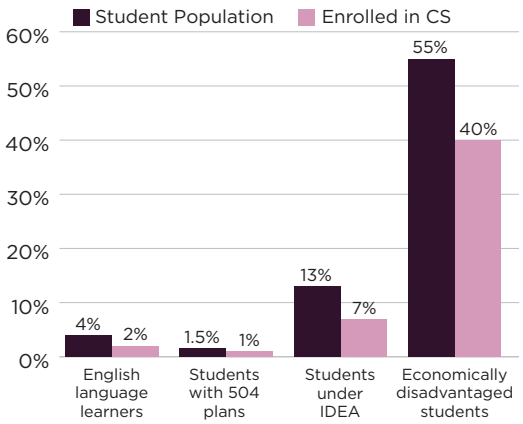


Data provided primarily by the State Department of Education, based on 407 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

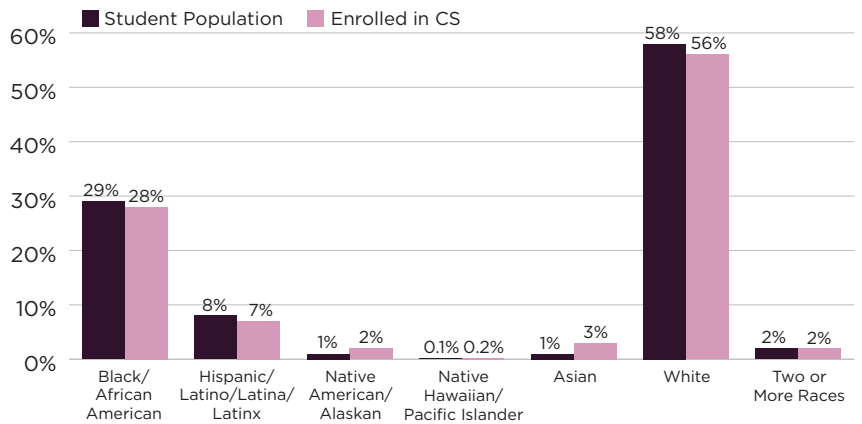
90% of AL high school students attend a school that offers computer science, but only 4.5% of students are enrolled in a foundational computer science course. 38% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Some students may be represented in multiple race/ethnicity columns as the state reports race and ethnicity separately.

Alaska

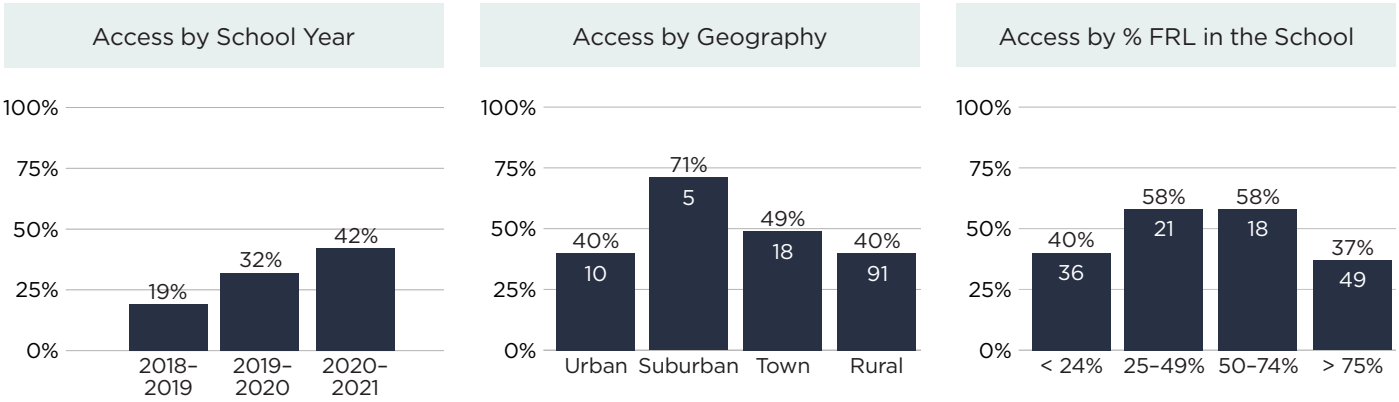
State Plan	Standards	Funding
No	Yes	No
Certification	**Preservice**	**Supervisor**
No	No	No
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	No

Standards: Alaska adopted K–12 computer science (CS) standards based on the CSTA standards in 2019. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

Grad Credit: Alaska passed a permissive and encouraging policy to allow computer science to count as a mathematics, science, or local CTE technology credit for graduation, but it is a district decision.

Alaska has a statewide CSTA chapter.

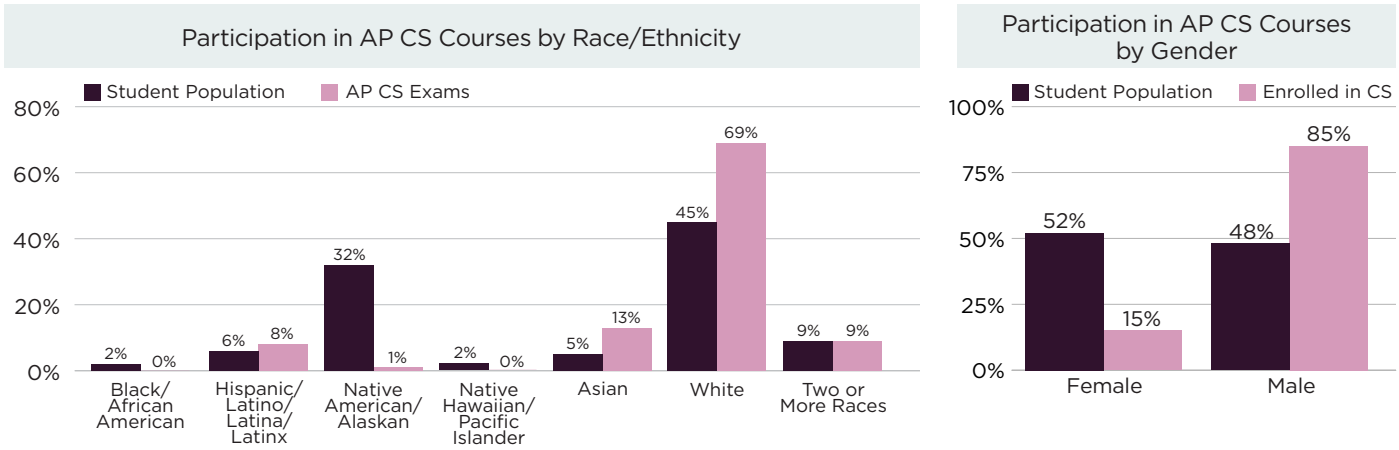
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the Department of Education and Early Development and school catalogs, based on 296 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

67% of AK high school students attend a school that offers computer science. Of 108 total AP CS exams taken in Alaska last year, 15% were female. Although Native American/Alaskan students make up 32% of the overall student population, only one Native American/Alaskan student took an AP CS exam. No Native Hawaiian/Pacific Islander students nor Black/African American students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)



Course enrollment data for all foundational computer science courses is not available from Alaska. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Arizona

State Plan	Standards	Funding
No	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	In Progress

All HS Offer	Grad Credit	Admissions
No	District Decision	No

Standards: AZ adopted K–12 computer science (CS) standards with a focus on equity in 2018.

Funding: Since 2016, AZ allocated $4.7M for CS.

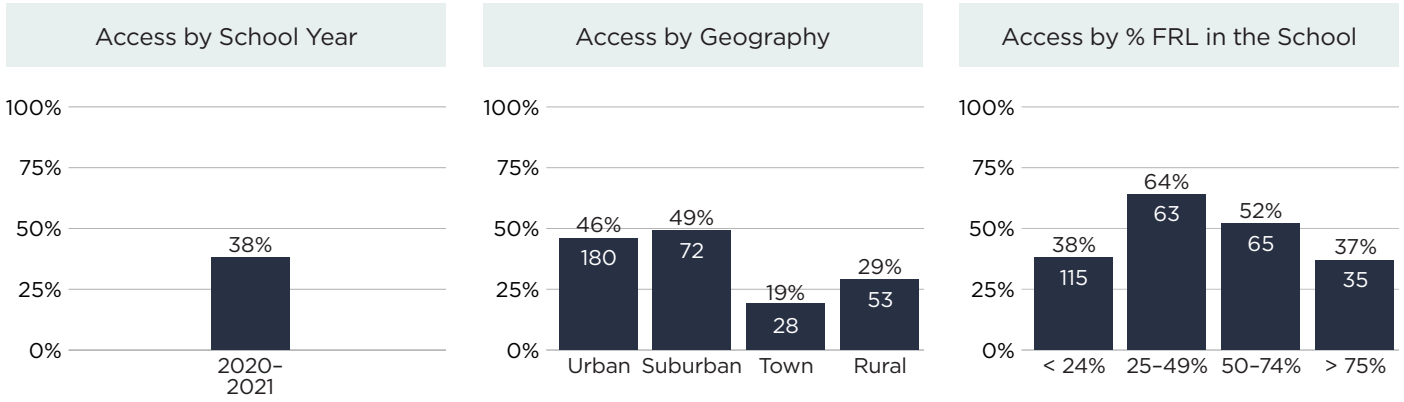
Certification: Teachers with existing licensure can obtain the PreK–8 or 6–12 CS endorsement by completing a district-approved program or academic coursework in CS content and teaching methods. The PreK–12 special subject endorsement requires completing academic coursework in CS content and methods.

Supervisor: The AZ Department of Education is currently in the process of hiring a CS and Educational Technology Specialist.

Grad Credit: AZ passed a permissive and encouraging policy to allow CS to count as a mathematics credit for graduation, but it is a district decision.

AZ has a statewide CSTA chapter and Governor Doug Ducey is a member of the Governors' Partnership for K–12 Computer Science.

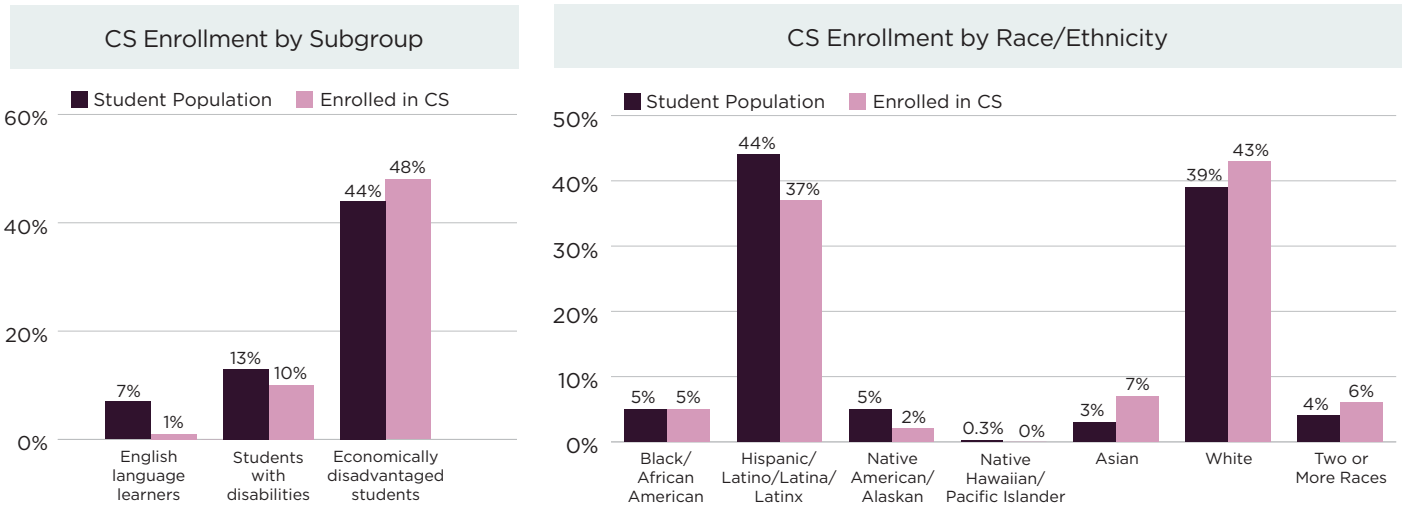
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the Department of Education, based on 867 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

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.

Participation in Foundational High School Computer Science Courses by Demographic



The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals. Participation data was masked at low counts.

Arkansas

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: The AR Dept. of Education released new recommendations for computer science (CS) in 2020, updating their ongoing state plan.

Standards: In 2020, AR adopted revised K–12 CS standards.

Funding: $21M for CS since 2015.

Certification: AR has an initial CS license and an add-on 4–12 CS endorsement. Each public high school must employ a CS-certified teacher by 2023–24.

Preservice: AR has approved preparation programs and requires all preservice elementary teachers to receive instruction in CS.

Supervisor: The Dept. of Education has a CS office and a new position focused on postsecondary.

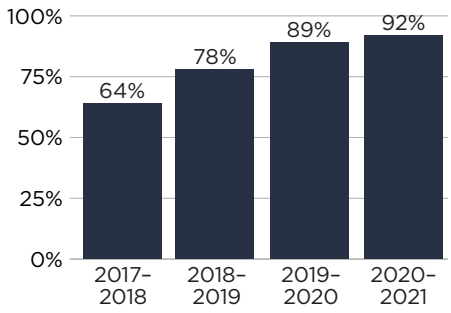
All HS Offer: All elementary, middle, and high schools must offer CS.

Grad Credit and Admissions: Act 414 (2021) required all students to take CS to graduate. Any CS course can count as a mathematics, science, or career focus credit for graduation and for higher education admission.

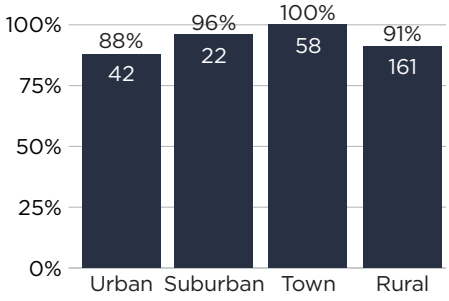
AR is a member of the ECEP Alliance, has a statewide CSTA chapter, and Governor Asa Hutchinson is co-chair of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

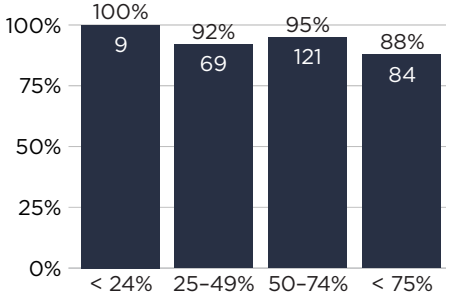
Access by School Year



Access by Geography



Access by % FRL in the School

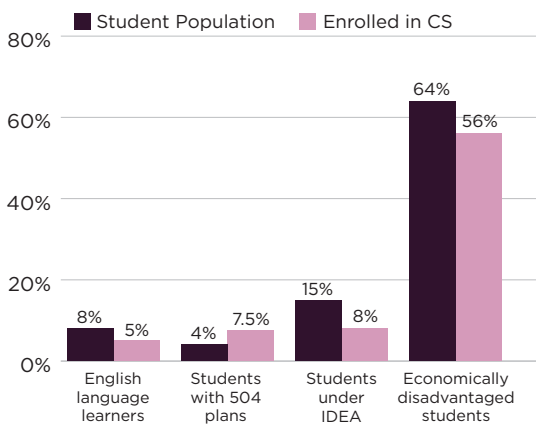


Data provided primarily by the Department of Education, based on 306 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

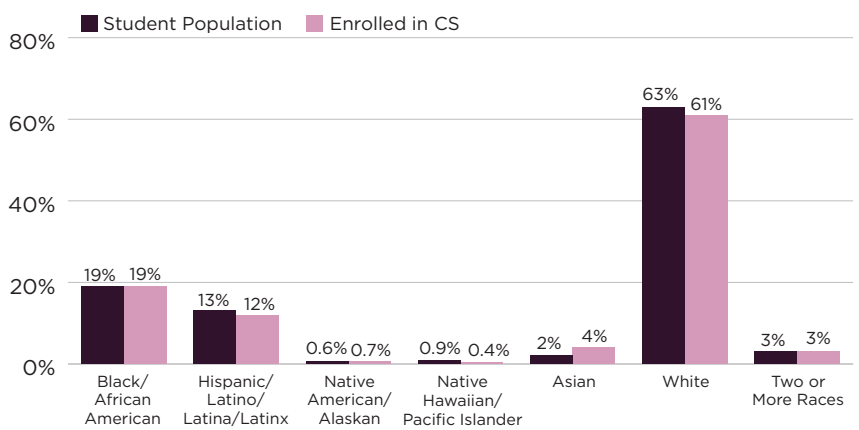
97% of AR high school students attend a school that offers computer science, but only 6.5% of students are enrolled in a foundational computer science course. 29% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science, but Native Hawaiian/Pacific Islander students are 2.6 times less likely than their white and Asian peers to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



California

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	No	In Progress
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	Yes

State Plan: The California State Board of Education adopted the Computer Science Strategic Implementation Plan in 2019.

Standards: CA adopted K–12 CS standards in 2018.

Funding: In 2021, CA allocated $20M for CS via AB 128 and AB 130.

Certification: Teachers with existing licensure can obtain a supplementary authorization for PreK–12 CS through academic coursework.

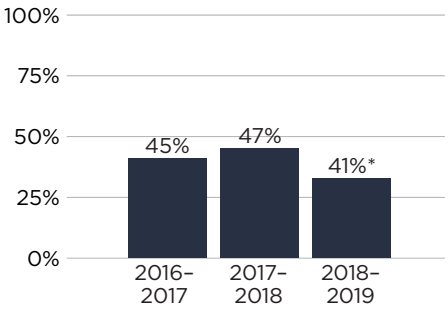
Supervisor: The CA Department of Education is in the process of hiring a CS Coordinator.

Grad Credit and Admissions: Approved CS courses can count as the third-year science course (area D) or as a mathematics credit (area C) for higher education admission which aligns with the high school graduation policy.

CA is a member of the ECEP Alliance and has 11 regional CSTA chapters.

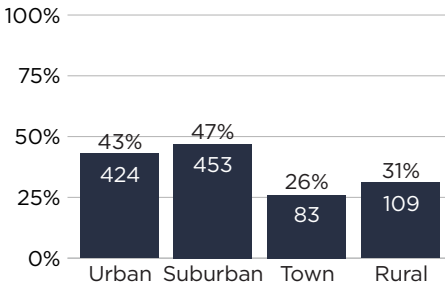
Percentage of Public High Schools Offering Foundational Computer Science

Access by School Year

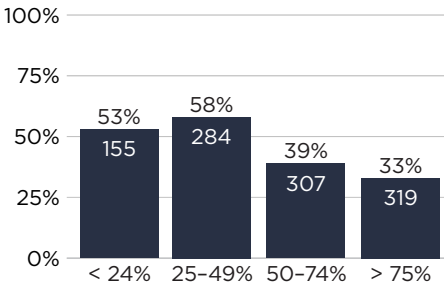


*Decrease may be due to course code changes in SY 2017–18

Access by Geography



Access by % FRL in the School

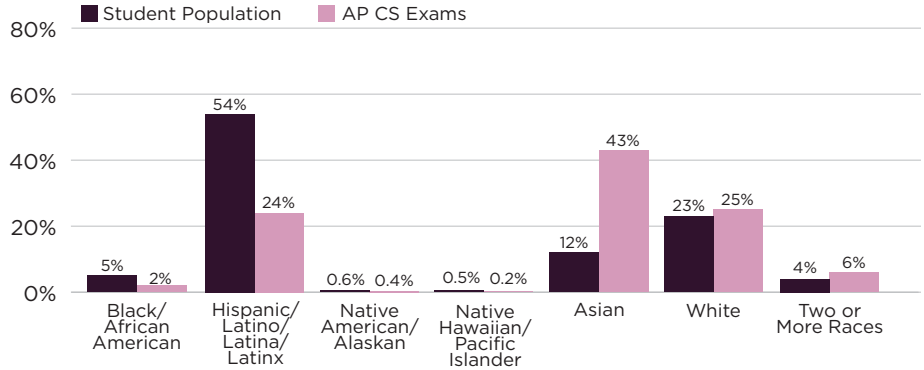


Data provided primarily by the Department of Education and school catalogs, based on 2,633 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

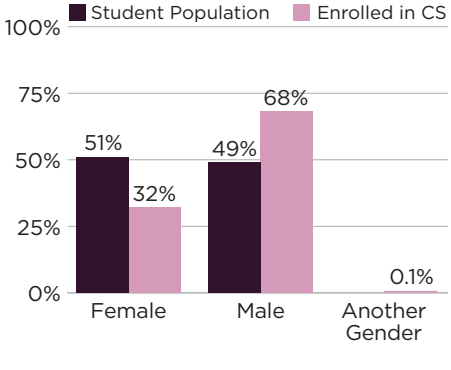
75% of CA high school students attend a school that offers computer science. Of 32,263 total AP CS exams taken in California last year, 32% were female and 0.08% identified as another gender. Black/African American students and Native Hawaiian/ Pacific Islander students are both four times less likely than their white and Asian peers to take an AP CS exam. Similarly, Hispanic/Latino/Latina/Latinx students are three times less likely to take an AP CS exam than their white and Asian peers.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from California. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Colorado

State Plan	Standards	Funding
No	No	Yes
Certification	**Preservice**	**Supervisor**
No	No	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	Yes

Standards: Although CO does not yet have computer science standards across K–12, the state adopted high school computer science standards in 2018.

Funding: Since 2017, CO appropriated $4.2M for CS.

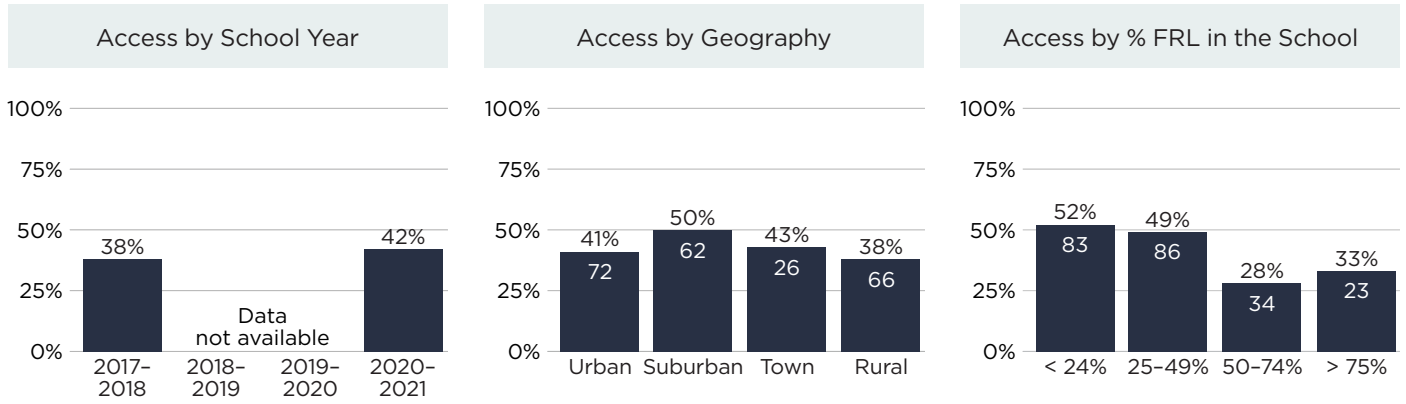
Supervisor: The CO Department of Education has a CS Content Specialist.

Grad Credit: CO passed a permissive and encouraging policy to allow CS to count as either a mathematics or science credit for graduation, but it is a district decision.

Admissions: A CS course with a mathematics prerequisite can count as a mathematics credit required for admission at institutions of higher education.

CO has a statewide CSTA chapter.

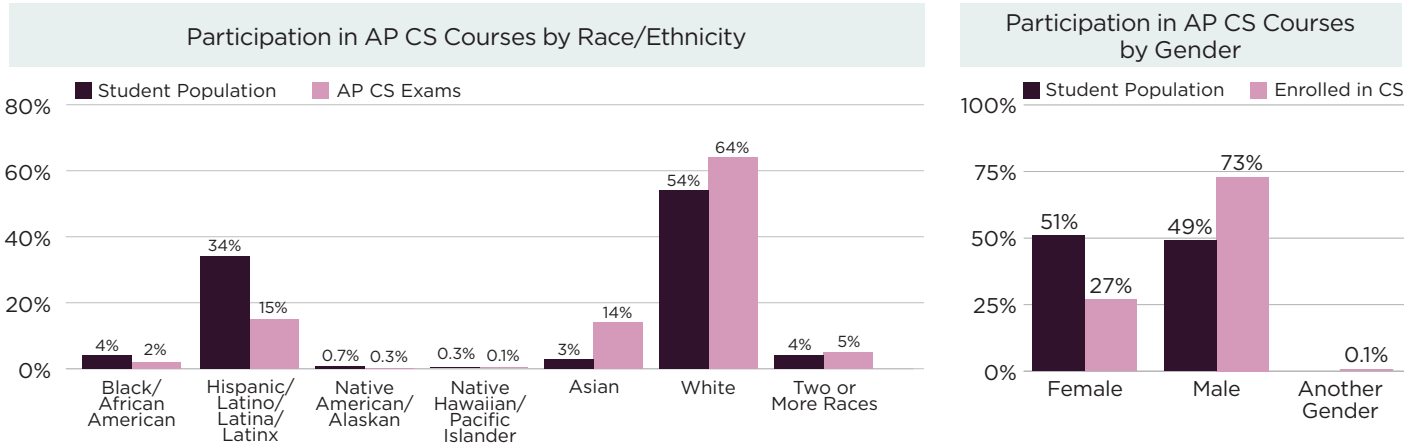
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the school catalogs, based on 533 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

66% of CO high school students attend a school that offers computer science. Of 2,700 total AP CS exams taken in Colorado last year, 27% were female and 0.1% identified as another gender. When compared to their white and Asian peers, Black/African American students and Native Hawaiian/Pacific Islander students are each four times less likely and Hispanic/Latino/Latina/Latinx students are three times less likely to take an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)



Course enrollment data for all foundational computer science courses is not available from Colorado. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Connecticut

State Plan	Standards	Funding
Yes	Yes	No
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	District Decision	No

State Plan: The State Board of Education adopted a computer science (CS) plan in 2020.

Standards: CT adopted the CSTA K–12 CS Standards in 2018.

Certification: Teachers with existing licensure can obtain the K–6 or 7–12 CS endorsement through academic coursework or passing the Praxis CS exam.

Preservice: Teacher preparation programs are required to include instruction in CS that is grade-level and subject-area appropriate.

Supervisor: The CT Department of Education has a CS Education Consultant.

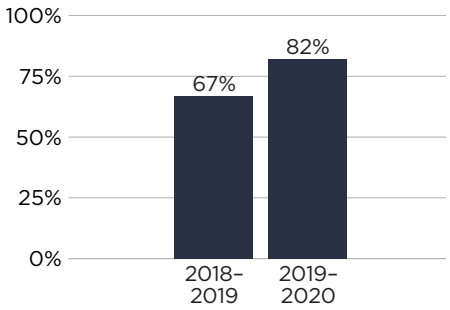
All HS Offer: All public elementary, middle, and high schools must teach CS.

Grad Credit: In 2021, CT passed a permissive and encouraging policy for local boards of education to allow CS courses aligned to the state CS standards to count towards the nine STEM credits required for graduation (beginning with the class of 2023).

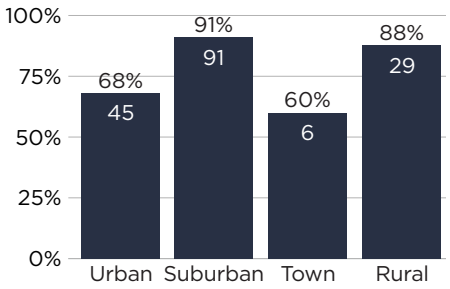
CT is a member of the ECEP Alliance and has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

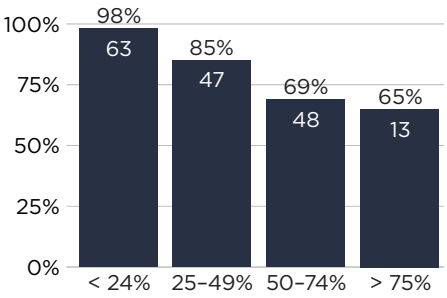
Access by School Year



Access by Geography



Access by % FRL in the School

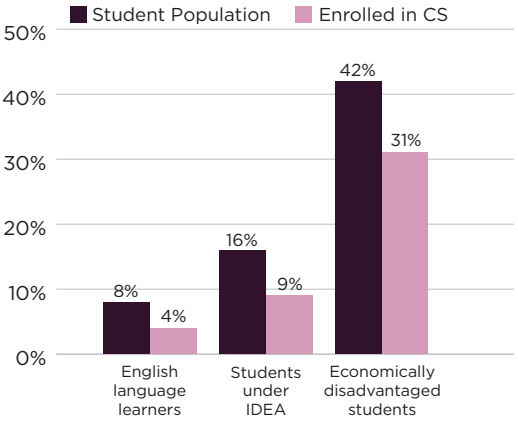


Data provided primarily by the Department of Education, based on 209 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

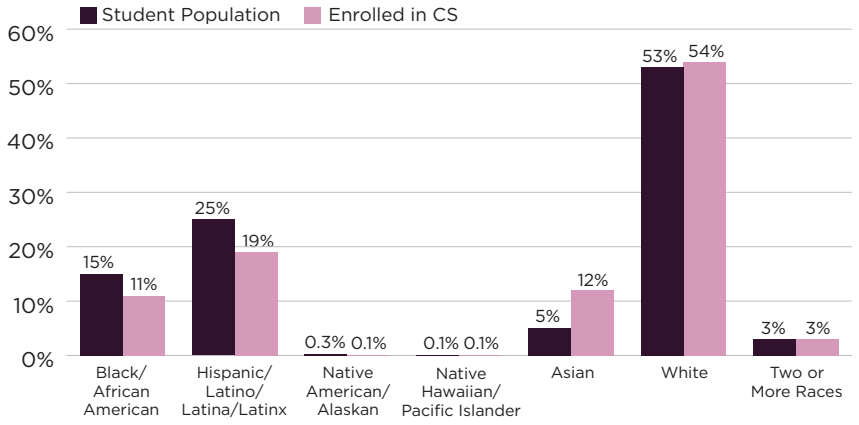
89% of CT high school students attend a school that offers computer science, but only 5.3% of students are enrolled in a foundational computer science course. 24% of students enrolled in computer science courses are female. Only twelve Native American students and nine Native Hawaiian/Pacific Islander students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Both female and nonbinary students are reported under female.

Delaware

State Plan	Standards	Funding
No	Yes	No
Certification	**Preservice**	**Supervisor**
No	No	No
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	No

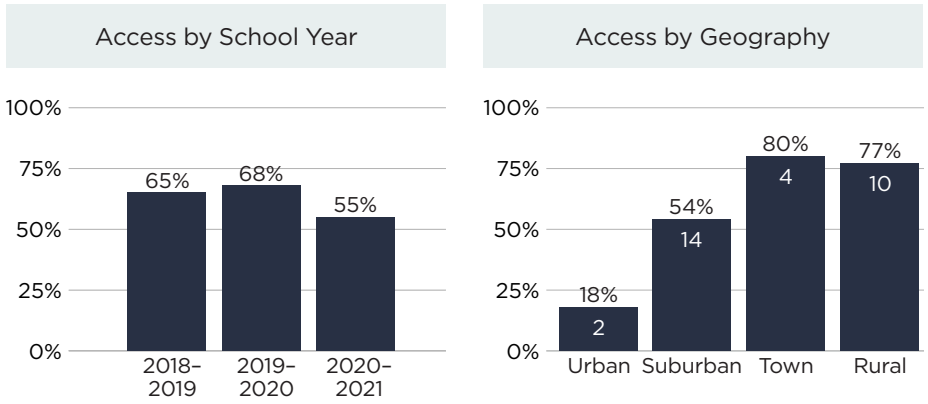
Standards: Delaware adopted the CSTA K–12 Computer Science Standards in 2018. The "Equity" section in the Implementation Guidelines includes examples of ways to broaden participation in computer science education, and standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

All HS Offer: All high schools are required to offer computer science.

Grad Credit: An Advanced Placement, honors, college prep, or integrated computer science course meeting the computer science and mathematics standards can count as the fourth mathematics credit for graduation.

Delaware has a statewide CSTA chapter.

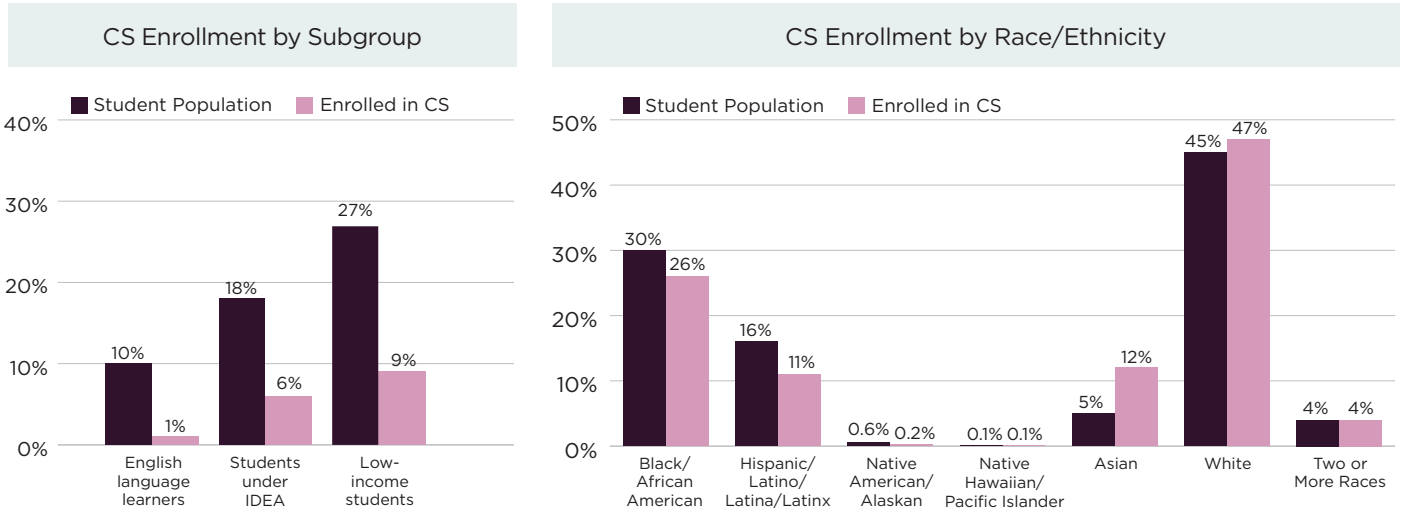
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the Department of Education, based on 55 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

74% of DE high school students attend a school that offers computer science, but only 3.4% of students are enrolled in a foundational computer science course. 21% of students enrolled in computer science courses are female. Native American students are half as likely as their white and Asian peers to enroll in computer science. Only four Native American students and two Native Hawaiian/Pacific Islander students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic



Participation data was masked at low counts.

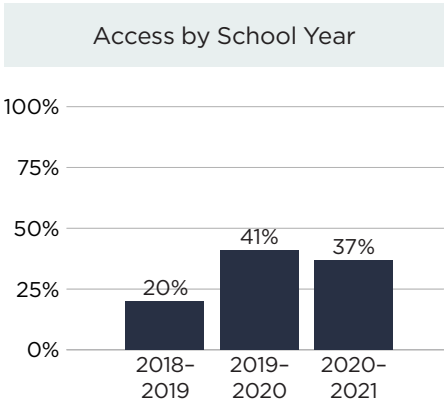
District of Columbia

State Plan	Standards	Funding
No	No	No
Certification	**Preservice**	**Supervisor**
Yes	No	No
All HS Offer	**Grad Credit**	**Admissions**
No	Yes	No

Certification: Teachers with existing licensure can obtain a 7–12 computer science certification by passing the Praxis computer science exam. An initial license in computer science requires academic coursework and passing the exam.

Grad Credit: An AP computer science course can count as the fourth-year upper-level mathematics credit for graduation.

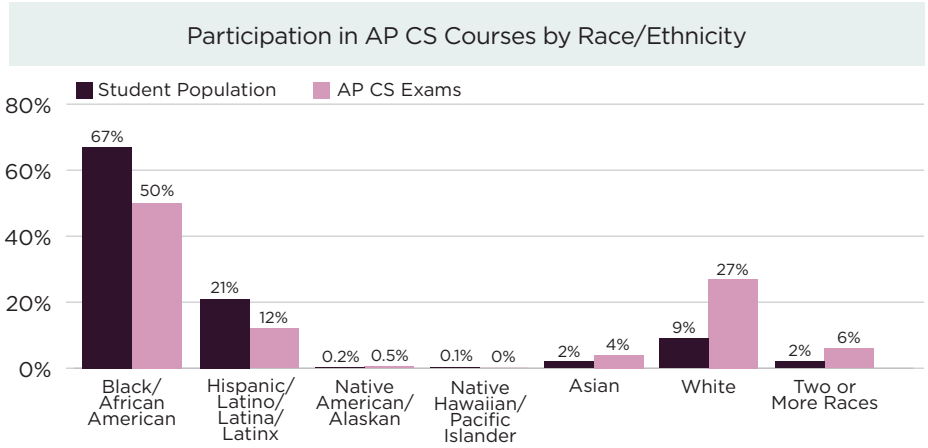
Percentage of Public High Schools Offering Foundational Computer Science

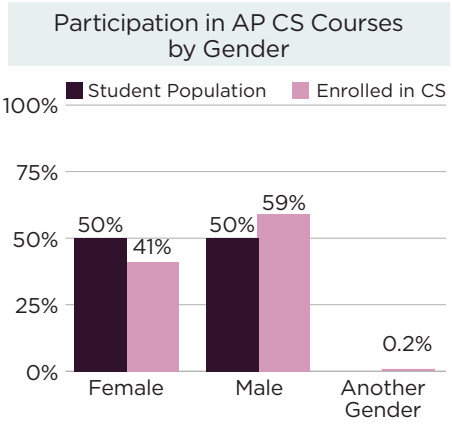


Data provided primarily by the Office of the State Superintendent of Education and school catalogs, based on 43 schools with high school grades. All schools are in urban geographic areas. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

51% of DC high school students attend a school that offers computer science. Of 424 total AP CS exams taken in DC last year, 41% were female and 0.1% identified as another gender. Hispanic/Latino/Latina/Latinx students are half as likely as their white and Asian peers to attend a school that offers AP CS and half as likely to take an AP CS exam. Black/African American students are 3.6 times less likely than their white and Asian peers to attend a school that offers AP CS. No Native Hawaiian/Pacific Islander students and only two Native American students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)





Course enrollment data for all foundational computer science courses is not available from DC. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Florida

State Plan	Standards	Funding
No	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
Yes	Yes	No

Standards: FL adopted K–12 computer science (CS) standards in 2016.

Funding: Since 2019, FL has allocated $30M for CS.

Certification: Teachers can obtain the K–12 CS certification as an initial license or an add-on endorsement through academic coursework.

Supervisor: The FL Department of Education has a CS Program Specialist.

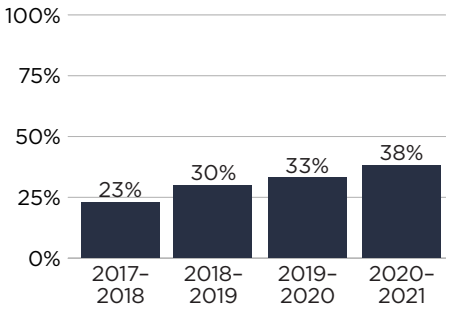
All HS Offer: All middle and high schools are required to offer CS or provide students access via the FL Virtual School if a district is unable to provide access.

Grad Credit: CS can count as a mathematics or science credit for graduation.

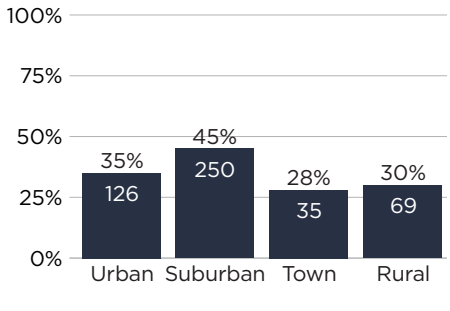
FL has three regional CSTA chapters.

Percentage of Public High Schools Offering Foundational Computer Science

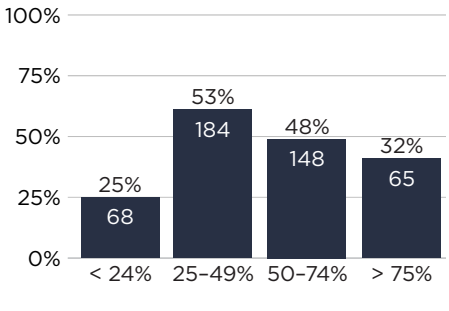
Access by School Year



Access by Geography



Access by % FRL in the School

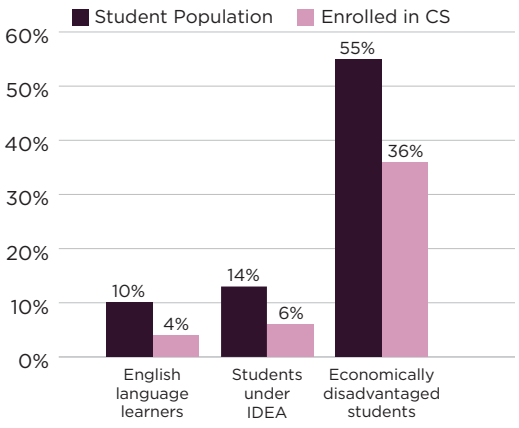


Data provided primarily by the Department of Education, based on 1,280 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

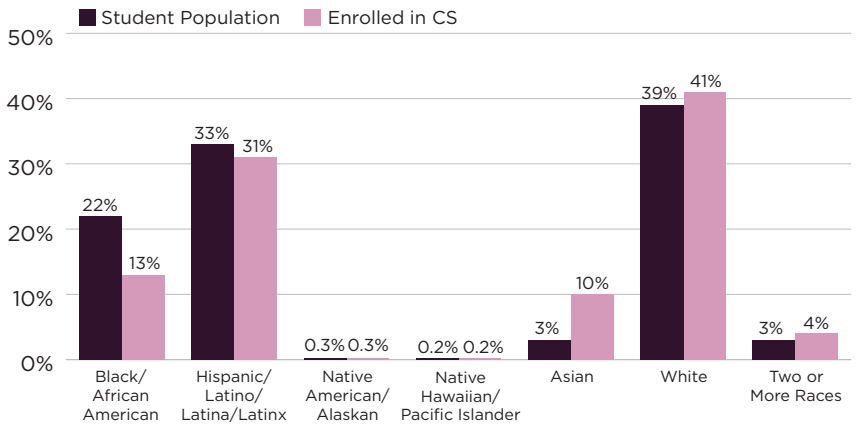
75% of FL high school students attend a school that offers computer science, but only 2.5% of students are enrolled in a foundational computer science course. 29% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science, but Black/African American students are only half as likely as their white and Asian peers to enroll in computer science when they attend a school that offers it.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Georgia

State Plan	Standards	Funding
Yes	In Progress	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: The GA Department of Education developed a state plan for computer science (CS) in 2018.

Standards: While GA does not yet have a set of K–12 standards, K–8 CS standards were adopted in 2019.

Funding: Since 2015, GA has appropriated $3.4M for CS.

Certification: Licensed teachers can obtain a 6–12 CS endorsement by passing the state assessment. An initial license requires completing a state-approved program.

Preservice: The Dept. of Education has approved teacher preparation programs.

Supervisor: The Dept. of Education has a CS Education Program Specialist.

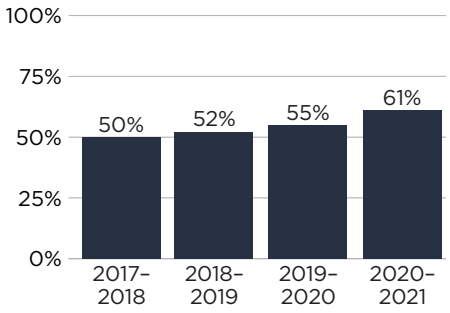
All HS Offer: All high schools are required to offer CS by the 2024–25 school year. All middle schools must offer instruction by 2022–23, and it is recommended for all elementary schools.

Grad Credit and Admissions: CS can count as a science or mathematics credit for graduation and as a science or foreign language credit for higher education admission.

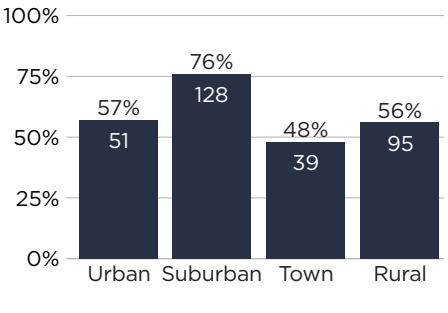
GA is a member of the ECEP Alliance and has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

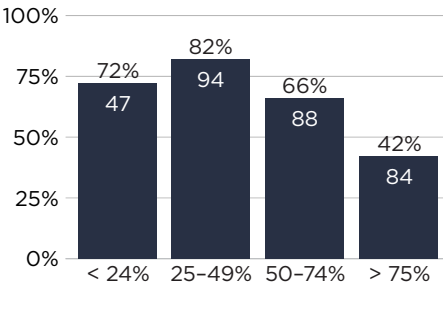
Access by School Year



Access by Geography



Access by % FRL in the School

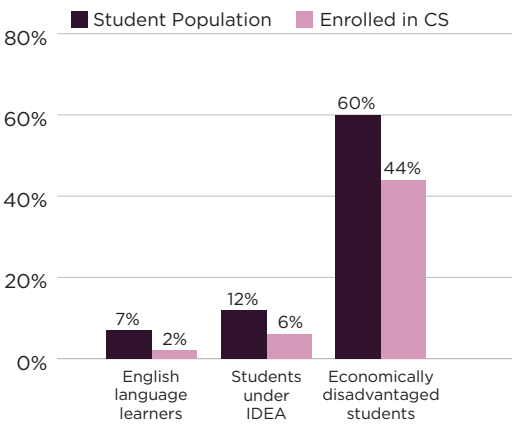


Data provided primarily by the Department of Education, based on 511 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

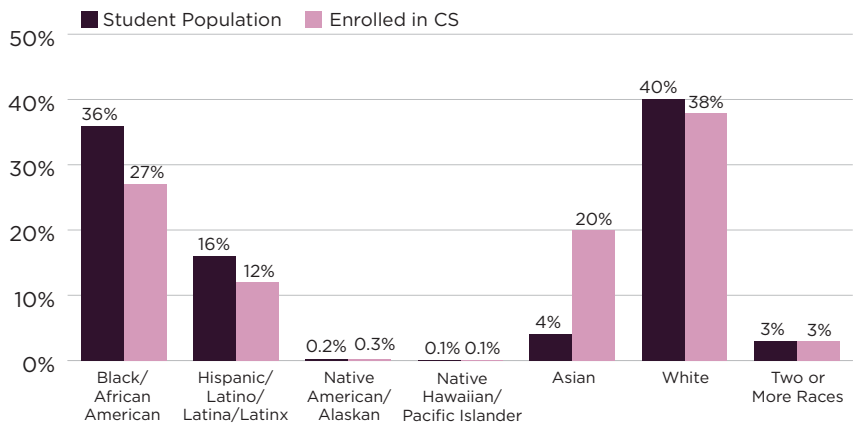
84% of GA high school students attend a school that offers computer science, but only 3.3% of students are enrolled in a foundational computer science course. 27% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. However, Black students are 1.6 times less likely, and Hispanic/Latino/Latina/Latinx students are 1.7 times less likely than their white and Asian peers to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Hawaii

State Plan	Standards	Funding
Yes	Yes	No (Historic yes)
Certification	**Preservice**	**Supervisor**
Yes	No	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	No

State Plan: The HI Department of Education developed a computer science (CS) state plan in 2018.

Standards: HI adopted K–12 CS Standards in 2018.

Funding: Although HI does not currently provide dedicated state funding, the state allocated $500K to CS in 2018.

Certification: Licensed teachers can obtain a K–6, 6–12, or K–12 CS certification by completing a state-approved program, the Praxis CS exam, coursework and experience, PD and experience, or holding a certification from another state.

Supervisor: The HI Department of Education has a CS Specialist.

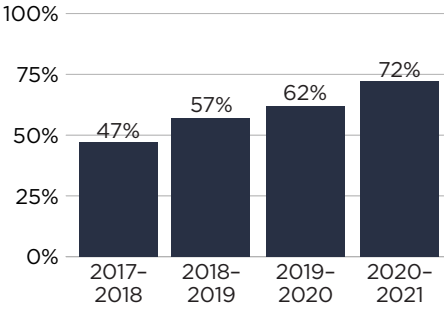
All HS Offer: All high schools must offer at least one CS course by the 2021–22 school year, and all middle, elementary, and charter schools by the 2024–25 school year.

Grad Credit: AP CS can count as the fourth mathematics credit for an Honors Recognition Certificate.

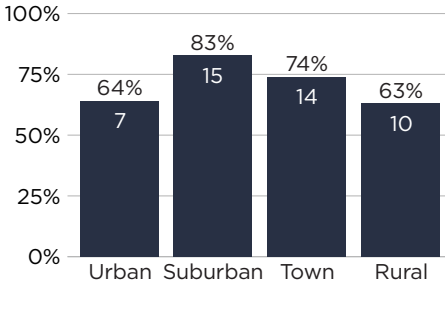
HI is a member of the ECEP Alliance, has a statewide CSTA chapter, and Governor David Ige is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

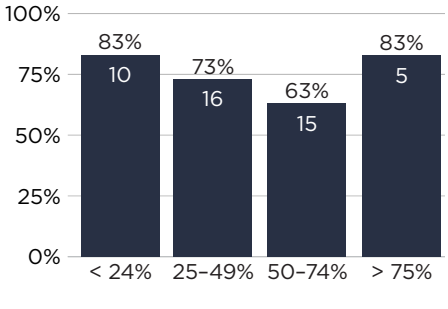
Access by School Year



Access by Geography



Access by % FRL in the School

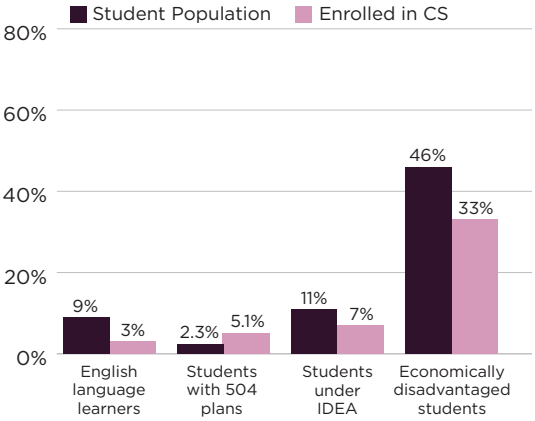


Data provided primarily by the Department of Education and school catalogs, based on 64 schools with high school grades. Data includes both public DOE and public charter schools. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

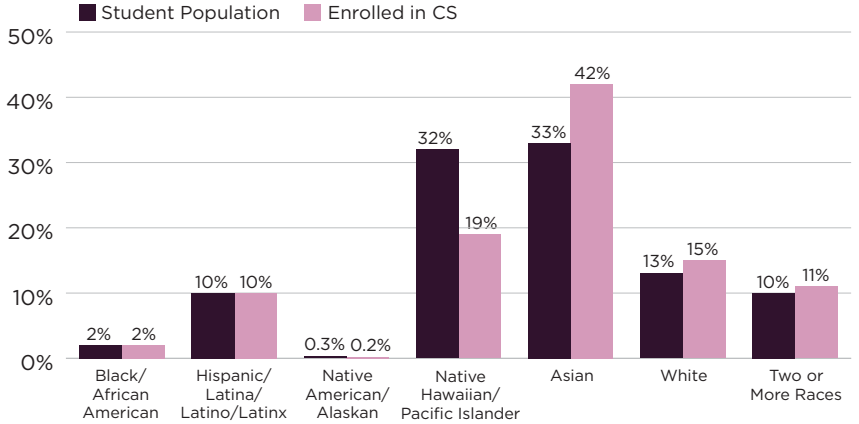
87% of HI high school students attend a school that offers computer science, but only 3.9% of students are enrolled in a foundational computer science course. 26% of students enrolled in computer science courses are female. Native Hawaiian/Pacific Islander and Native American students are less than half as likely as their white and Asian peers to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data includes only public DOE school data, and access report data includes both public and public charter school data.

Idaho

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: The ID STEM Action Center and ID Digital Learning Academy developed the Computer Science (CS) State Plan in 2018.

Standards: ID adopted K–12 CS standards in 2017.

Funding: $8M for CS since 2016.

Certification: Teachers can earn an initial 6–12 or 5–9 CS license or endorsement by completing a state-approved program and passing the Praxis CS exam. A 6–12 CTE Occupational Specialist certification requires industry experience.

Preservice: The Dept. of Education has approved preparation programs.

Supervisor: Governor's STEM Action Center has a CS Program Manager.

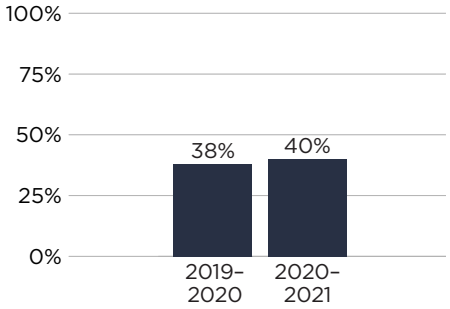
All HS Offer: All school districts are required to make one or more CS courses available to all high school students.

Grad Credit and Admissions: AP CS or dual-credit CS can count as a mathematics credit or up to two science credits for graduation and for higher education admission.

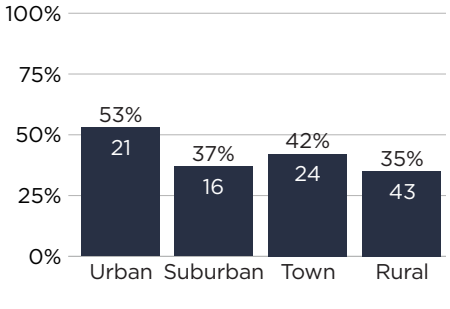
ID has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

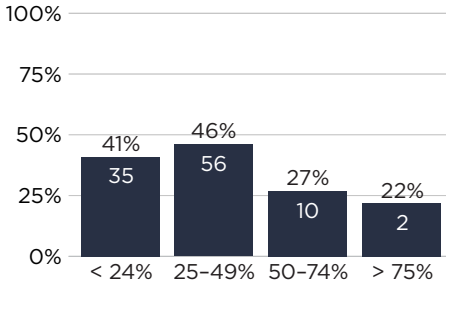
Access by School Year



Access by Geography



Access by % FRL in the School

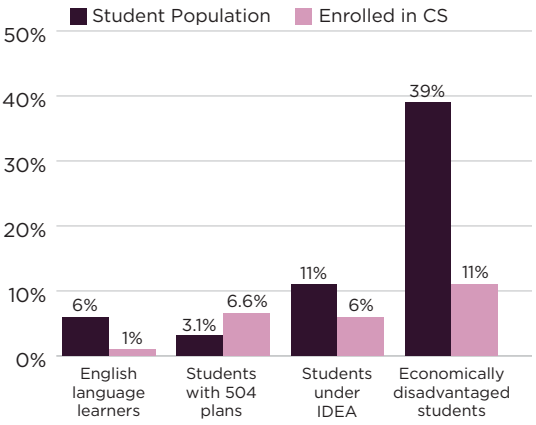


Data provided primarily by the State Department of Education, based on 262 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

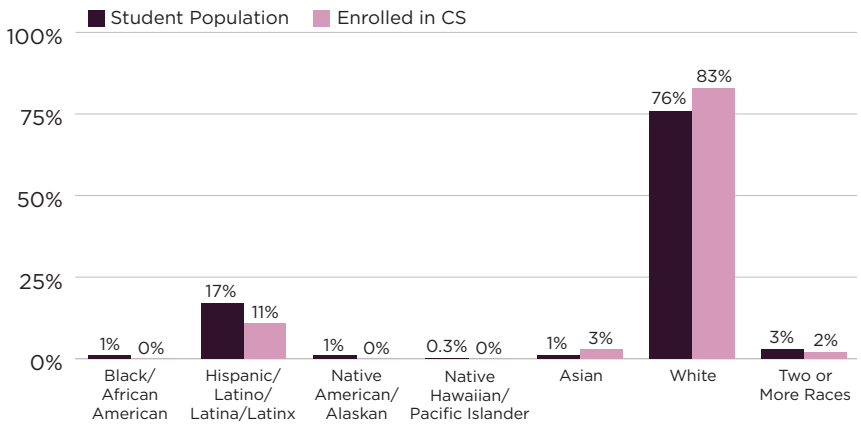
60% of ID high school students attend a school that offers computer science, but only 2% of students are enrolled in a foundational computer science course. 23% of students enrolled in computer science courses are female. Hispanic/Latino/Latina/Latinx students are 1.7 times less likely than their white and Asian peers to enroll in computer science. No Black/African American, Native American, nor Native Hawaiian/Pacific Islander students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data was masked at low counts.

Illinois

State Plan	Standards	Funding
No	In Progress	No

Certification	Preservice	Supervisor
Yes	No	No

All HS Offer	Grad Credit	Admissions
Yes	Yes	Yes

Standards: The IL State Board of Education began developing computer science (CS) standards in December 2020.

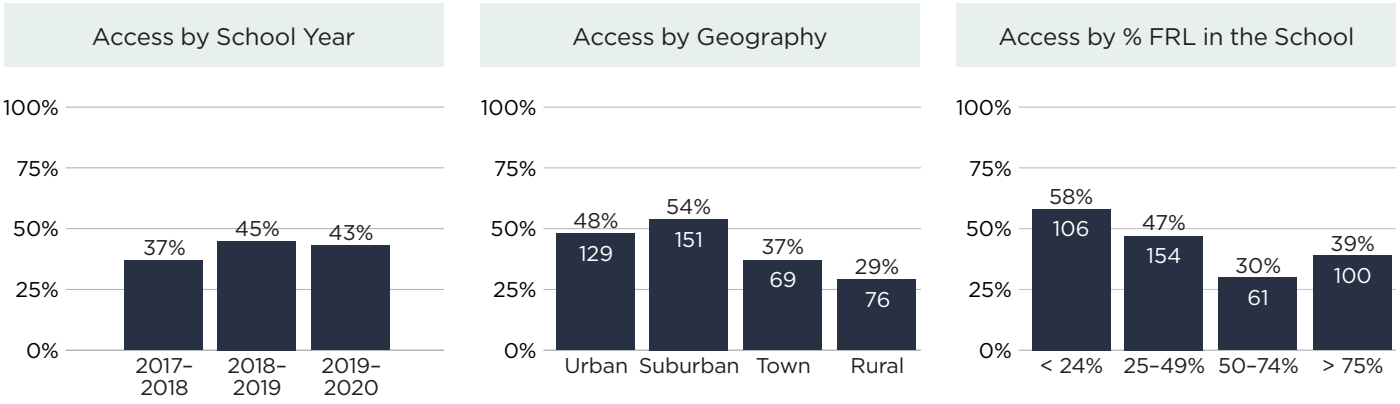
Certification: Teachers with existing licensure can obtain a 5–8, 6–8, or 9–12 CS endorsement through academic coursework, including CS teaching methods and passing the state content exam.

All HS Offer: HB 2170 (2021) required each school district to provide an opportunity for every high school student to take a CS course by the 2023–24 school year.

Grad Credit and Admissions: CS can count as a mathematics credit required for admission at institutions of higher education, aligning with IL's high school graduation policy.

IL has three regional CSTA chapters.

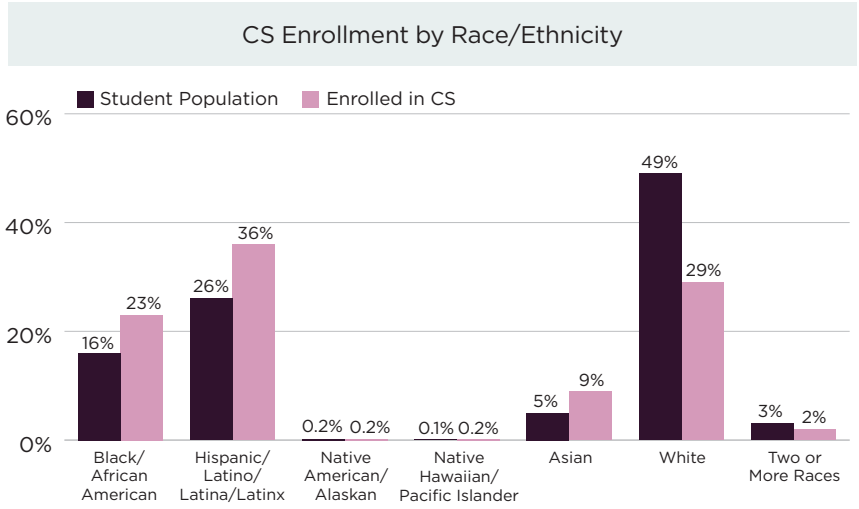
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the State Board of Education, based on 994 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

80% of IL high school students attend a school that offers computer science, but only 4.1% of students are enrolled in a foundational computer science course. 37% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. However, only 29% of rural schools offer it, compared to 54% in suburban areas.

Participation in Foundational High School Computer Science Courses by Demographic



Participation data was masked at low counts.

Indiana

State Plan	Standards	Funding
Yes	Yes	Yes

Certification	Preservice	Supervisor
Yes	Yes	Yes

All HS Offer	Grad Credit	Admissions
Yes	Yes	Yes

State Plan: The Dept. of Ed. created a computer science (CS) state plan in 2019.

Standards: IN published K–12 CS standards in 2018.

Funding: $12.6M for CS since 2018.

Certification: IN has endorsements for 5–12 and preK–12 CS which require a state content exam. An initial license also requires a state-approved program. A CTE license requires industry experience. Educator standards for the new elementary STEM license addition include CS.

Preservice: The Dept. of Ed. has approved preparation programs. All preservice K–6 teachers are required to learn CS.

Supervisor: The Dept. of Education has a CS Specialist.

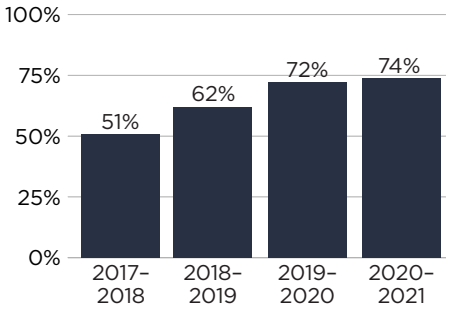
All HS Offer: All schools are required to offer CS by the 2021–22 school year.

Grad Credit and Admissions: CS can count as a mathematics or science credit required for higher education admission, aligning with IN's high school graduation policy.

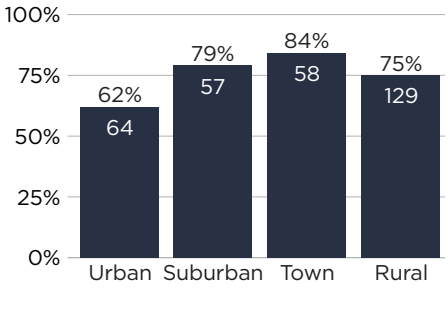
IN is a member of the ECEP Alliance, has a statewide CSTA chapter, and Governor Eric Holcomb is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

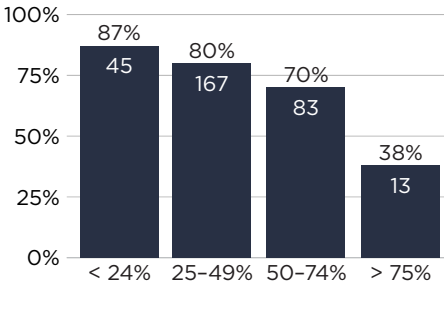
Access by School Year



Access by Geography



Access by % FRL in the School

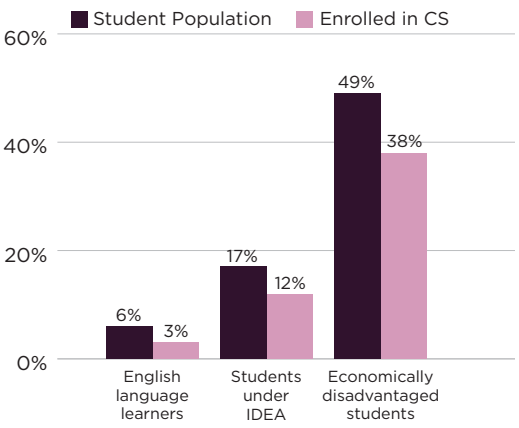


Data provided primarily by the Department of Education, based on 415 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

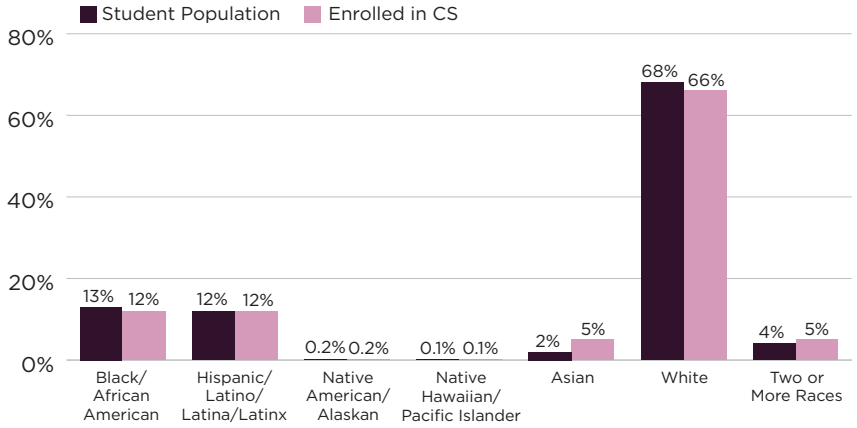
87% of IN high school students attend a school that offers computer science, but only 4.7% of students are enrolled in a foundational computer science course. 21% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. However, only 38% of schools with high percentages of economically disadvantaged students offer it, compared to 87% of schools with low percentages.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Iowa

State Plan	Standards	Funding
In Progress	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
Yes	District Decision	Yes

State Plan: IA is developing a K–12 computer science (CS) plan.

Standards: IA adopted K–12 CS standards in 2018.

Funding: $2.5M for CS since 2018.

Certification: Licensed teachers can obtain a 5–12 or K–8 endorsement by completing a state-approved program or coursework. The state waived these requirements for teachers who demonstrated content knowledge and successful teaching experience.

Supervisor: The IA Department of Education has a CS Education Program Consultant.

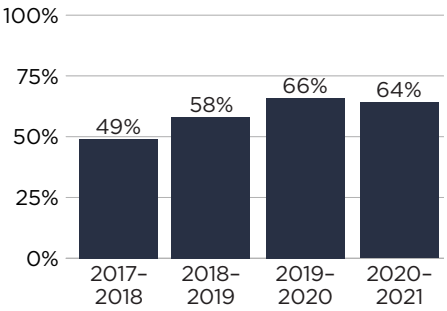
All HS Offer: All high schools are required to offer CS by the 2022–23 school year, and all elementary and middle schools are required to offer CS in at least one grade level by 2023–24.

Grad Credit and Admissions: CS can count as a mathematics credit for graduation, as decided by districts. CS can count towards a core subject area credit for higher education admission.

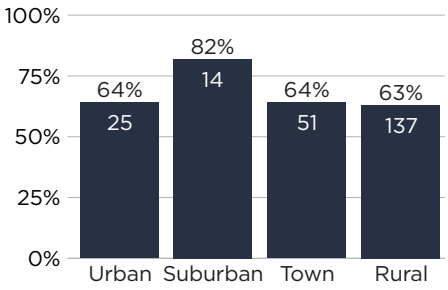
IA has a statewide CSTA chapter and Governor Kim Reynolds is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

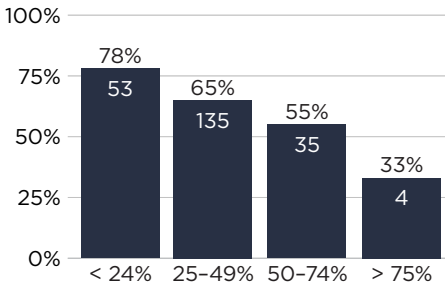
Access by School Year



Access by Geography



Access by % FRL in the School

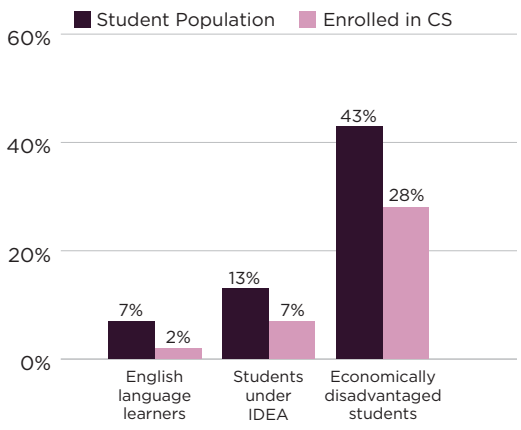


Data provided primarily by the Iowa Department of Education, based on 353 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

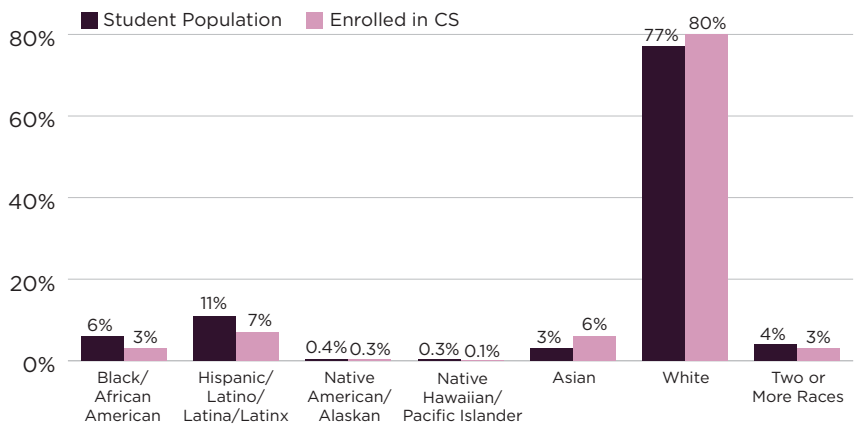
73% of IA high school students attend a school that offers computer science, but only 3.5% of students are enrolled in a foundational computer science course. 18% of students enrolled in computer science courses are female. Black/African American students are only half as likely as their white and Asian peers to enroll in computer science and Hispanic/Latino/Latina/Latinx students are 1.4 times less likely. Only six Native Hawaiian/Pacific Islander students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Kansas

State Plan	Standards	Funding
No	Yes	No
Certification	**Preservice**	**Supervisor**
In Progress	No	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	No

State Plan: Although KS has not yet created a plan for K–12 CS, the State Board of Education adopted five policy recommendations from the Department of Education's Computer Science (CS) Education Task Force in 2020 which include recommendations encouraging all schools to offer CS, create a licensure endorsement, and arrange funding to carry out these goals.

Standards: KS adopted preK–12 CS standards in 2019.

Certification: The KS State Department of Education has developed proposed licensure standards for preK–12 CS educators.

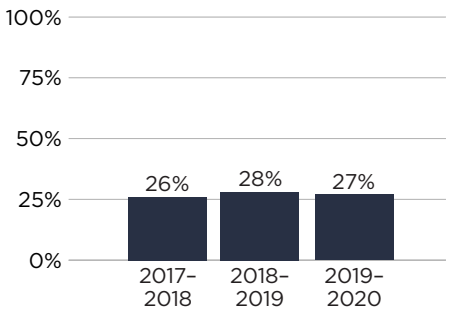
Supervisor: The KS Department of Education has a CS Education Program Consultant.

Grad Credit: In 2021, the KS Board of Education approved a policy for school districts to allow locally-approved CS courses to count as a credit for graduation in mathematics or science.

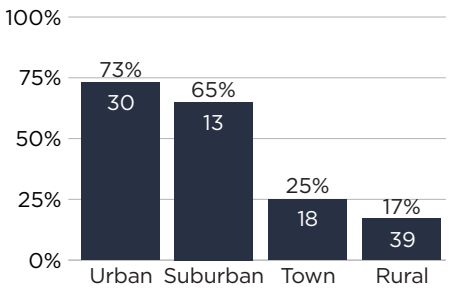
KS has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

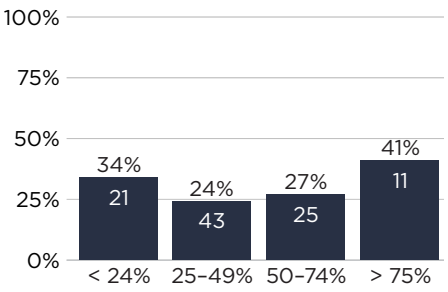
Access by School Year



Access by Geography



Access by % FRL in the School

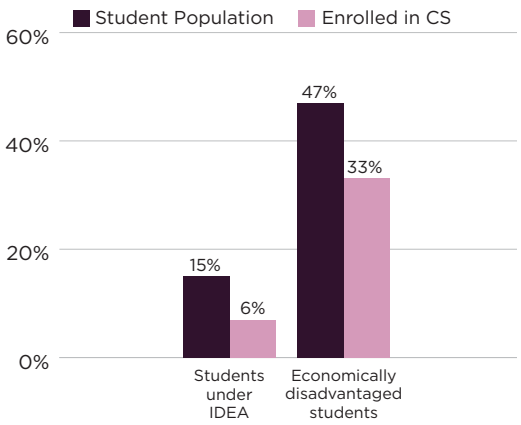


Data provided primarily by the State Department of Education, based on 365 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

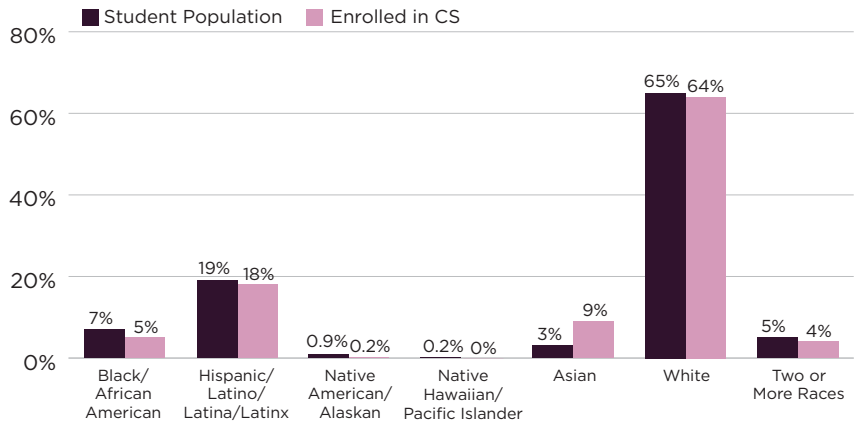
57% of KS high school students attend a school that offers computer science, but only 3% of students are enrolled in a foundational computer science course. 15% of students enrolled in computer science courses are female. Native American students are 4 times and Black/African American students are 2 times less likely than their white and Asian peers to enroll in computer science. No Native Hawaiian/Pacific Islander students and only ten Native American students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data is from the 2018–19 school year, and access report data is from the 2019–20 school year. Participation data was masked at low counts.

Kentucky

State Plan	Standards	Funding
In Progress	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
No	District Decision	Yes

State Plan: KY is in the process of creating a plan for K–12 computer science (CS) for submission to the legislature.

Standards: KY adopted K–12 CS standards in 2019.

Funding: In 2019, KY dedicated $800K to the CS and IT academy to address growth in CS learning.

Certification: Teachers with existing licensure can obtain an 8–12 CS endorsement.

Supervisor: The KY Department of Education has a dedicated K–12 CS Lead.

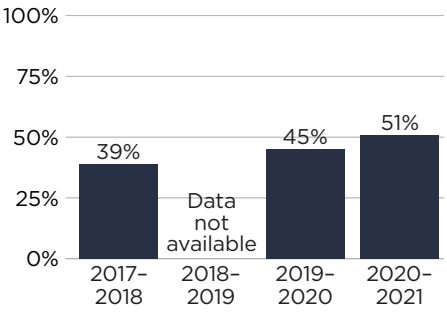
Grad Credit: KY passed a permissive and encouraging policy to allow CS to count as an elective science credit or a fourth-year mathematics credit for graduation, but it is a district decision.

Admissions: CS can count as a mathematics credit required for higher education admission if the K–12 district allows the student to fulfill a mathematics graduation credit via the CS course.

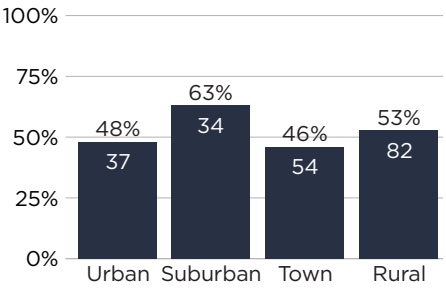
Kentucky has two CSTA chapters.

Percentage of Public High Schools Offering Foundational Computer Science

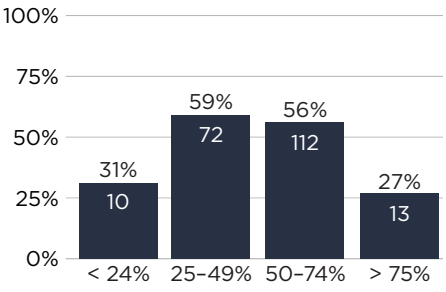
Access by School Year



Access by Geography



Access by % FRL in the School

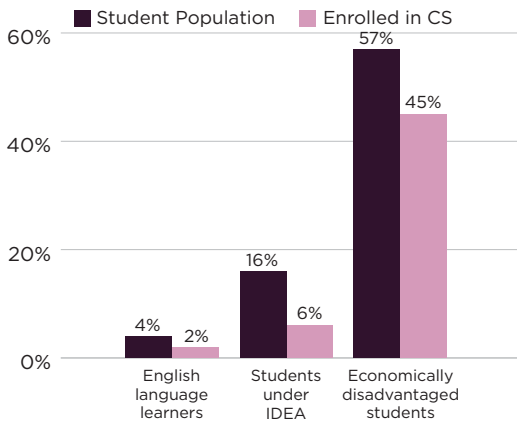


Data provided primarily by the Department of Education, based on 405 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

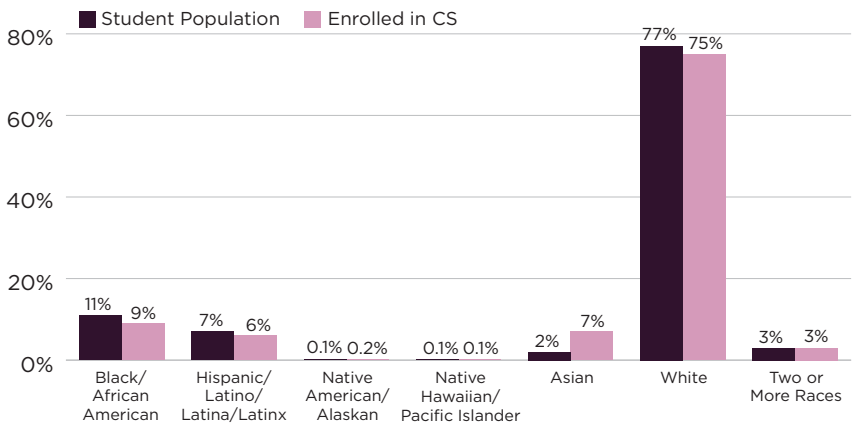
81% of KY high school students attend a school that offers computer science, but only 3.6% of students are enrolled in a foundational computer science course. 24% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science, but only nine Native Hawaiian/Pacific Islander students enrolled in it.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Louisiana

State Plan	Standards	Funding
No	No	No

Certification	Preservice	Supervisor
Yes	No	No

All HS Offer	Grad Credit	Admissions
No	Yes	Yes

Certification: Teachers with existing licensure can add a 6–12 specialty content area in computer science (CS) through academic coursework and/or passing the Praxis CS exam.

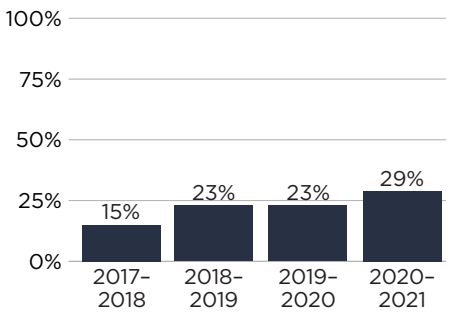
Grad Credit: In Louisiana, AP Computer Science A can count as an advanced mathematics credit for graduation.

Admissions: AP Computer Science A can count as a mathematics credit required for admission at institutions of higher education in Louisiana.

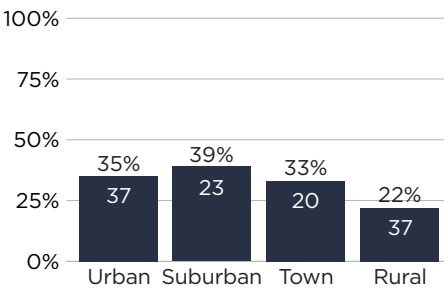
Louisiana has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

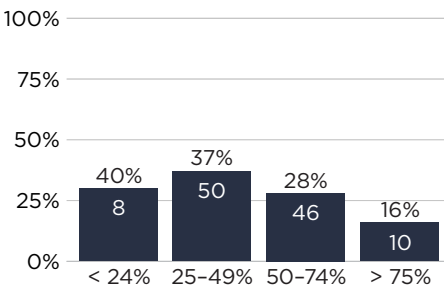
Access by School Year



Access by Geography



Access by % FRL in the School

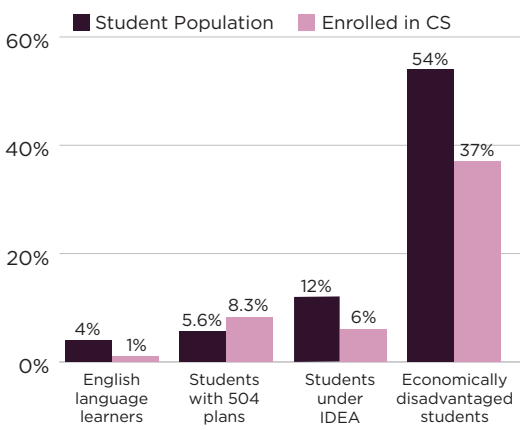


Data provided primarily by the Department of Education, based on 398 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

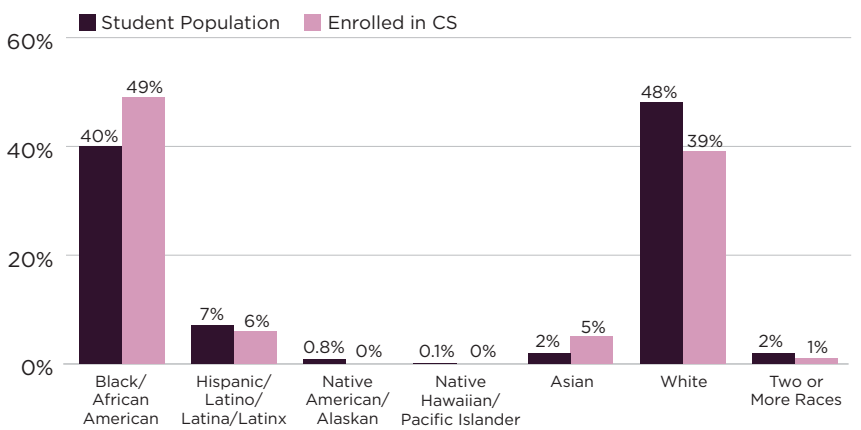
45% of LA high school students attend a school that offers computer science, but only 1.9% of students are enrolled in a foundational computer science course. 39% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science, but no Native American nor Native Hawaiian/Pacific Islander students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Maine

State Plan	Standards	Funding
Yes	No	Yes
Certification	**Preservice**	**Supervisor**
No	No	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	No

State Plan: The Department of Education developed a state plan for computer science (CS) in 2020. Previously, a task force presented recommendations to recognize CS in the path to proficiency.

Funding: In 2021, ME allocated $100K to establish a pilot program to provide professional development grants for CS instruction. The grants prioritize applicants that serve socioeconomically disadvantaged school districts or prioritize student populations traditionally underrepresented in CS.

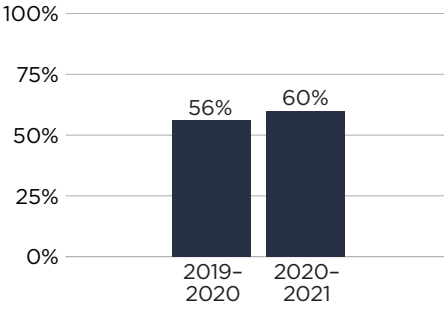
Supervisor: The ME Department of Education has a Secondary Digital Learning and CS Specialist.

Grad Credit: ME passed a policy in 2019 to allow CS to count as a credit for graduation, but it is a district decision.

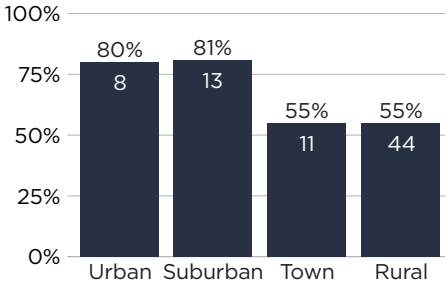
ME has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

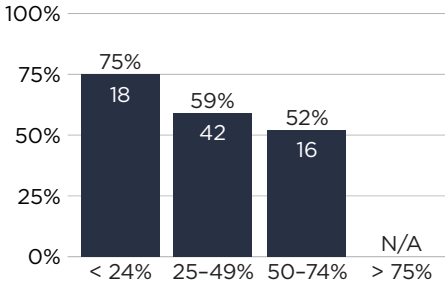
Access by School Year



Access by Geography



Access by % FRL in the School

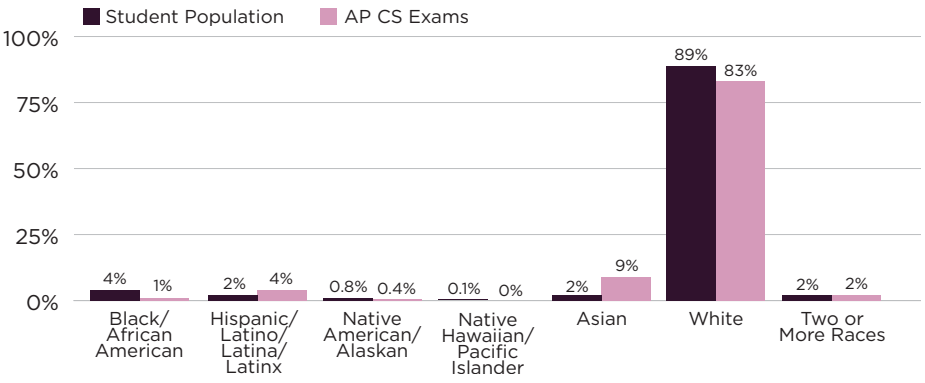


Data provided primarily by the Department of Education and school catalogs, based on 126 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

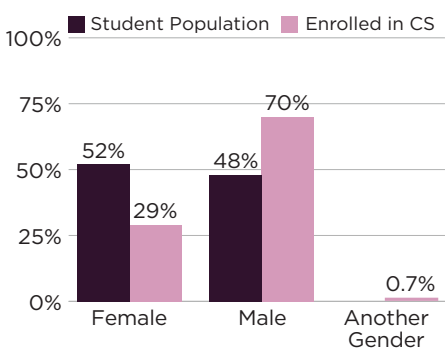
72% of ME high school students attend a school that offers computer science. Of 300 total AP CS exams taken in Maine last year, 29% were female and 1% identified as another gender. Black/African American students make up 4% of the overall student population, but only three Black/African American students took an AP CS exam. No Native Hawaiian/Pacific Islander students and only one Native American student took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from Maine. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Maryland

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: The MD Center for Computing Education (MCCE) developed a state plan for computer science (CS) in 2018.

Standards: K–12 CS standards (2018).

Funding: $8M for CS since 2018.

Certification: MD has a 7–12 CS endorsement. An initial CS licensure requires an exam and coursework.

Preservice: The Dept. of Ed. has approved teacher prep programs. MCCE provides funding for new or existing programs integrating CS.

Supervisor: The Dept. of Ed. has a CS Education Specialist and a Career Programs, STEM, and CS Coordinator.

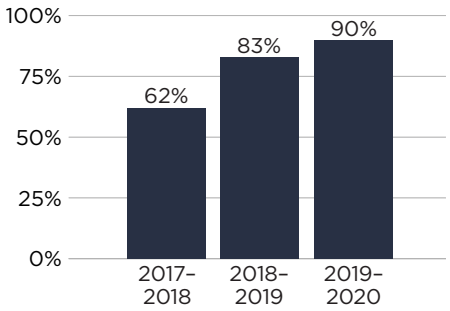
All HS Offer: All high schools are required to offer CS by the 2021–22 school year, all middle schools are required to teach computational thinking, and all school boards are asked to incorporate CS in each elementary school.

Grad Credit and Admissions: CS courses can fulfill the CS, Engineering, or TechEd requirement. AP CS A can count as a mathematics credit for graduation and for admission at IHEs.

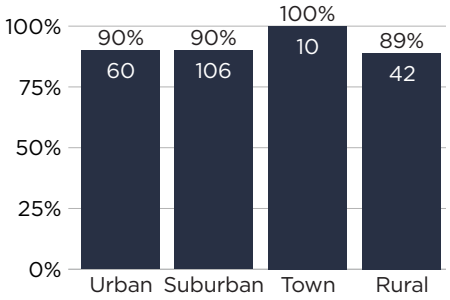
MD is a member of the ECEP Alliance, has a statewide CSTA chapter, and Governor Larry Hogan is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

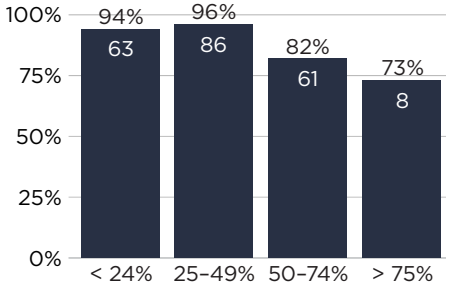
Access by School Year



Access by Geography



Access by % FRL in the School

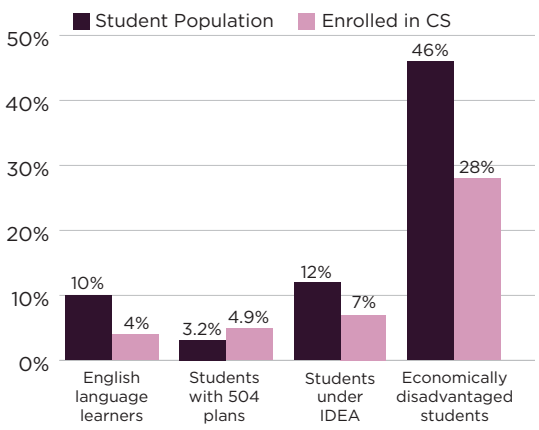


Data provided primarily by the State Department of Education, based on 242 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

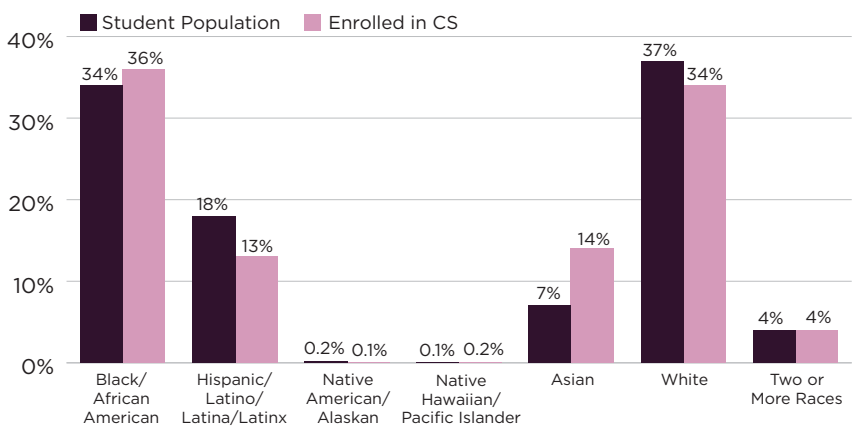
96% of MD high school students attend a school that offers computer science, and 12.5% of students are enrolled in a foundational computer science course. 41% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. Native American students are 1.7 times less likely, and Hispanic/Latino/Latina/Latinx students are 1.4 times less likely than their white and Asian peers to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Massachusetts

State Plan	Standards	Funding
Yes	Yes	Yes

Certification	Preservice	Supervisor
Yes	Yes	Yes

All HS Offer	Grad Credit	Admissions
No	Yes	Yes

State Plan: The MA Department of Education created the 2019 Digital Literacy Now 3 Year Plan, which includes goals for advancing K–12 computer science (CS).

Standards: MA adopted K–12 digital literacy and CS standards in 2016.

Funding: In previous years, MA has allocated $3.1M for CS.

Certification: Teachers with or without existing licensure can obtain a 5–12 CS certification.

Preservice: The MA Department of Education has approved teacher preparation programs.

Supervisor: The MA Dept. of Education has a CS Content Coordinator.

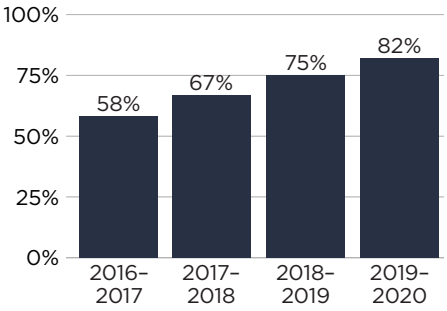
Grad Credit: A CS course that aligns with the state CS standards can substitute for a mathematics or lab science course. Students in technical and vocational programs may substitute a CS course for a foreign language.

Admissions: A CS course can count as a mathematics, science, or foreign language credit required for higher education admission if the course meets certain criteria.

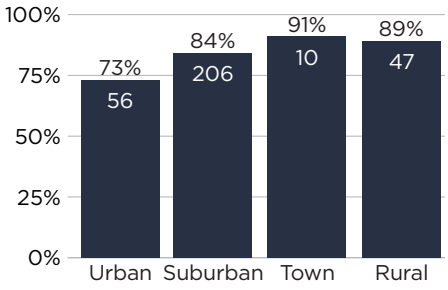
MA is a member of the ECEP Alliance and has two regional CSTA chapters.

Percentage of Public High Schools Offering Foundational Computer Science

Access by School Year



Access by Geography

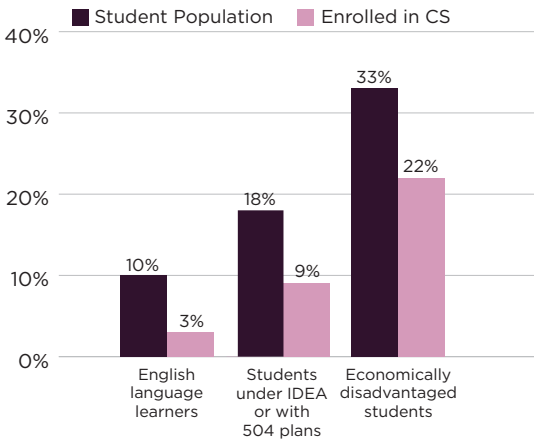


Data provided primarily by the Department of Elementary and Secondary Education, based on 387 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

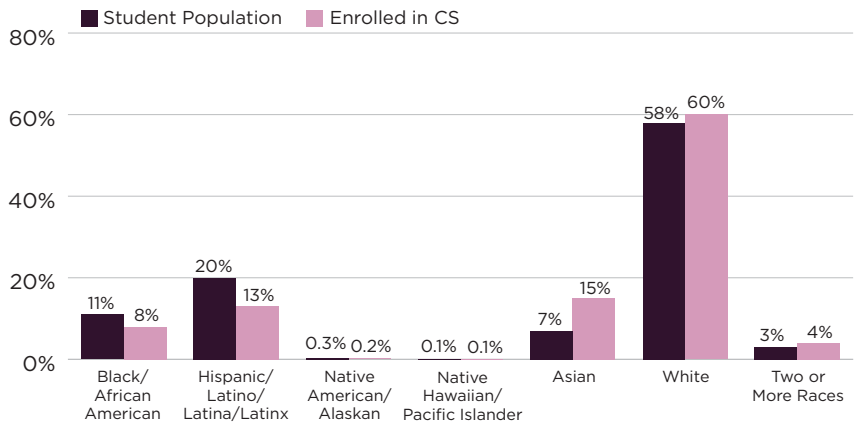
90% of MA high school students attend a school that offers computer science, but only 5.9% of students are enrolled in a foundational computer science course. 25% of students enrolled in computer science courses are female and 0.1% identified as other or nonbinary. Hispanic/Latino/Latina/Latinx students are 1.8 times less likely, and Native American students are 1.6 times less likely than their white and Asian peers to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals.

Michigan

State Plan	Standards	Funding
No	Yes	No
Certification	**Preservice**	**Supervisor**
No	No	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	Yes	No

Standards: MI adopted the CSTA K–12 Computer Science (CS) Standards in 2019. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

Certification: MI phased out the CS endorsement in 2017 so that any licensed teacher is eligible to teach CS.

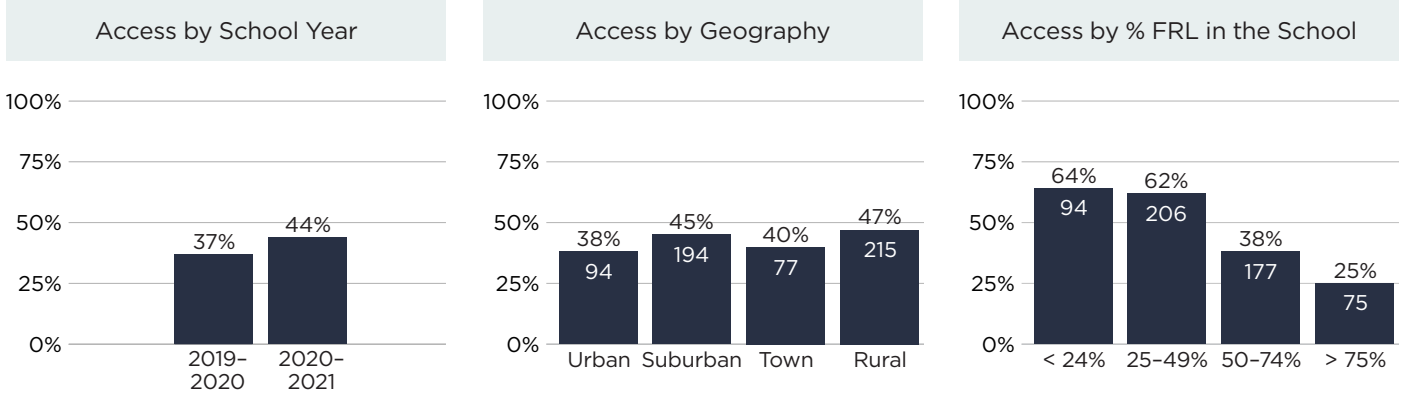
Preservice: After MI phased out the CS certification, teacher preparation programs in the state also phased out preservice programs in CS education.

Supervisor: The MI Department of Education has a CS Consultant.

Grad Credit: Any department-approved CS course can count as the fourth mathematics credit for graduation or replace the Algebra II requirement.

Michigan has a statewide CSTA chapter.

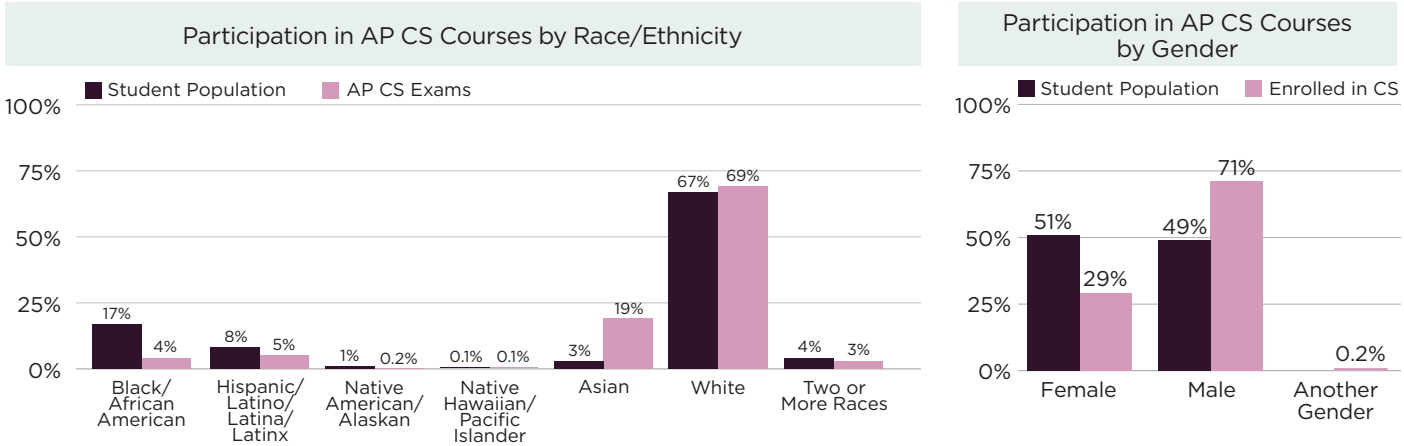
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the school catalogs, based on 1,327 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

72% of MI high school students attend a school that offers computer science. Of 4,613 total AP CS exams taken in Michigan last year, 29% were female and 0.2% identified as another gender. Black/African American students are over four times less likely than their white and Asian peers to take an AP CS exam. Only five Native Hawaiian/Pacific Islander students and eight Native American students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)



Course enrollment data for all foundational computer science courses is not available from Michigan. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Minnesota

State Plan	Standards	Funding
No	No	No

Certification	Preservice	Supervisor
No	No	Yes

All HS Offer	Grad Credit	Admissions
No	Yes	No

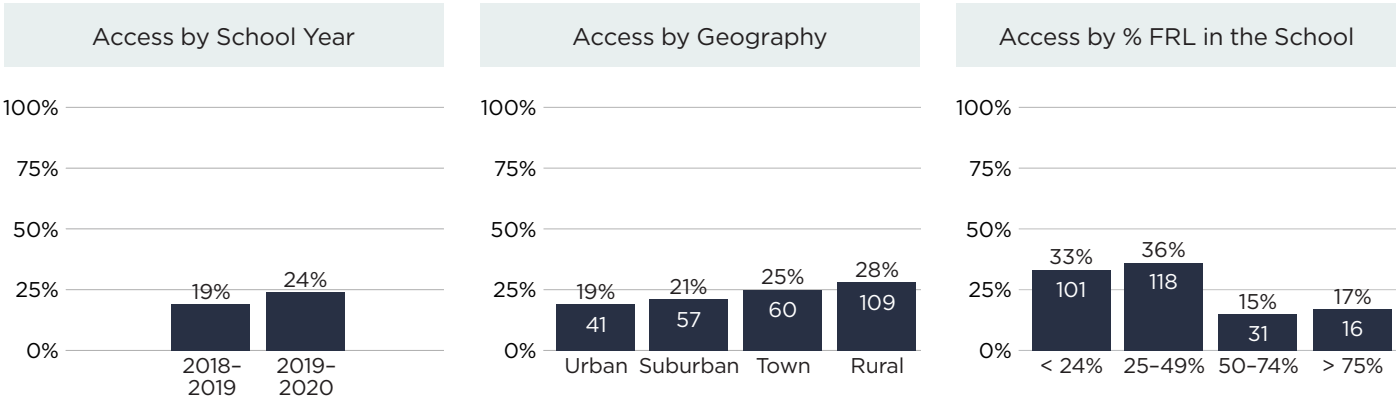
Funding: Although Minnesota does not provide dedicated state funding to computer science (CS), the state was awarded a federal grant under the Jacob K. Javits Gifted and Talented Students Education Program to develop a screening process to identify students gifted in CS, particularly English language learners or students from marginalized racial and ethnic groups. Schools that participate receive ongoing professional development, and all students receive computer science instruction.

Supervisor: The Minnesota Department of Education has a STEM and Computer Science Integration Specialist.

Grad Credit: Computer science can count as a mathematics credit for graduation if the course meets state academic standards in mathematics.

Minnesota is a member of the ECEP Alliance and has a statewide CSTA chapter.

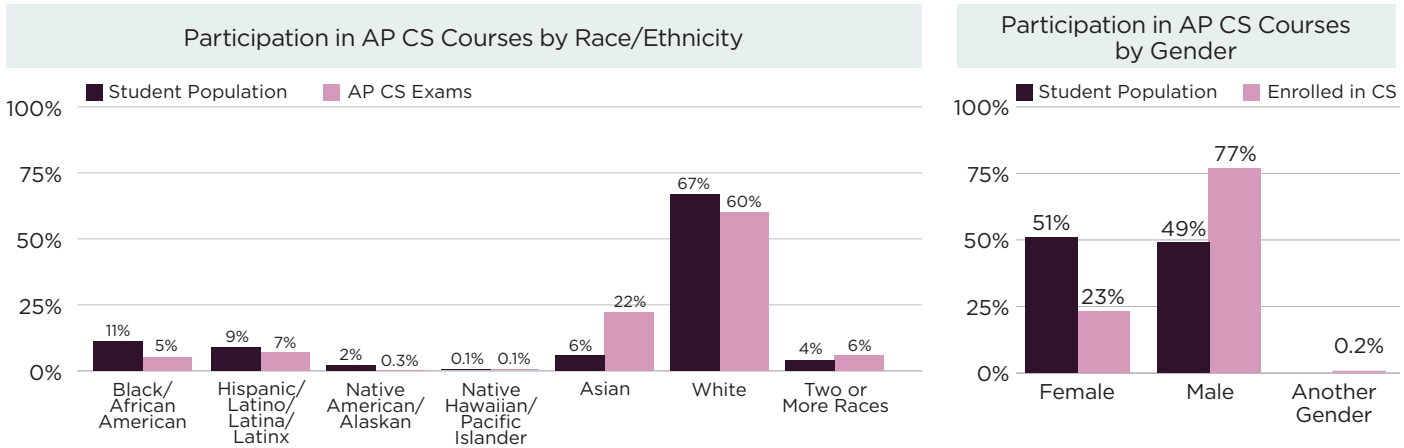
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the Department of Education and school catalogs, based on 1,114 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

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.

Participation in Foundational High School Computer Science Courses by Demographic



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. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Mississippi

State Plan	Standards	Funding
In Progress	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	No	No
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: MS HB 633 (2021) required the development of a strategic plan for computer science (CS) education by January 1, 2022.

Standards: MS adopted K–12 CS standards in 2018.

Funding: $1.6M for CS since 2019.

Certification: Teachers with existing licensure can obtain an AP CS Principles Endorsement by completing an approved training. Teachers can also obtain a K–8 or 7–12 add-on CS endorsement by completing coursework or approved professional development for specific courses.

All HS Offer: All elementary, middle, and high schools are required to offer instruction in CS by the 2024–25 school year.

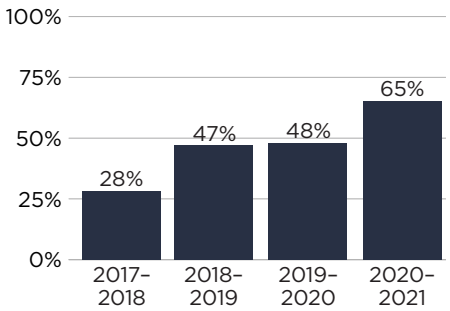
Grad Credit: All MS students must earn one credit in technology or CS. Multiple CS courses may satisfy the graduation credit.

Admissions: All students applying to state IHEs in MS for entrance in Fall 2022 must have earned one credit in CS or technology, which aligns with the high school graduation policy.

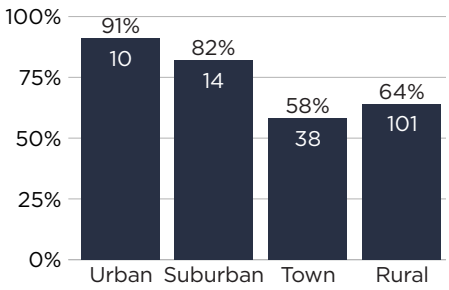
MS is a member of the ECEP Alliance and has a regional CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

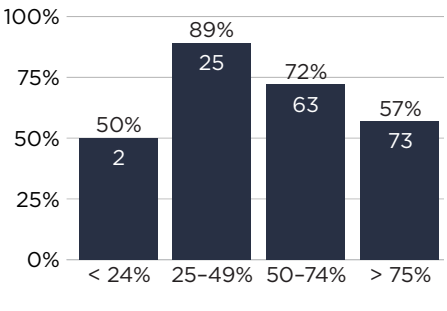
Access by School Year



Access by Geography



Access by % FRL in the School

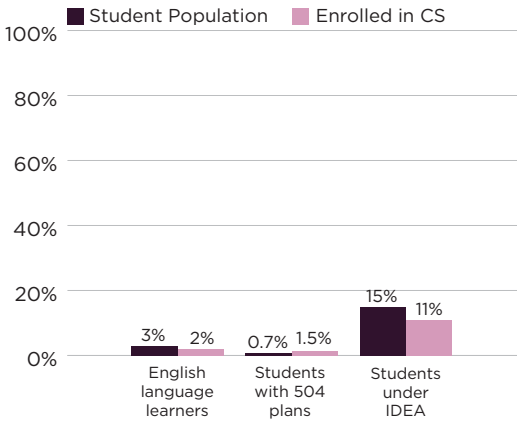


Data provided primarily by the Department of Education, based on 252 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

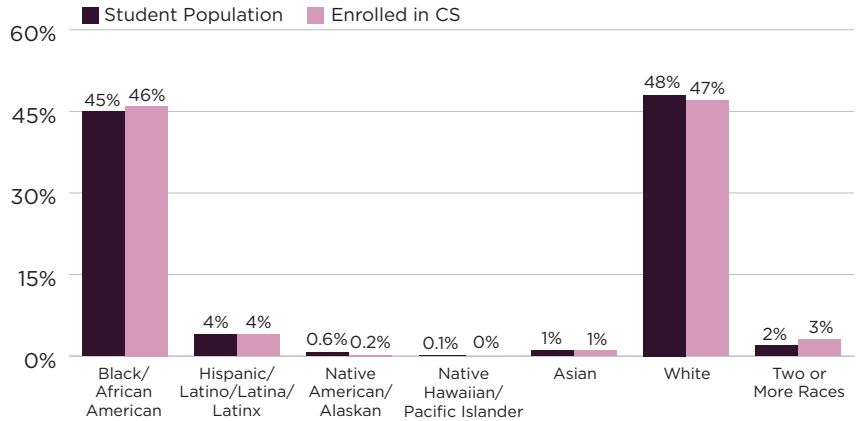
76% of MS high school students attend a school that offers computer science, but only 5.2% of students are enrolled in a foundational computer science course. 47% of students enrolled in computer science courses are female. Native American students are almost half as likely as their white and Asian peers to attend a school that offers computer science and 1.7 times less likely to enroll in it. No Native Hawaiian/Pacific Islander students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



All students receive free and reduced-price meals.

Missouri

State Plan	Standards	Funding
No	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	No

All HS Offer	Grad Credit	Admissions
No	Yes	No

Standards: MO adopted K–12 computer science (CS) standards in 2019.

Funding: Since 2019, MO has allocated $1.35M to the CS Education fund. Grant awardees must describe how they will reach and support students from marginalized racial and ethnic groups underrepresented in CS.

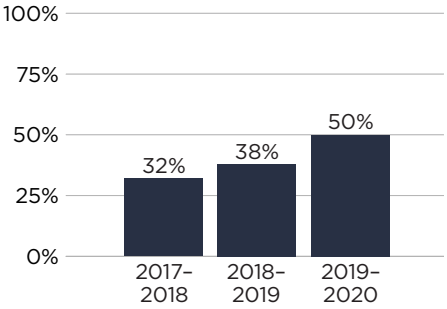
Certification: Teachers can obtain a 9–12 CS certification through academic coursework or by passing the state content exam. Teachers can be authorized to teach CS after completion of department-approved professional development. State funding for CS can be used to support credentialing for teachers.

Grad Credit: Any CS course that aligns to the standards and has an appropriately qualified teacher can count as a mathematics, science, or practical arts credit for graduation.

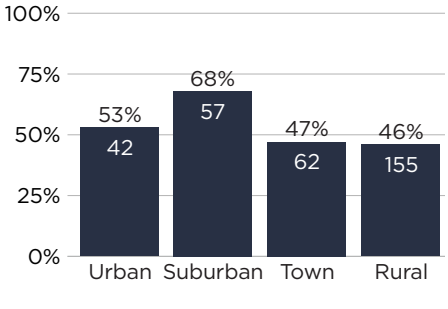
MO has three regional CSTA chapters and Governor Michael Parson is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

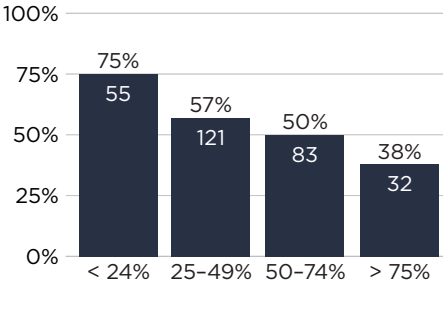
Access by School Year



Access by Geography



Access by % FRL in the School

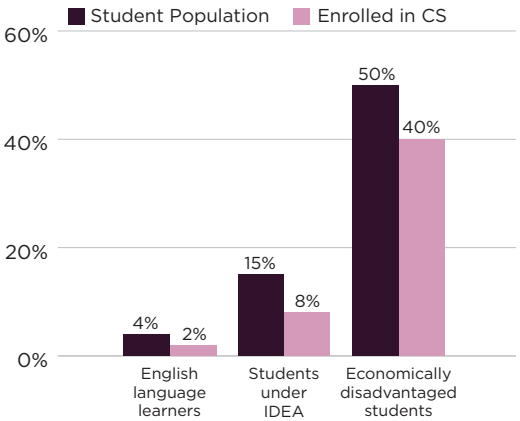


Data provided primarily by the Department of Elementary and Secondary Education, based on 634 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

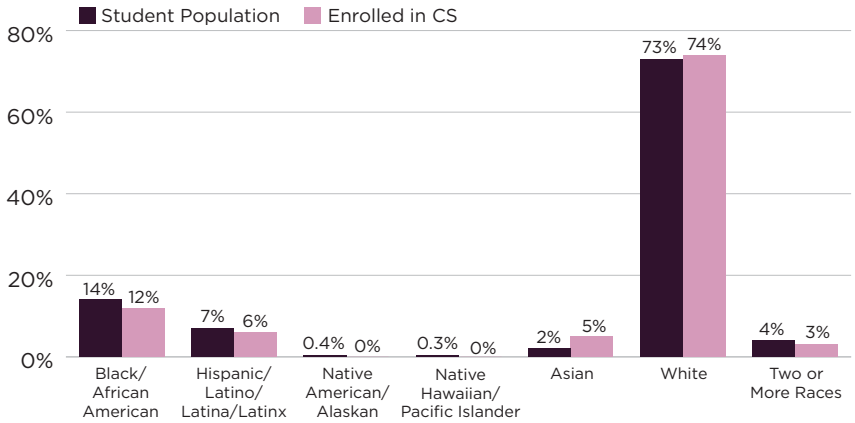
74% of MO high school students attend a school that offers computer science, but only 3.3% of students are enrolled in a foundational computer science course. 25% of students enrolled in computer science courses are female. No Native American nor Native Hawaiian/Pacific Islander students enrolled in computer science. Only 38% of schools with high percentages of economically disadvantaged students offer it, compared to 75% of schools with low percentages.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data was masked at low counts.

Montana

State Plan	Standards	Funding
No	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	No
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	No

Standards: MT adopted K–12 computer science (CS) standards in November 2020.

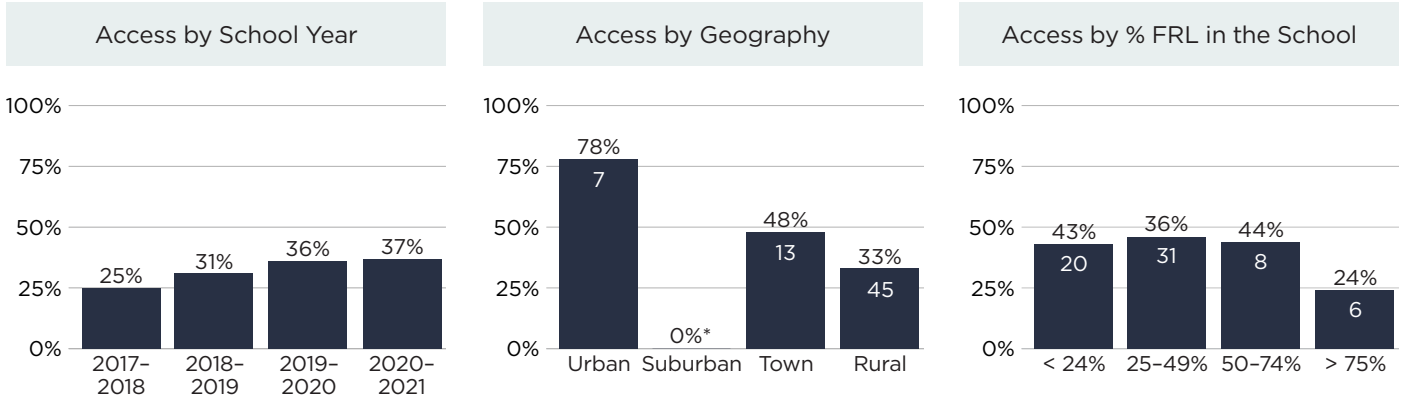
Funding: In 2021, MT allocated $32K via HB 644 for computer programming courses at high schools on Indian reservations and for professional development for teachers.

Certification: Teachers with existing licensure can obtain a K–12 CS endorsement through academic coursework. An initial license in CS 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: The MT Office of Public Instruction has approved CS teacher preparation programs.

Grad Credit: MT passed a policy to allow CS to count as a science, mathematics, elective, or CTE graduation requirement, but it is a district decision. A district may also increase the local requirements and allow a CS course to fulfill one of the required credits.

Percentage of Public High Schools Offering Foundational Computer Science

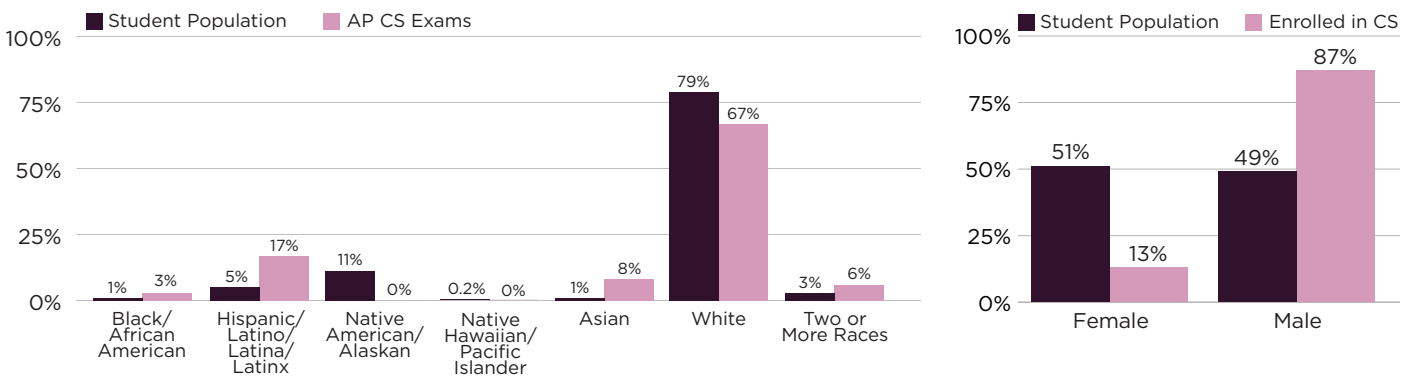


*Only one school is located in a suburban geographic area and it does not offer CS.

Data provided primarily by the Office of Public Instruction, based on 174 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

65% of MT high school students attend a school that offers computer science, but only 3.4% of students are enrolled in a foundational computer science course. Of 38 total AP CS exams taken in Montana last year, 13% were female. No Native American or Hawaiian/Pacific Islander students, only six Hispanic/Latino/Latina/Latinx students, and only one Black/African American student took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)



Course enrollment data for all foundational computer science courses is not available from Montana. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Nebraska

State Plan	Standards	Funding
In Progress	No	No
Certification	**Preservice**	**Supervisor**
No	No	No
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	No

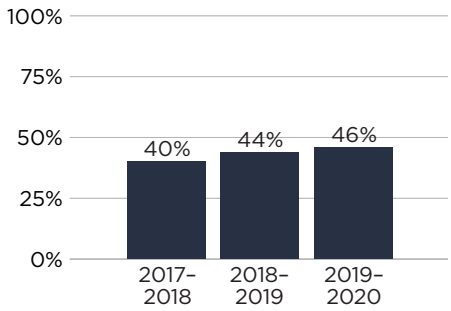
State Plan: The Nebraska Department of Education is in the process of developing a state plan for K–12 computer science.

Grad Credit: Nebraska passed a permissive and encouraging policy to allow computer science to count towards CTE in the 80 core curriculum hours required for graduation, but it is a district decision.

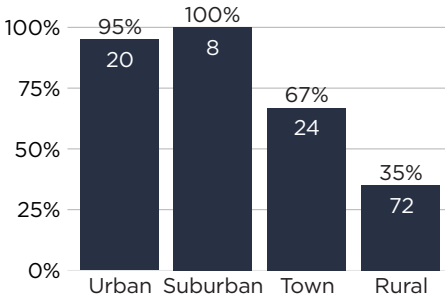
Nebraska has two regional CSTA chapters.

Percentage of Public High Schools Offering Foundational Computer Science

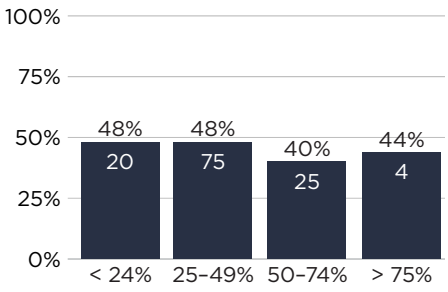
Access by School Year



Access by Geography



Access by % FRL in the School

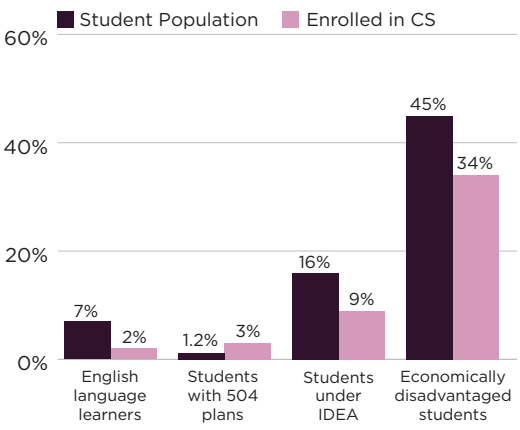


Data provided primarily by the Department of Education, based on 269 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

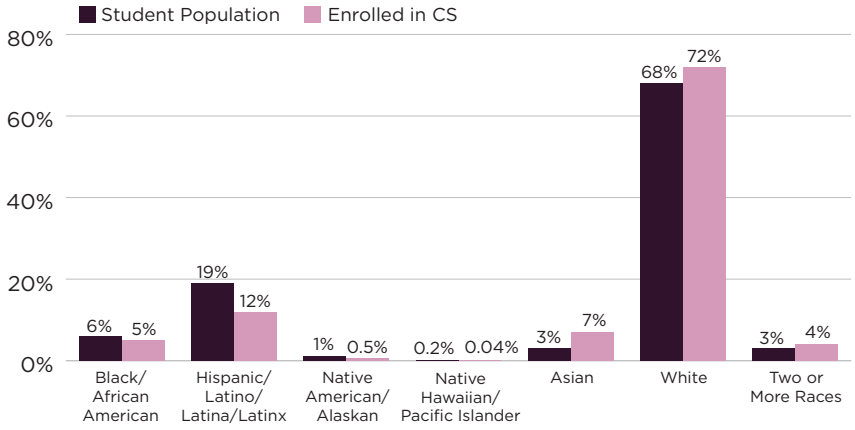
77% of NE high school students attend a school that offers computer science, but only 2.6% of students are enrolled in a foundational computer science course. 22% of students enrolled in computer science courses are female. Black/African American, Hispanic/Latino/Latina/Latinx, and Native American students are half as likely as their white and Asian peers to enroll in computer science. Only one Native Hawaiian/Pacific Islander student enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Nevada

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: The NV Department of Education developed the Computer Science (CS) Strategic Plan in 2018.

Standards: NV adopted K–12 CS standards in 2018.

Funding: $4M for CS since 2017.

Certification: Teachers can obtain a secondary endorsement in advanced CS, or a K–12 Introductory CS endorsement through academic coursework.

Preservice: All preservice teachers are required to be trained in CS and computer literacy.

Supervisor: The NV Department of Education has a CS Education Programs Professional.

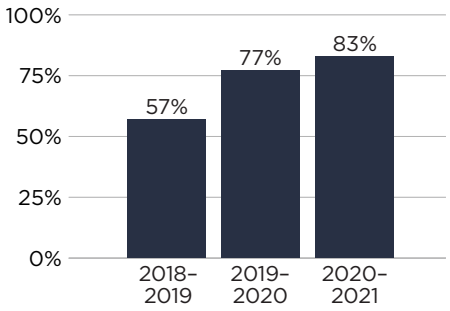
All HS Offer: All high schools are required to offer a CS course by the 2022–23 school year. All students are required to receive instruction in computer education before 6th grade.

Grad Credit and Admissions: All students must earn one half-credit in computer education and technology. A full-year CS course can count as a math or science credit required for graduation and for admission at IHEs.

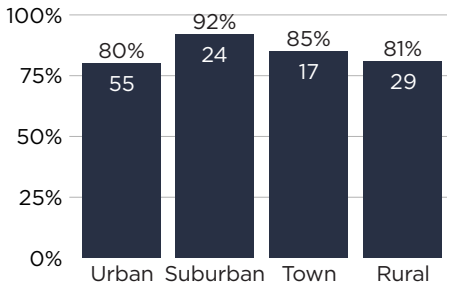
NV is a member of the ECEP Alliance and has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

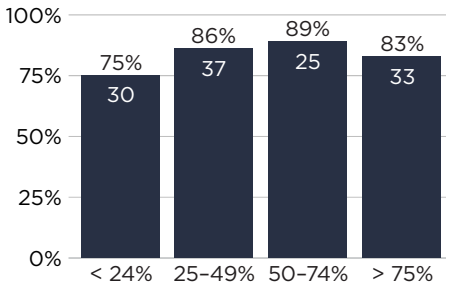
Access by School Year



Access by Geography



Access by % FRL in the School

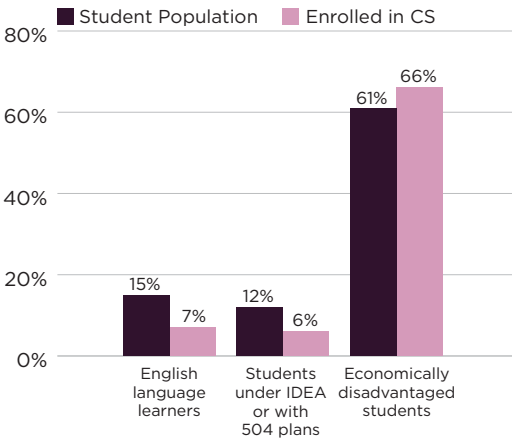


Data provided primarily by the Department of Education, school catalogs, and school survey data, based on 151 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

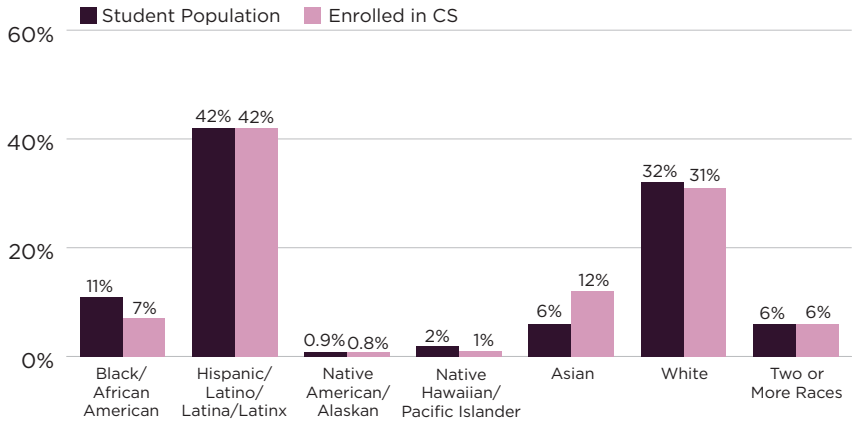
95% of NV high school students attend a school that offers computer science, but only 4.8% of students are enrolled in a foundational computer science course. 32% of students enrolled in computer science courses are female. Black/African American students are 1.7 times less likely, and Native Hawaiian/Pacific Islander students are 1.5 times less likely than their white and Asian peers to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data was masked at low counts.

New Hampshire

State Plan	Standards	Funding
Yes	Yes	No
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	District Decision	No

State Plan: NH developed a plan for expanding computer science (CS) in 2018.

Standards: NH adopted K–12 CS standards based on the CSTA standards in 2018.

Certification: Teachers with or without existing licensure can obtain CS certification.

Preservice: The NH Department of Education has approved teacher preparation programs leading to CS certification and lists these programs publicly.

Supervisor: The NH Department of Education has a STEM Integration and CS Administrator.

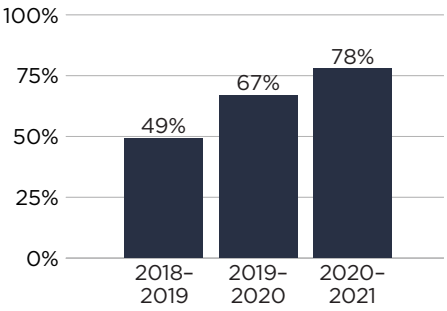
All HS Offer: HB 1674 (2018) required all schools to create and implement CS programs with a target goal of 2020 for full implementation.

Grad Credit: NH passed a permissive and encouraging policy to allow CS to count as a mathematics or technology credit for graduation, but it is a district decision.

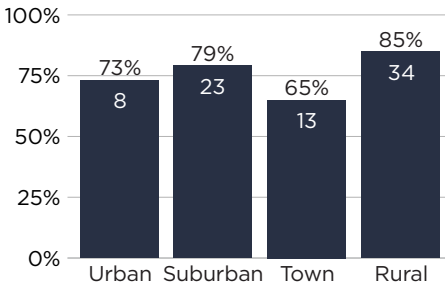
NH is a member of the ECEP Alliance and has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

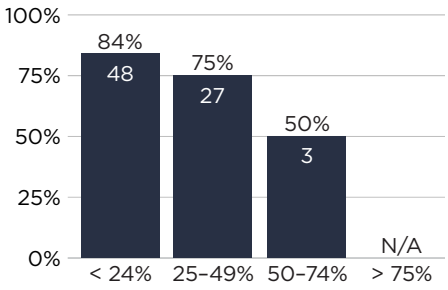
Access by School Year



Access by Geography



Access by % FRL in the School

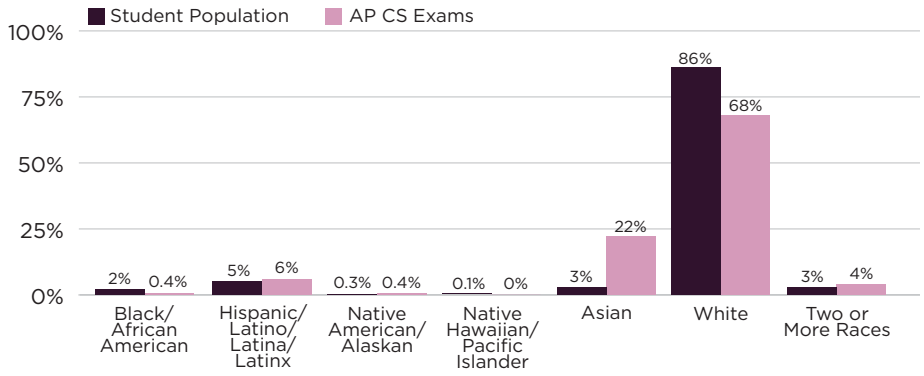


Data provided primarily by the school catalogs, based on 100 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

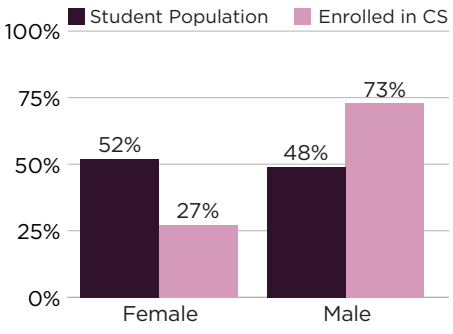
94% of NH high school students attend a school that offers computer science. Of 506 total AP CS exams taken in ew Hampshire last year, 27% were female. Although Black/African American students make up 2% of the overall student population, only two Black/African American students took an AP CS exam. No Native Hawaiian/Pacific Islander students and only two Native American/Alaskan students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from New Hampshire. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

New Jersey

State Plan	Standards	Funding
Yes	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
Yes	Yes	No

State Plan: The NJ Department of Education developed a state plan for computer science (CS) education in 2019.

Standards: NJ adopted revised CS and design thinking standards in 2020.

Funding: Since 2017, NJ has allocated $4.8M for CS.

Certification: Teachers with existing licensure can obtain a 9–12 CTE CS endorsement.

Supervisor: The NJ Department of Education has a CS Coordinator.

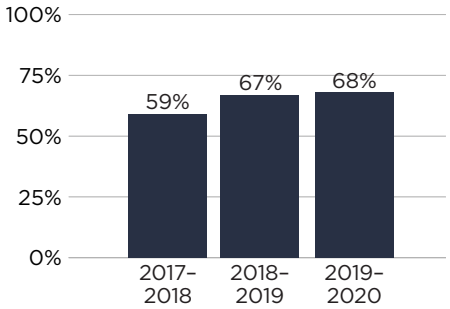
All HS Offer: All high schools are required to offer a course in CS.

Grad Credit: CS can count as a mathematics credit for graduation.

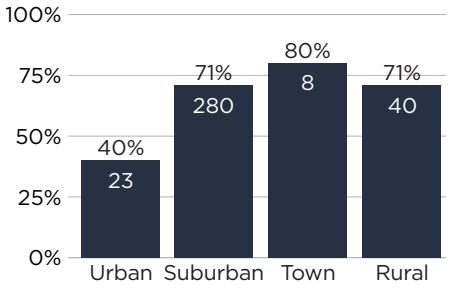
NJ has a CSTA chapter and Governor Phil Murphy is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

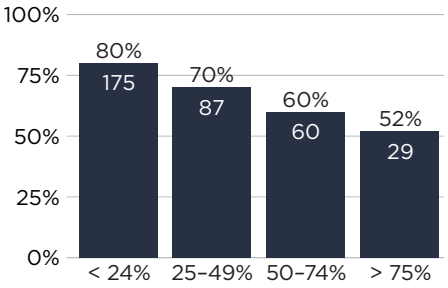
Access by School Year



Access by Geography



Access by % FRL in the School

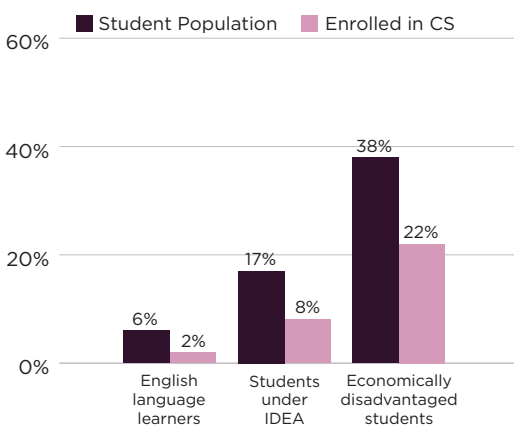


Data provided primarily by the Department of Education, based on 516 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

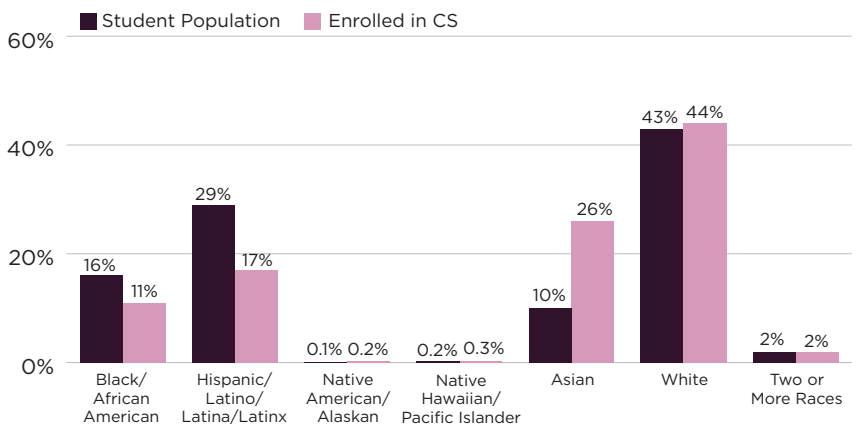
88% of NJ high school students attend a school that offers computer science, but only 7.1% of students are enrolled in a foundational computer science course. 28% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. Hispanic/Latino/Latina/Latinx students are two times less likely, and Black/African American students are 1.6 times less likely than their white and Asian peers to enroll in it.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



New Mexico

State Plan	Standards	Funding
Yes	Yes	Yes

Certification	Preservice	Supervisor
In Progress	No	Yes

All HS Offer	Grad Credit	Admissions
No	Yes	No

State Plan: The NM Public Education Department developed a state strategic plan for K–12 computer science (CS) in 2021.

Standards: NM adopted the CSTA K–12 CS Standards in 2018.

Funding: Since 2018, NM has allocated $1.2M for CS.

Certification: HB 188 (2021) required the Public Education Department to create a license endorsement in secondary CS by December 31, 2021.

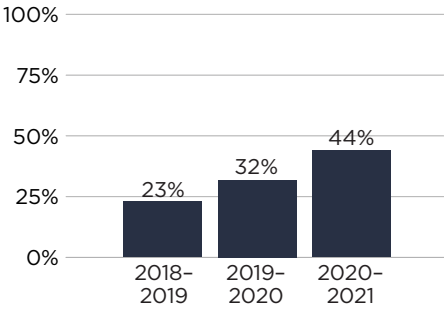
Supervisor: The NM Public Education Department has a K–8 CS Specialist and an Education Administrator in the Office of College and Career Readiness focused on high school CS.

Grad Credit: CS can count as a mathematics or science credit for graduation, provided that a student has demonstrated competence in mathematics or science.

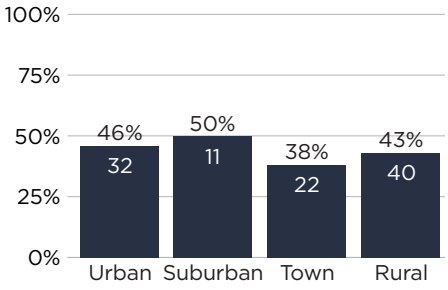
New Mexico has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

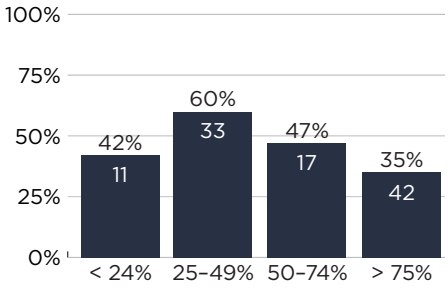
Access by School Year



Access by Geography



Access by % FRL in the School

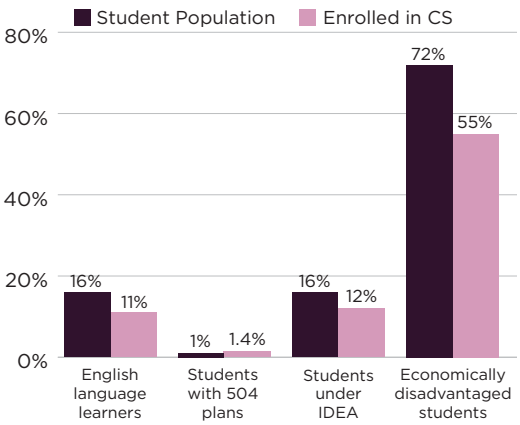


Data provided primarily by the Public Education Department, based on 241 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

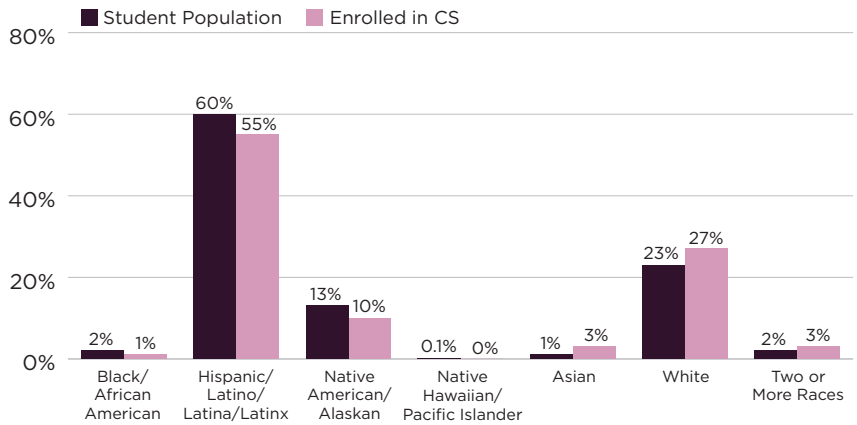
63% of NM high school students attend a school that offers computer science, but only 2.3% of students are enrolled in a foundational computer science course. 28% of students enrolled in computer science courses are female. Native American students are 1.4 times less likely than their white and Asian peers to attend a school that offers computer science. Black/African American students are 1.6 times less likely to enroll in it. No Native Hawaiian/Pacific Islander students enrolled in CS.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data was masked at low counts.

New York

State Plan	Standards	Funding
No	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	No
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	No

Standards: The NY State Board of Regents approved the K–12 Learning Standards for Computer Science (CS) and Digital Literacy in December 2020.

Funding: Since 2018, NY has allocated $24M to expand CS education via the Smart Start grant program.

Certification: Teachers with or without existing licensure can obtain a 7–12 CS certification. Any licensed teacher who teaches CS before September 2022 will be eligible to continue teaching CS in the same district for ten years.

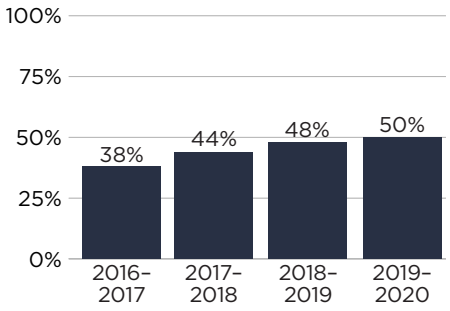
Preservice: The NY State Education Department has approved teacher preparation programs leading to CS certification and lists these programs publicly.

Grad Credit: NY passed a permissive and encouraging policy to allow CS to count as either a mathematics or science credit for graduation, but it is a district decision.

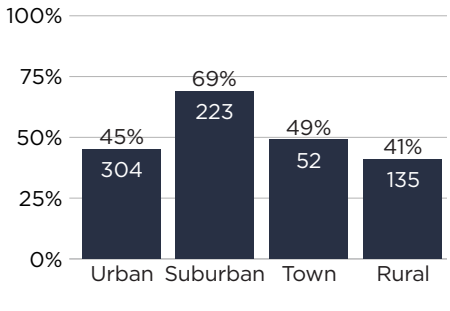
New York has eight regional CSTA chapters.

Percentage of Public High Schools Offering Foundational Computer Science

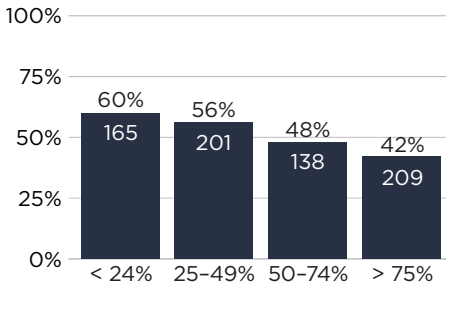
Access by School Year



Access by Geography



Access by % FRL in the School

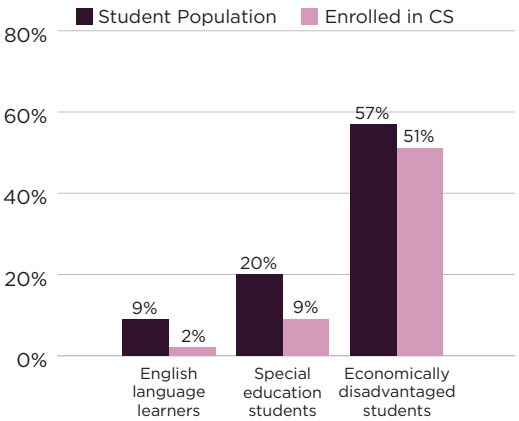


Data provided primarily by the State Department of Education, based on 1,428 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

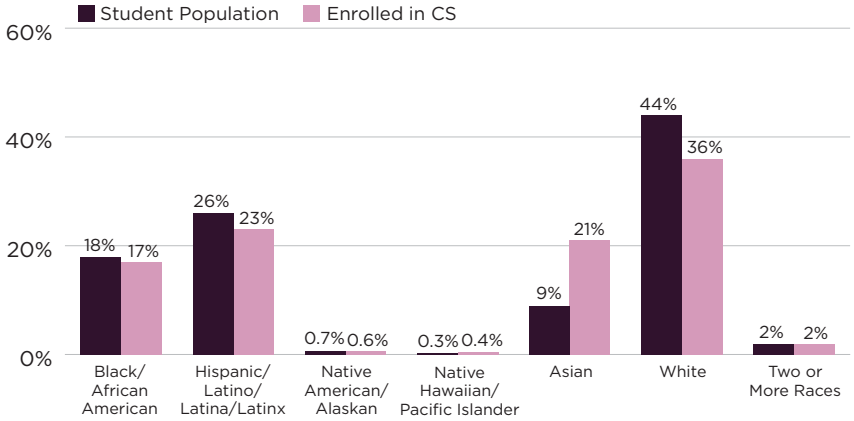
66% of NY high school students attend a school that offers computer science, but only 4.3% of students are enrolled in a foundational computer science course. 34% of students enrolled in computer science courses are female. Black/African American students are 1.3 times less likely than their white and Asian peers to attend a school that offers computer science. Only 41% of schools in rural areas and 45% of schools in urban areas offer computer science, compared to 69% in suburban areas.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals.

North Carolina

State Plan	Standards	Funding
Yes	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
No	Yes	No

State Plan: The NC Department of Public Instruction developed a state plan for expanding computer science (CS) in 2018.

Standards: NC adopted K–12 CS standards in 2020.

Funding: Since 2017, NC has allocated $3M for CS.

Certification: Teachers with existing CTE licensure can obtain a 9–12 CTE computer programming endorsement.

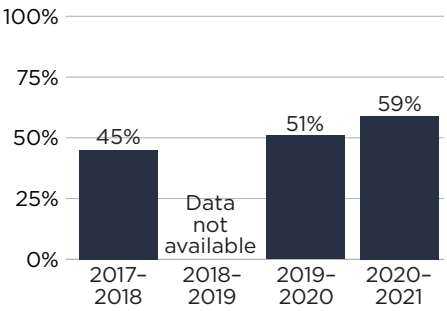
Supervisor: The NC Department of Public Instruction has a Director of CS and Technology.

Grad Credit: CS can count as the fourth mathematics credit for graduation in the Future-Ready Core track.

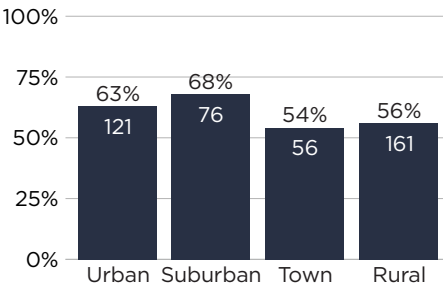
NC is a member of the ECEP Alliance, has a statewide CSTA chapter, and Governor Roy Cooper is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

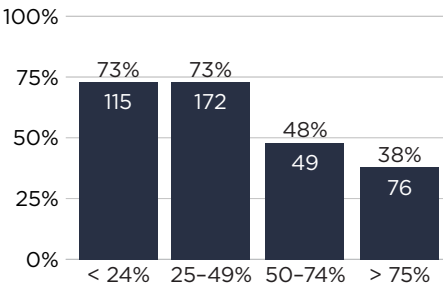
Access by School Year



Access by Geography



Access by % FRL in the School

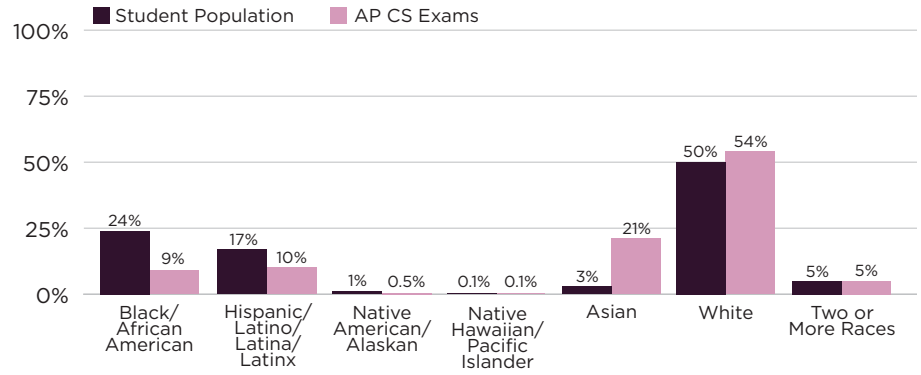


Data provided primarily by the Department of Public Instruction, based on 697 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

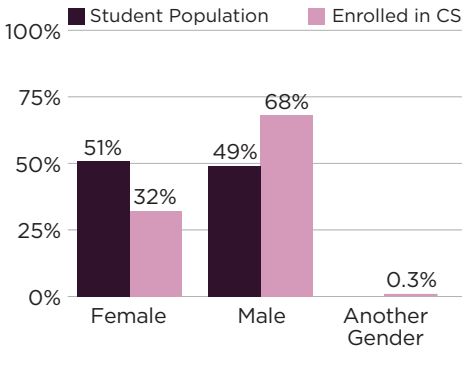
78% of NC high school students attend a school that offers computer science. Of 5,367 total AP CS exams taken in North Carolina last year, 32% were female and 0.3% identified as another gender. Native American/Alaskan students are 2.6 times less likely than their white and Asian peers to attend a school that offers AP CS. Black/African American students are 3 times less likely and Hispanic/Latino/Latina/Latinx students are 2 times less likely than their white and Asian peers to take an AP CS exam. Only three Native Hawaiian/Pacific Islander students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from North Carolina. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

North Dakota

State Plan	Standards	Funding
In Progress	Yes	No
Certification	**Preservice**	**Supervisor**
Yes	No	No
All HS Offer	**Grad Credit**	**Admissions**
No	Yes	No

State Plan: The North Dakota Department of Public Instruction is in the process of developing a state plan for K–12 computer science.

Standards: North Dakota adopted K–12 computer science (CS) and cybersecurity standards in 2019, becoming the first state to create K–12 cybersecurity standards.

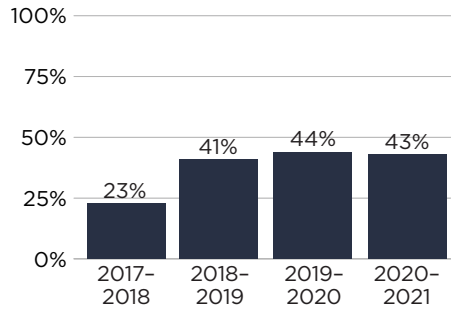
Certification: Teachers with existing licensure can obtain a grade level corresponding CS credential through academic coursework. Teachers are eligible to teach specific CS courses for five years after earning a credential. Teachers can renew the credential by completing academic work during the five-year period.

Grad Credit: AP Computer Science A or Mathematics for Computer Science/Information Technology can countas a mathematics credit forgraduation.

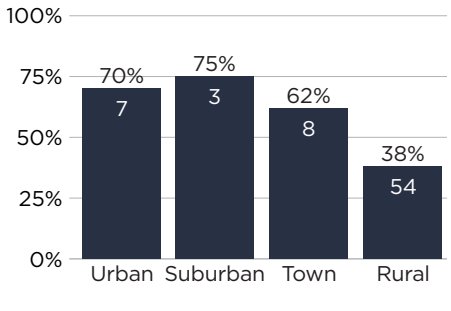
North Dakota has a statewide CSTA chapter and Governor Doug Burgum is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

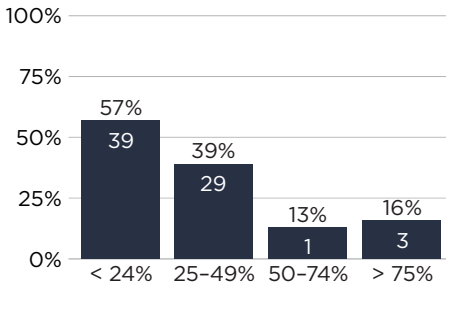
Access by School Year



Access by Geography



Access by % FRL in the School

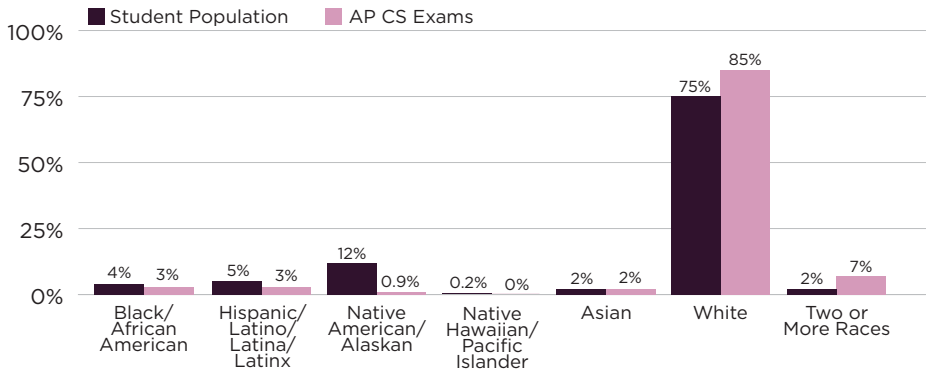


Data provided primarily by the Department of Public Instruction, based on 169 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

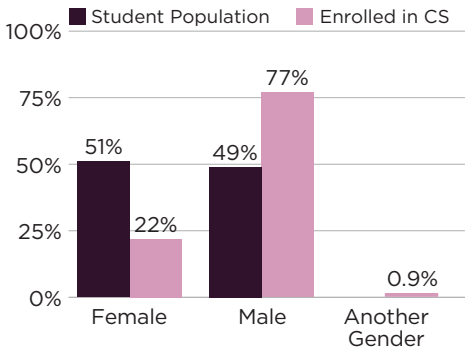
71% of ND high school students attend a school that offers computer science, but only 3.9% of students are enrolled in a foundational computer science course. 17% of students enrolled in computer science courses are female. Of 112 total AP CS exams taken in North Dakota last year, 22% were female and 1% identified as another gender. Only three Black/African American students, three Hispanic/Latino/Latina/Latinx students, and one Native American/Alaskan student took an AP CS exam. No Native Hawaiian/Pacific Islander students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from North Dakota. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Ohio

State Plan	Standards	Funding
In Progress	Yes	No (Historic yes)
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	Yes	Yes

State Plan: The OH Dept. of Ed. and Dept. of Higher Ed. are developing a state plan for computer science (CS).

Standards: Adopted K–12 standards and a model curriculum in 2018.

Funding: Although OH does not currently provide dedicated state funding, $1.5M for teachers to become credentialed in CS (2019) was discontinued due to COVID-19 related budget cuts.

Certification: Teachers can earn an initial license in CS or a K–12 CS supplemental teaching license.

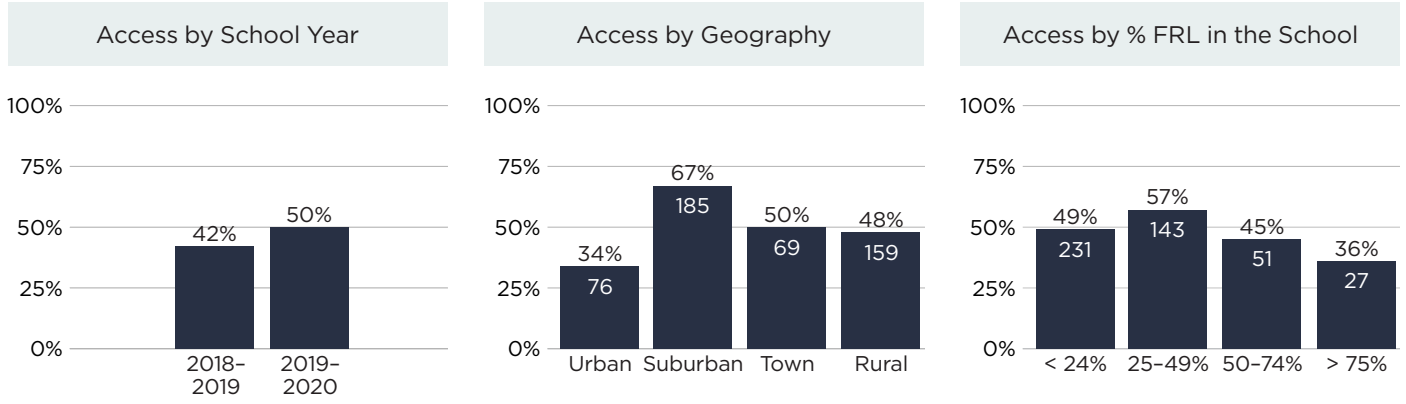
Preservice: The OH Dept. of Higher Ed. has approved teacher preparation programs. In 2021, HB 110 required each educator licensure candidate to receive instruction in CS and computational thinking.

Supervisor: The OH Dept of Ed. has a CS Education Program Specialist.

Grad Credit and Admissions: An advanced CS course can count towards the math or science graduation and higher education admission requirements, and a unit of coding can count towards foreign language.

OH is a member of the ECEP Alliance and has a statewide CSTA chapter.

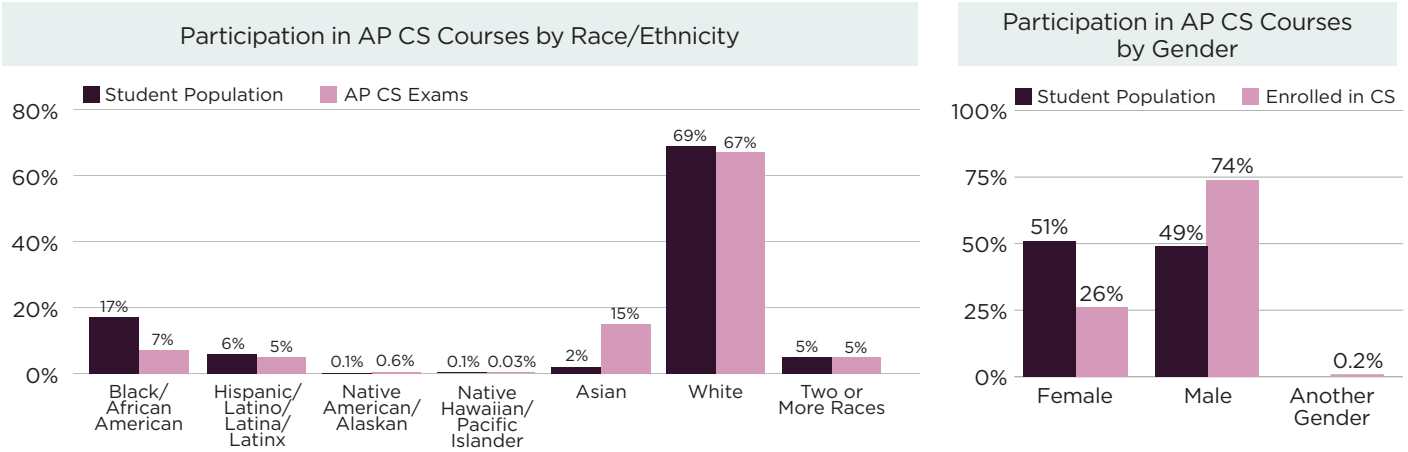
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the Department of Education and school catalogs, based on 971 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

65% of OH high school students attend a school that offers computer science. Of 3,548 total AP CS exams taken in Ohio last year, 26% were female and 0.2% identified as another gender. Black/African American students are 1.7 times less likely than their white and Asian peers to attend a school that offers AP CS. Only one Native Hawaiian/Pacific Islander student took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)



Course enrollment data for all foundational computer science courses is not available from Ohio. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Oklahoma

State Plan	Standards	Funding
Yes	Yes	No
Certification	**Preservice**	**Supervisor**
Yes	No	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: CSforOK developed a strategic plan for expanding computer science (CS) education in October 2020.

Standards: OK adopted K–12 CS standards in 2018.

Certification: Teachers with existing licensure can obtain a 9–12 CS certification; teachers can also earn an initial license in CS.

Supervisor: The OK Department of Education has a Director of Education Technology and CS Education, and will soon hire a Director of Computer Science Education.

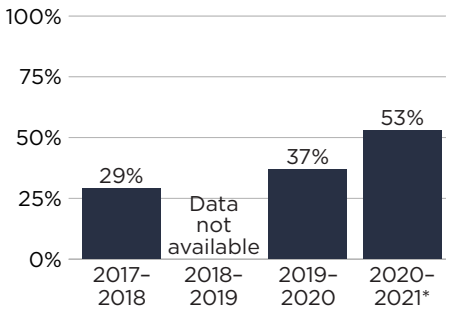
All HS Offer: SB 252 (2021) required all elementary, middle, and high schools to offer CS by the 2024–25 school year.

Grad Credit and Admissions: An approved CS course can count as a mathematics or computer technology/world language credit. Two CS credits can count towards the additional units in required content areas for higher education admission.

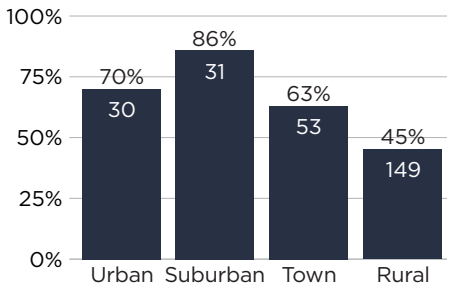
OK has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

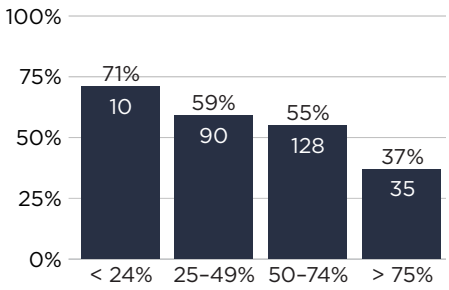
Access by School Year



Access by Geography



Access by % FRL in the School



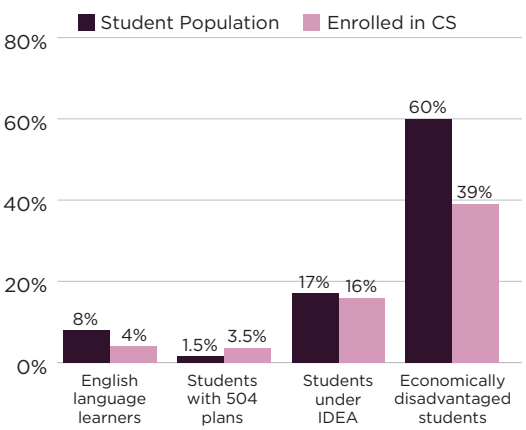
*2020–21 data includes CareerTech courses for the first time

Data provided primarily by the State Education Department, based on 494 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

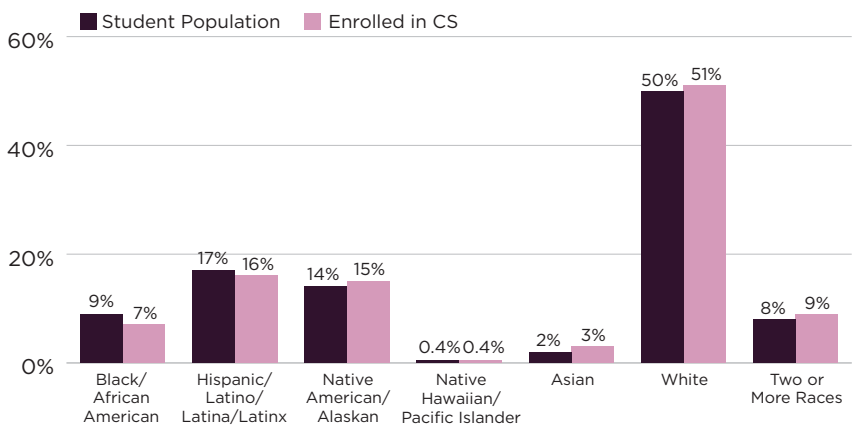
77% of OK high school students attend a school that offers computer science, but only 7.2% of students are enrolled in a foundational computer science course. 36% of students enrolled in computer science courses are female. Black/African American students are 1.4 times less likely than their white and Asian peers to enroll in computer science. Only 45% of schools in rural areas offer computer science, compared to 86% in suburban areas.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Oregon

State Plan	Standards	Funding
No	No	No

Certification	Preservice	Supervisor
No	No	No

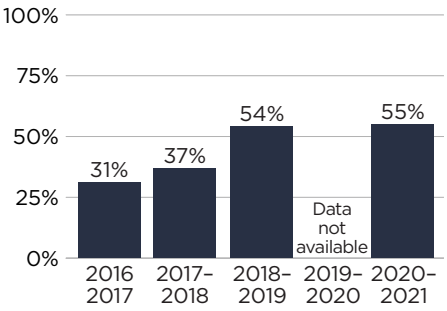
All HS Offer	Grad Credit	Admissions
No	District Decision	No

Grad Credit: Oregon passed a permissive and encouraging policy to allow computer science (CS) to count as a fourth science elective for graduation, but it is a district decision.

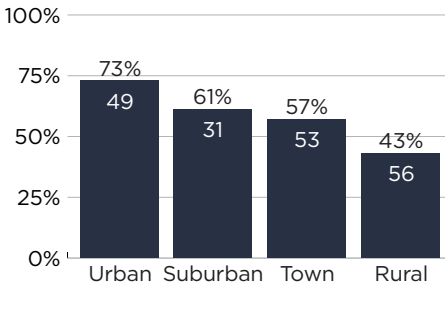
Oregon is a member of the ECEP Alliance and has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

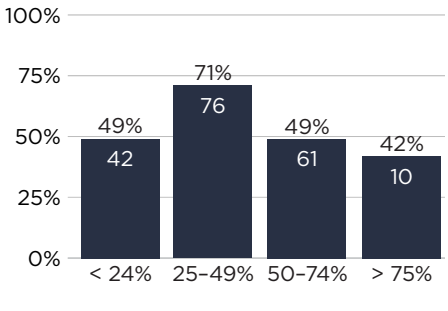
Access by School Year



Access by Geography



Access by % FRL in the School

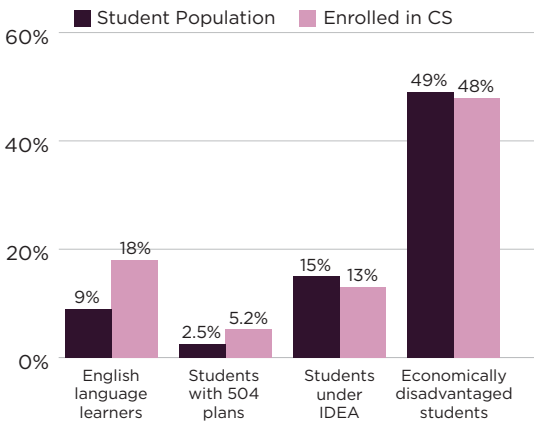


Data provided primarily by the Department of Education and school catalogs, based on 341 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

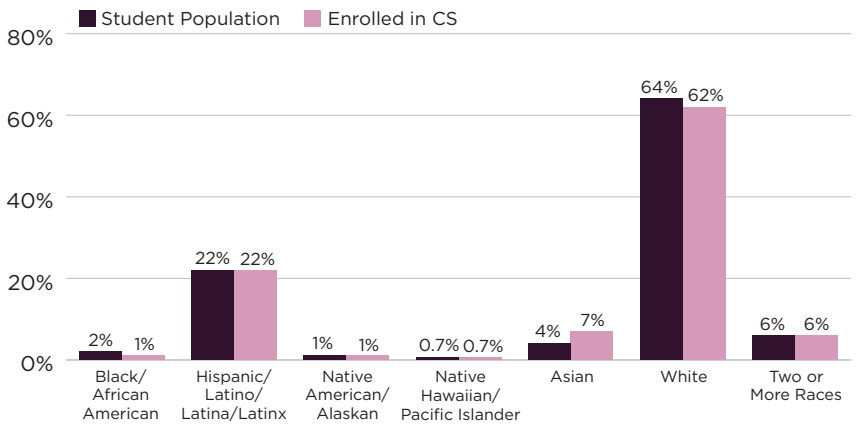
82% of OR high school students attend a school that offers computer science, but only 2.7% of students are enrolled in a foundational computer science course. 24% of students enrolled in computer science courses are female and 0.04% identified as other or nonbinary. Native American students are 1.5 times less likely than their white and Asian peers to attend a school that offers computer science. Black/African American students are 1.5 times less likely to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data is from the 2018–19 school year, and access report data is from the 2020–21 school year.

Pennsylvania

State Plan	Standards	Funding
No	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	Yes	No

Standards: PA endorsed the CSTA K–12 Computer Science (CS) Standards in 2018.

Funding: PA dedicated $20M annually ($56M since 2018) to PAsmart, a program established to expand STEM and CS education.

Certification: Teachers with existing licensure can obtain a 9–12 CS certification; teachers can also earn an initial license in CS.

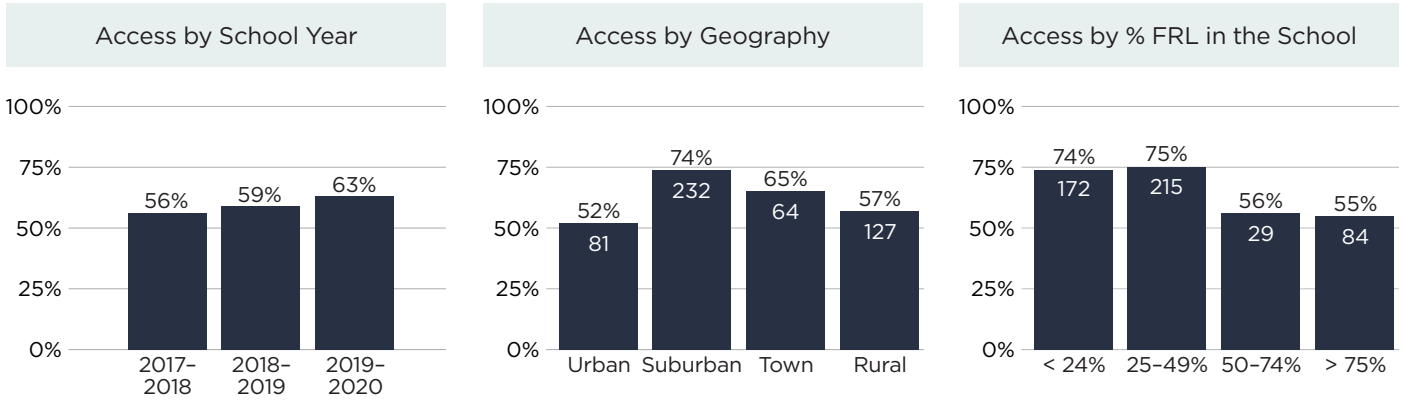
Preservice: The PA Department of Education developed specific program guidelines for state approval of professional educator programs in CS.

Supervisor: The PA Department of Education has a Consultant to the Secretary of Education on STEM and CS.

Grad Credit: Any CS course aligned with the CS standards can count as a mathematics or science credit for graduation.

PA has four regional CSTA chapters and Governor Tom Wolf is a member of the Governors' Partnership for K–12 Computer Science.

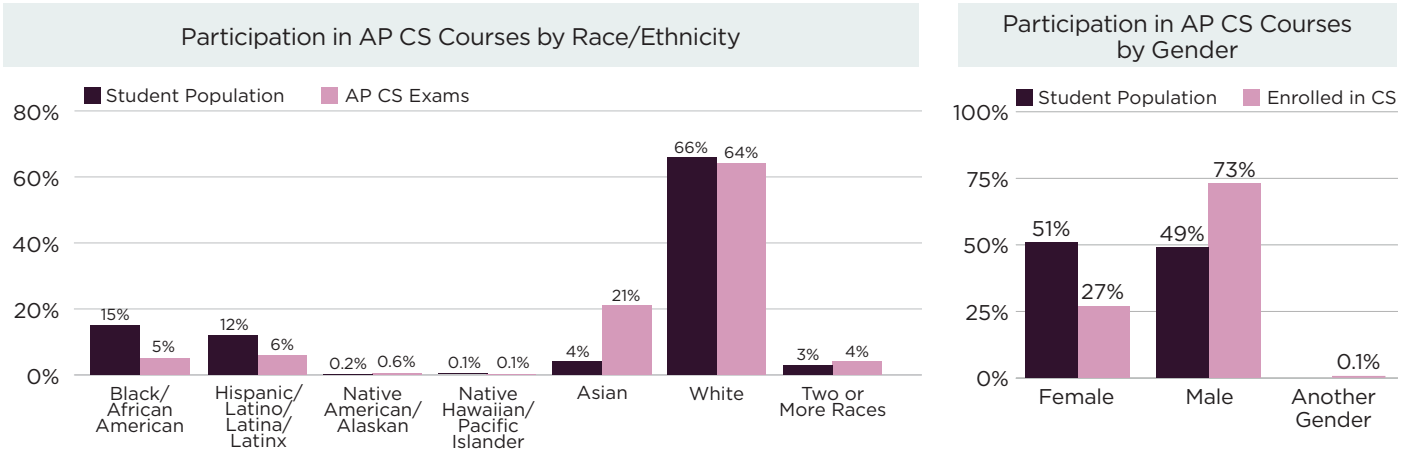
Percentage of Public High Schools Offering Foundational Computer Science



Data provided primarily by the Department of Education, based on 794 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

81% of PA high school students attend a school that offers computer science. Of 6,211 total AP CS exams taken in Pennsylvania last year, 27% were female and 0.06% identified as another gender. When compared to their white and Asian peers, Black/African American students are 2.7 times less likely and Hispanic/Latino/Latina/Latinx students are half as likely to take an AP CS exam. Only three Native Hawaiian/Pacific Islander students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)



Course enrollment data for all foundational computer science courses is not available from Pennsylvania. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Rhode Island

State Plan	Standards	Funding
Yes	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
Other	Yes	No

State Plan: CS4RI, a partnership between the Governor's office and the RI Department of Education, created a state plan for computer science (CS).

Standards: RI adopted K–12 CS standards in 2018.

Funding: Since 2016, RI has allocated $840K for CS. The Department also received a $2.5M federal grant to support the creation of high school CS pathways that incorporate work-based learning.

Certification: Teachers with existing licensure can obtain a CS endorsement.

Supervisor: The RI Department of Education has a CS team, including the Digital Learning Specialist, CS4RI High School Grant Project Manager, and CS4RI Work-Based Learning Specialist.

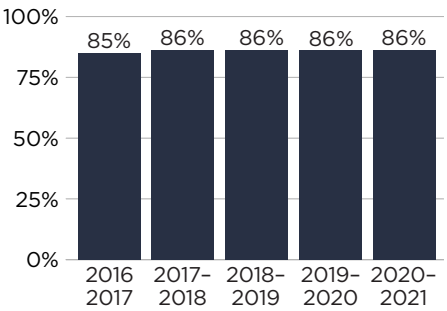
All HS Offer: The CS4RI initiative and the Governor's office set a goal for all students to have access to CS courses by the end of 2017, but does not require high schools to offer CS.

Grad Credit: CS can count as a math or science credit for graduation.

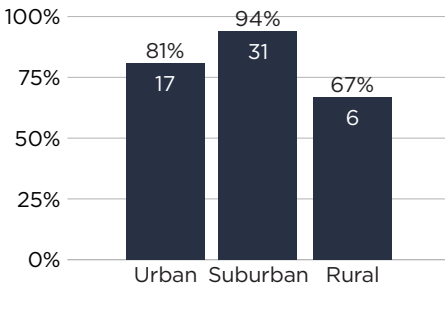
RI is a member of the ECEP Alliance and has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

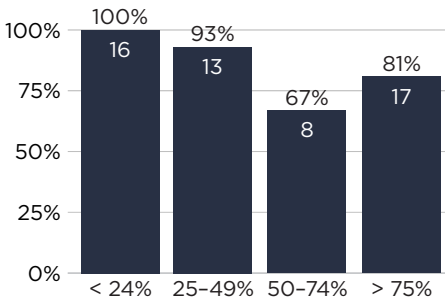
Access by School Year



Access by Geography



Access by % FRL in the School

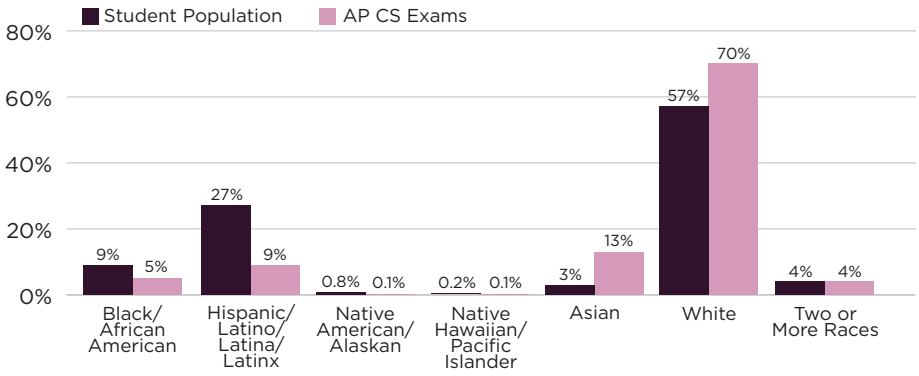


Data provided primarily by the Department of Education, based on 63 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

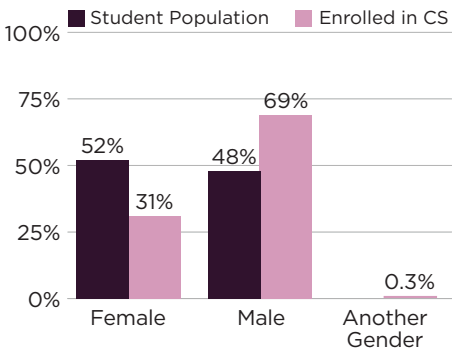
96% of RI high school students attend a school that offers computer science. Of 739 total AP CS exams taken in Rhode Island last year, 31% were female and 0.3% identified as another gender. When compared to their white and Asian peers, Black/African American students are 1.7 times less likely, and Hispanic/Latino/Latina/Latinx students are 2.4 times less likely to take an AP CS exam. Only one Native American student and one Native Hawaiian/Pacific Islander student took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from Rhode Island. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

South Carolina

State Plan	Standards	Funding
In Progress	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	No	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan SC is in the process of creating a state plan.

Standards: SC adopted K–8 computer science (CS) and digital literacy standards in 2017 and high school standards in 2018.

Funding: $3.1M for CS since 2017.

Certification: Teachers with or without existing licensure can obtain a 9–12 CS certification.

Preservice: There are program approval standards, but no universities currently meet them.

Supervisor: The SC Department of Education has a CS Supervisor.

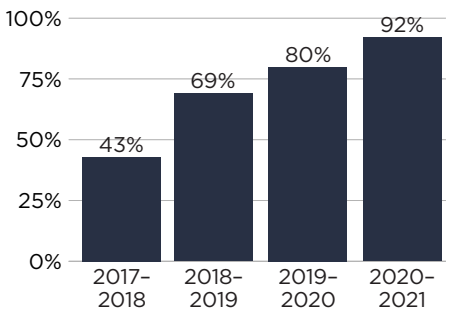
All HS Offer: The SC Department of Education requires all high schools to offer at least one CS course.

Grad Credit and Admission: All students must take one credit of CS to graduate. Multiple CS courses are approved to meet the credit. CS can count as the fourth mathematics credit required for admission at IHEs.

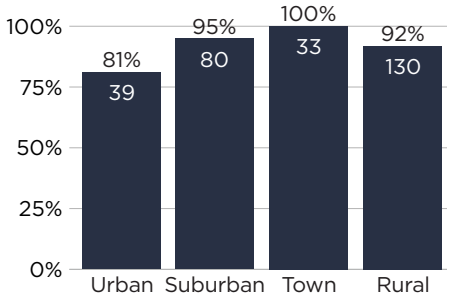
SC is a member of the ECEP Alliance, has a statewide CSTA chapter, and Governor Henry McMaster is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

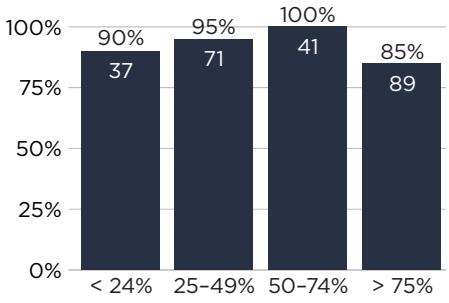
Access by School Year



Access by Geography



Access by % FRL in the School

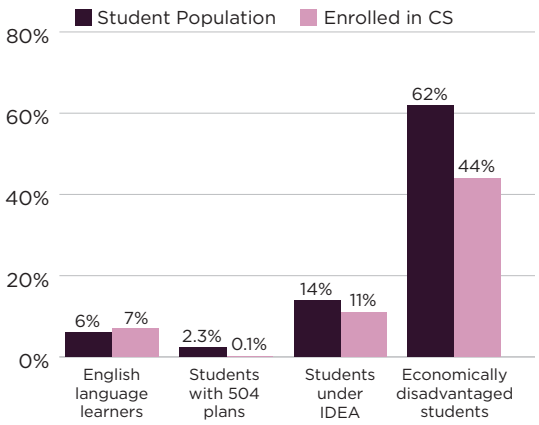


Data provided primarily by the Department of Education, based on 306 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

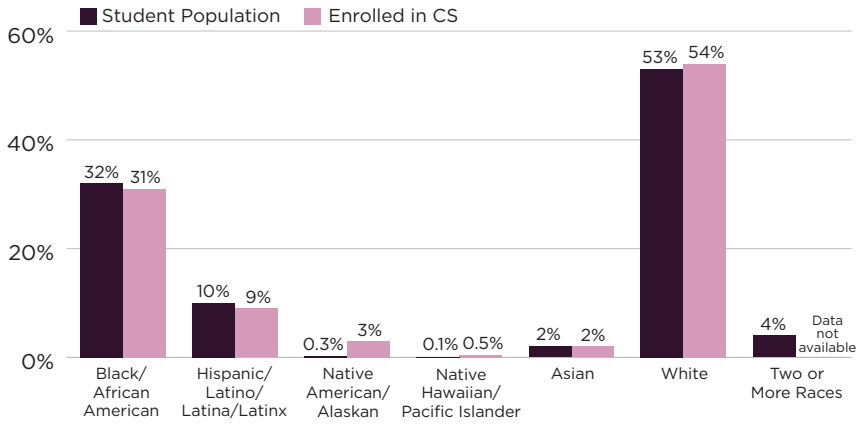
98% of SC high school students attend a school that offers computer science, and 21% of students are enrolled in a foundational computer science course. 46% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Some students may be represented in multiple race/ethnicity columns as the state reports race and ethnicity separately.

South Dakota

State Plan	Standards	Funding
No	No	No

Certification	Preservice	Supervisor
Yes	No	No

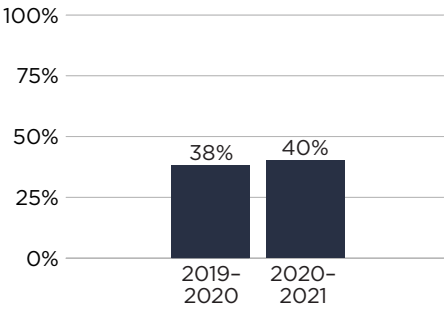
All HS Offer	Grad Credit	Admissions
No	Yes	No

Certification: In South Dakota, teachers with existing licensure can obtain a K–6 or 7–12 computer science (CS) endorsement through academic coursework or passing the Praxis computer science exam.

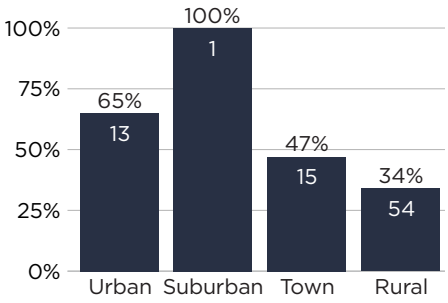
Grad Credit: A state-approved advanced computer science course can count as a science credit for students who earn a regular diploma in South Dakota.

Percentage of Public High Schools Offering Foundational Computer Science

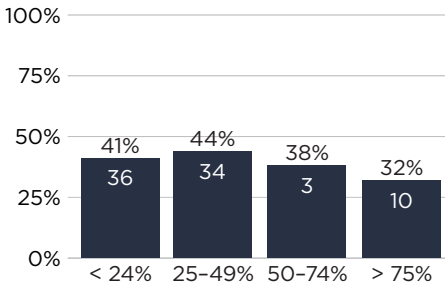
Access by School Year



Access by Geography



Access by % FRL in the School

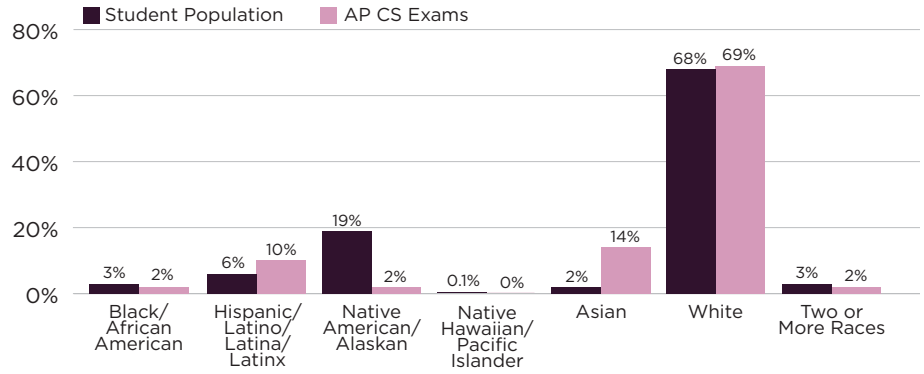


Data provided primarily by the Department of Education and school catalogs, based on 210 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

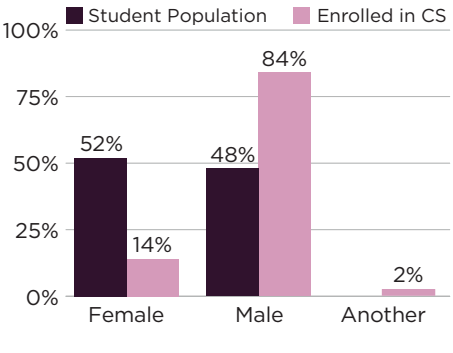
67% of SD high school students attend a school that offers computer science. Of 50 total AP CS exams taken in South Dakota last year, 14% were female and 2% identified as another gender. Only one Native American student, one Black/African American student, and five Hispanic/Latino/Latina/Latinx students took an AP CS exam. No Native Hawaiian/Pacific Islander students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from South Dakota. State data on students identifying as another gender is also unavailable. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Tennessee

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	Yes	No

State Plan: The TN Department of Education created the TN Computer Science (CS) State Education Plan in 2020.

Standards: TN published K–12 CS standards in 2020.

Funding: In 2020, $518K was allocated for CS.

Certification: Teachers with existing licensure can obtain the CS Employment Standard endorsement after completing approved professional development. An initial license in CS requires completing academic coursework and passing the Praxis CS exam.

Preservice: The TN Department of Education has approved teacher preparation programs for CS certification.

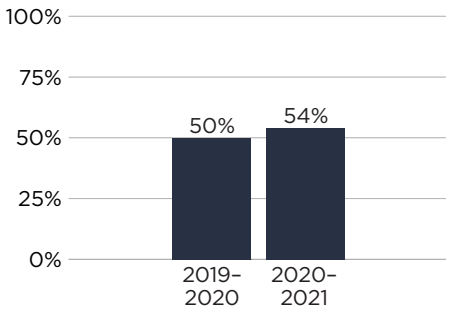
Supervisor: The TN Department of Education added a Director of STEAM and CS in 2021.

Grad Credit: CS can count as a mathematics credit for graduation.

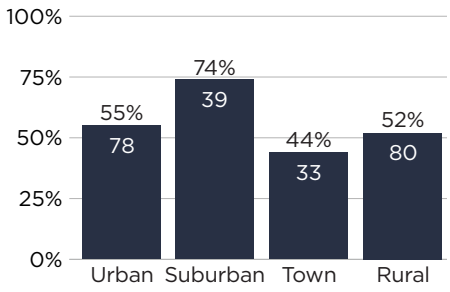
TN has two CSTA chapters.

Percentage of Public High Schools Offering Foundational Computer Science

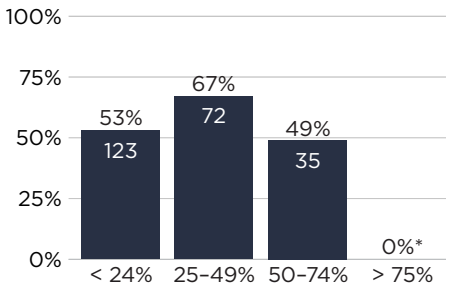
Access by School Year



Access by Geography



Access by % FRL in the School



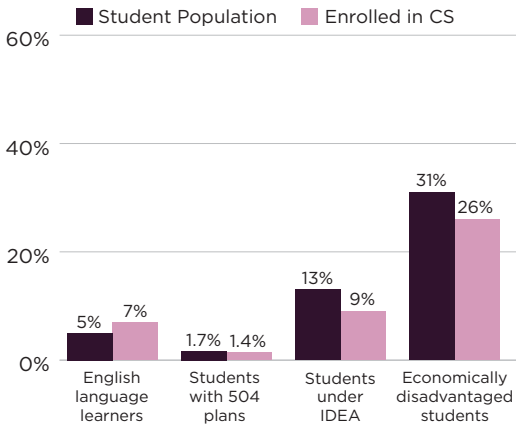
*Only four schools have 75–100% FRL enrollment and none offer computer science

Data provided primarily by the Department of Education, based on 423 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

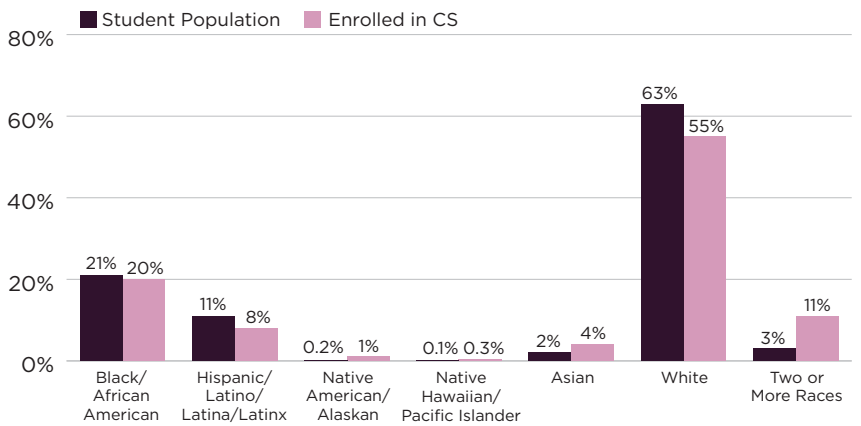
71% of TN high school students attend a school that offers computer science, but only 5% of students are enrolled in a foundational computer science course. 30% of students enrolled in computer science courses are female. Computer science is not offered in any of the four schools with over 75% of their students qualifying for free and reduced-price meals.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals. Some students may be represented in multiple race/ethnicity columns as the state reports race and ethnicity separately. Participation data was masked at low counts.

Texas

State Plan	Standards	Funding
No	No	Yes

Certification	Preservice	Supervisor
Yes	Yes	No

All HS Offer	Grad Credit	Admissions
Yes	Yes	Yes

State Plan: Although HB 2984 (2019) required the development of a state plan for computer science, Texas has not made progress towards a state plan.

Standards: The high school level TX Essential Knowledge and Skills (TEKS) contain CS standards.

Funding: TX allocated $2.585M to make an AP CS Principles course available in every high school.

Certification: Teachers with or without existing licensure can obtain an 8–12 CS certification.

Preservice: The TX Education Agency has approved teacher preparation programs.

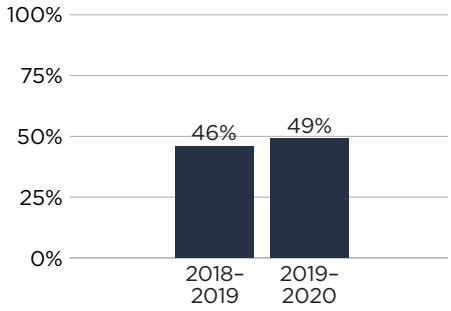
All HS Offer: The TX State Board of Education added CS courses to the list of required offerings at high schools in 2014.

Grad Credit and Admissions: Some CS courses can count as a required mathematics course for graduation. CS can also count as an advanced science credit or foreign language requirement. CS can count as the fourth mathematics credit required for higher education admission.

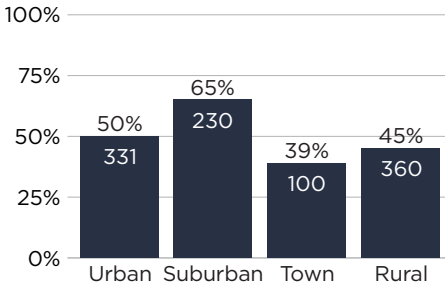
TX is a member of the ECEP Alliance and has five regional CSTA chapters.

Percentage of Public High Schools Offering Foundational Computer Science

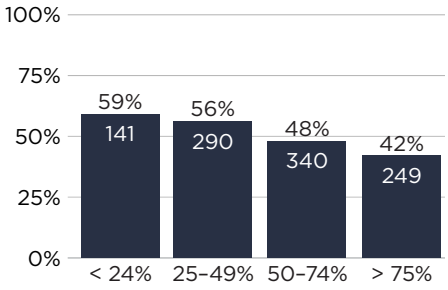
Access by School Year



Access by Geography



Access by % FRL in the School

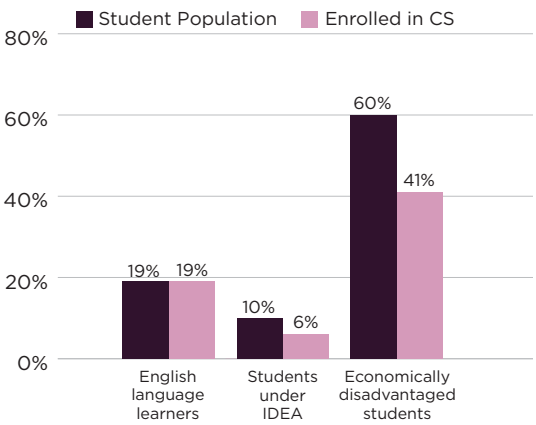


Data provided primarily by the Texas Education Agency and the University of Texas at Austin, based on 2,066 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

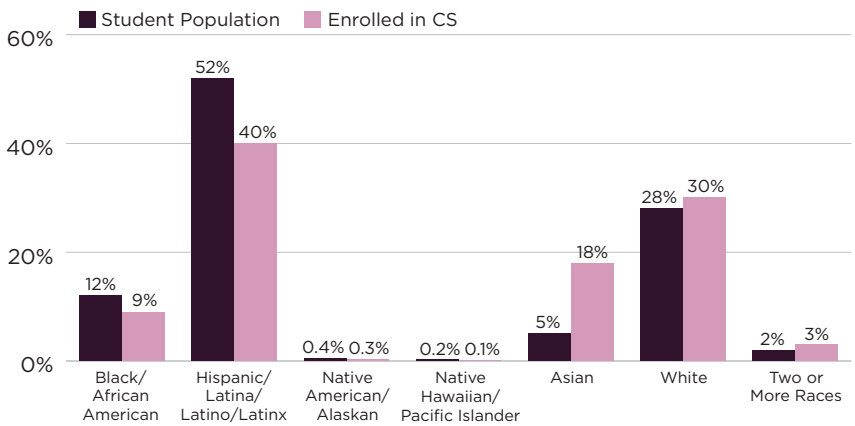
78% of TX high school students attend a school that offers computer science, but only 3.8% of students are enrolled in a foundational computer science course. 27% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. However, Black/African American students are half as likely as their white and Asian peers to enroll in computer science, and both Hispanic/Latino/Latina/Latinx and Native Hawaiian Pacific Islander students are almost half as likely.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals.

Utah

State Plan	Standards	Funding
Yes	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
No	Yes	No

State Plan: UT adopted the UT Computer Science (CS) Education Master Plan in 2019.

Standards: UT adopted K–5 CS standards in 2019 and 6–12 standards in 2020.

Funding: Since 2016, UT allocated $10.9M for CS.

Certification: Teachers with existing secondary or CTE licensure can obtain up to six course-specific 6–12 CS endorsements.

Preservice: The UT State Board of Education has approved teacher preparation programs.

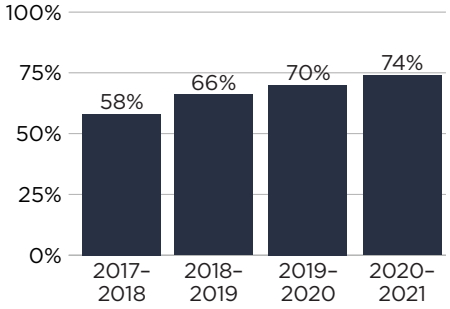
Supervisor: The UT State Board of Education has a CS State Specialist.

Grad Credit: A computer programming course can replace the third mathematics credit (Secondary III) by request from a parent, or it can count as a science or digital studies credit. AP CS, CS Principles, and Computer Programming II are approved to count as a science graduation credit.

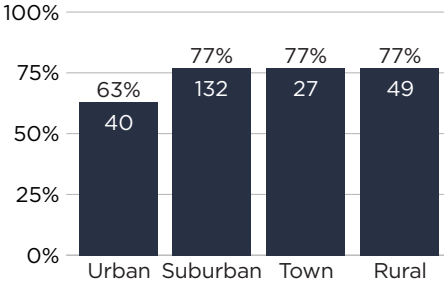
UT is a member of the ECEP Alliance and has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

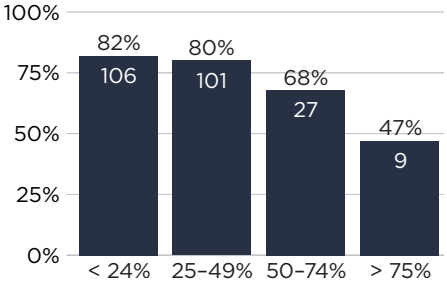
Access by School Year



Access by Geography



Access by % FRL in the School

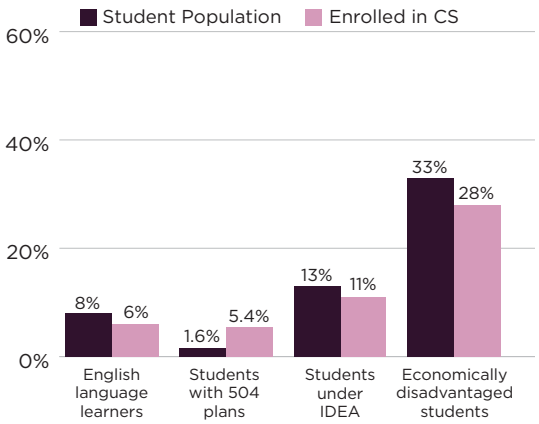


Data provided primarily by the State Board of Education, based on 333 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

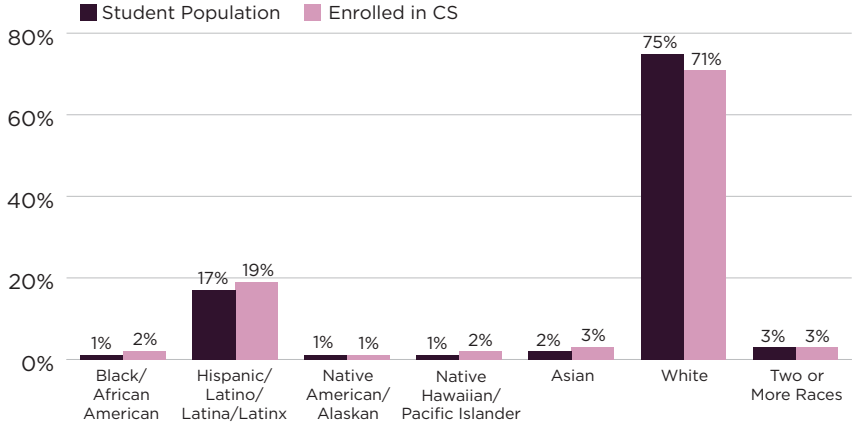
90% of UT high school students attend a school that offers computer science, but only 9.4% of students are enrolled in a foundational computer science course. 35% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. However, only 47% of schools with high percentages of economically disadvantaged students offer it, compared to 82% of schools with low percentages.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Participation data was masked at low counts. The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals.

Vermont

State Plan	Standards	Funding
No	No	No
Certification	**Preservice**	**Supervisor**
Yes	Yes	No
All HS Offer	**Grad Credit**	**Admissions**
No	District Decision	No

Certification: In Vermont, teachers with existing licensure can obtain a 7–12 computer science (CS) endorsement by demonstrating knowledge standards, performance standards, and completing academic coursework.

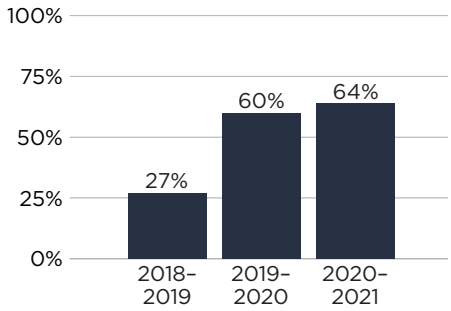
Preservice: The Vermont Agency of Education has approved teacher preparation programs leading to certification in computer science and lists these programs publicly.

Grad Credit: Vermont passed a permissive and encouraging policy to allow computer science to count towards a core graduation requirement at the district level.

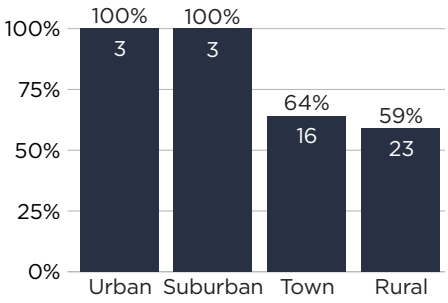
Vermont has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

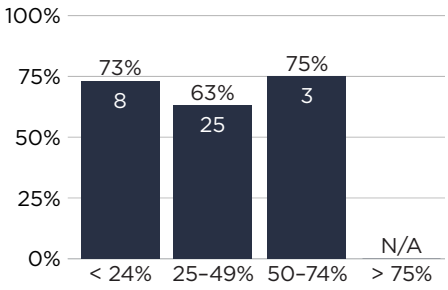
Access by School Year



Access by Geography



Access by % FRL in the School

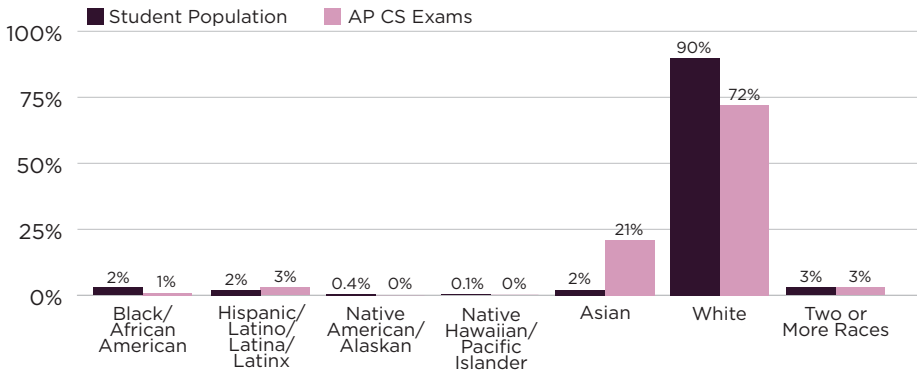


Data provided primarily by the Agency of Education and school catalogs, based on 70 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

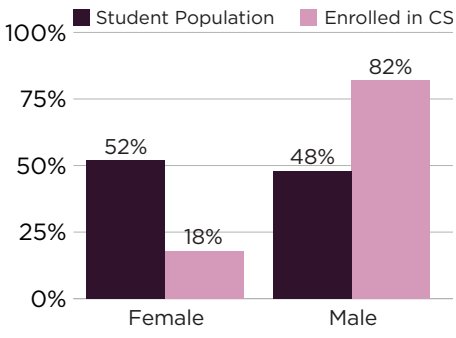
71% of VT high school students attend a school that offers computer science. Of 157 total AP CS exams taken in Vermont last year, 18% were female. Black/African American students make up 3% of the overall student population, and Hispanic/Latino/Latina/Latinx students make up 2%, but only one Black/African American and only five Hispanic/Latino/Latina/Latinx students took an AP CS exam. No Native American/Alaskan nor Native Hawaiian/Pacific Islander students took an AP CS exam.

Participation in AP Computer Science Courses by Demographic (2020)

Participation in AP CS Courses by Race/Ethnicity



Participation in AP CS Courses by Gender



Course enrollment data for all foundational computer science courses is not available from Vermont. Nationally, we know that participation in all foundational computer science courses is broader than AP participation. Although we cannot report on overall computer science course enrollment data, we can examine trends with AP exam participation data.

Virginia

State Plan	Standards	Funding
No	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	No

Standards: In 2017, VA added mandatory K–12 computer science (CS) standards.

Funding: $7.3M for CS since 2016.

Certification: Teachers can obtain a CS endorsement or initial license. The Dept. of Ed. is developing recommendations for micro-credentials in CS.

Preservice: The VA Department of Education has approved teacher preparation programs.

Supervisor: The VA Department of Education has a CS Coordinator.

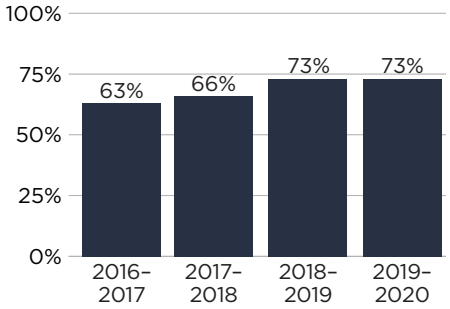
All HS Offer: CS was added into the K–12 Standards of Learning in 2016, which all schools must implement.

Grad Credit: A variety of CS courses can count as a credit for graduation in lab science, CTE, or mathematics. Students in English as a Second Language programs can add a CS elective if they test out of their foreign language requirement.

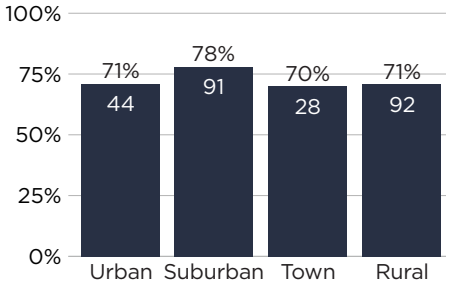
VA is a member of the ECEP Alliance, has seven regional CSTA chapters, and Governor Ralph Northam is a member of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

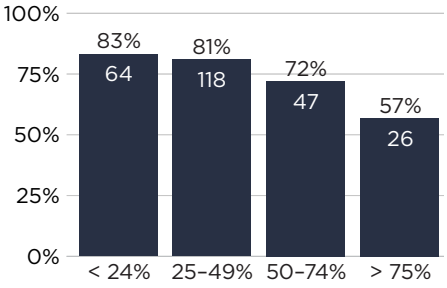
Access by School Year



Access by Geography



Access by % FRL in the School

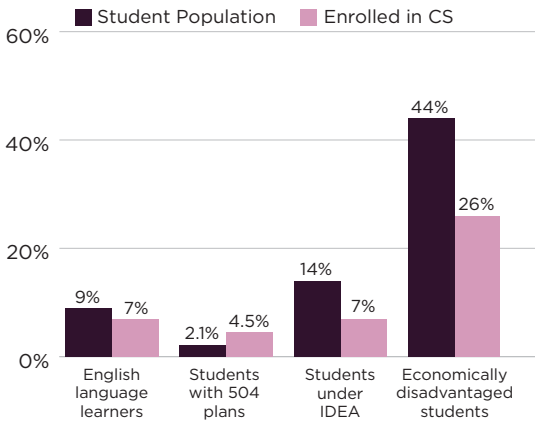


Data provided primarily by the Department of Education, based on 348 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

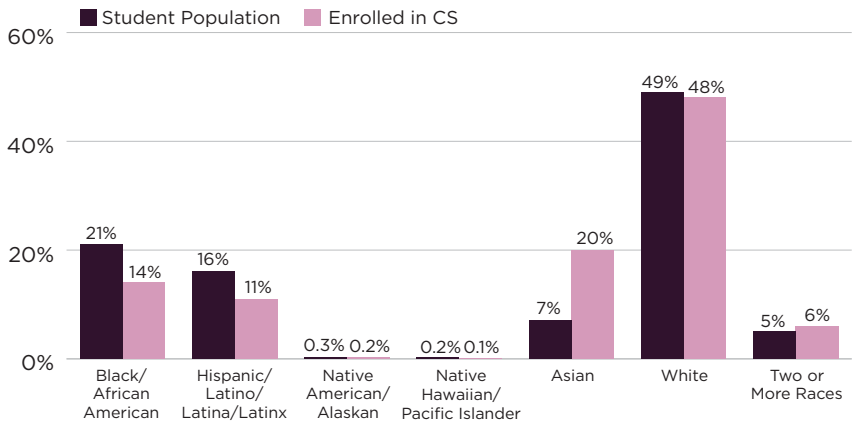
86% of VA high school students attend a school that offers computer science, but only 3.8% of students are enrolled in a foundational computer science course. 25% of students enrolled in computer science courses are female. Students of all racial and ethnic groups are similarly likely to attend a school that offers computer science. However, Black/African American students are 1.7 times less likely, Hispanic/Latino/Latina/Latinx students are 1.8 times less likely, Native American students are 1.5 times less likely, and Native Hawaiian/Pacific Islander students are half as likely as their white and Asian peers to enroll in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Washington

State Plan	Standards	Funding
In Progress	Yes	Yes
Certification	**Preservice**	**Supervisor**
Yes	Yes	Yes
All HS Offer	**Grad Credit**	**Admissions**
Yes	Yes	Yes

State Plan: The Washington State Office of Superintendent of Public Instruction (OSPI) is in the process of developing a state plan for K–12 computer science (CS).

Standards: In 2018, WA adopted updated K–12 CS standards.

Funding: WA has allocated $8M for CS requiring a one-to-one private match.

Certification: Teachers with existing licensure can obtain a K–12 CS endorsement. WA is creating two new specialty endorsements in CS.

Preservice: OSPI has approved teacher preparation programs in CS.

Supervisor: The OSPI has a CS Program Specialist.

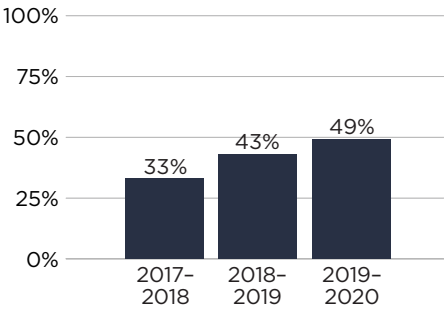
All HS Offer: All high schools must provide access to a CS course by the 2022–23 school year.

Grad Credit and Admissions: CS can count as the third mathematics credit or a science credit for graduation. AP CS A can count as a mathematics credit for higher education admission.

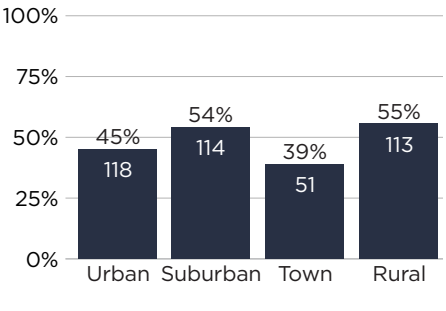
WA is a member of the ECEP Alliance, has four regional CSTA chapters, and Governor Jay Inslee is co-chair of the Governors' Partnership for K–12 Computer Science.

Percentage of Public High Schools Offering Foundational Computer Science

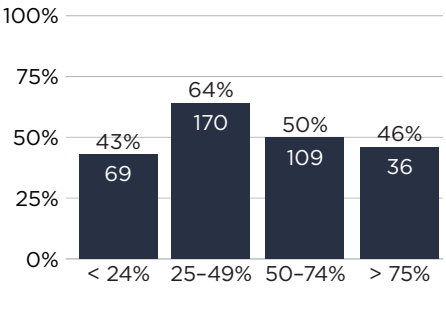
Access by School Year



Access by Geography



Access by % FRL in the School

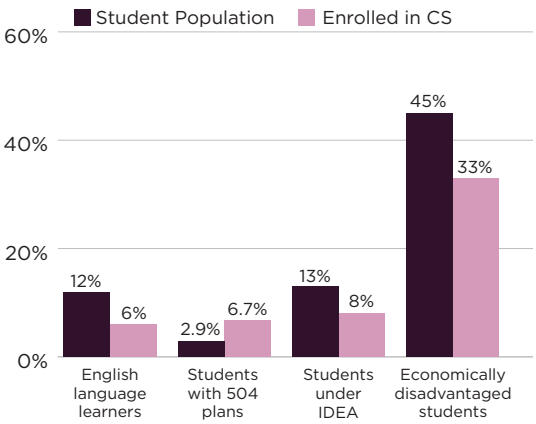


Data provided primarily by the Office of the Superintendent of Public Instruction, based on 811 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

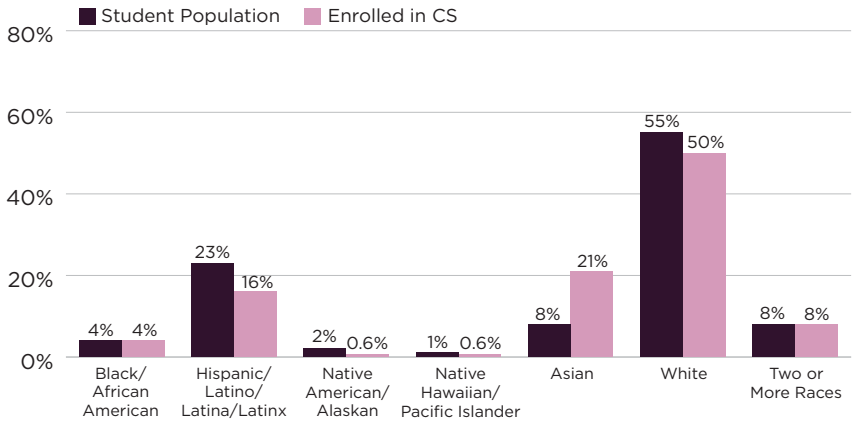
86% of WA high school students attend a school that offers computer science, but only 4% of students are enrolled in a foundational computer science course. 25% of students enrolled in computer science courses are female and 1% identified as other or nonbinary. Native American students are 1.6 times less likely than their white and Asian peers to attend a school that offers CS. Native American, Hawaiian/Pacific Islander, and Hispanic/Latinx students are less likely to enroll in it.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals. Participation data was masked at low counts.

West Virginia

State Plan	Standards	Funding
Yes	Yes	Yes

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
Yes	Yes	No

State Plan: The WV Department of Education approved a state plan for expanding computer science (CS) in 2019.

Standards: WV adopted K–12 CS standards in 2019.

Funding: Since 2019, WV has allocated annual funding for CS teacher professional development.

Certification: Teachers with existing licensure can obtain course-specific CS authorizations by completing specified professional development.

Supervisor: The WV Department of Education has a CS Supervisor.

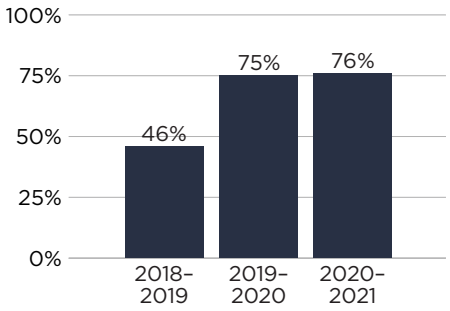
All HS Offer: CS instruction shall be available to students at each programmatic level, and all high schools must offer a CS course.

Grad Credit: An AP CS course can count as the fourth mathematics credit or a science credit for graduation.

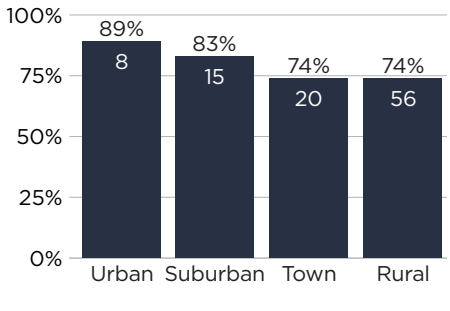
WV has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

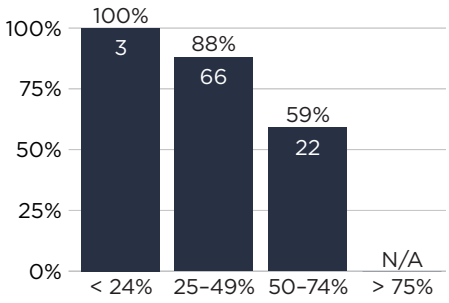
Access by School Year



Access by Geography



Access by % FRL in the School

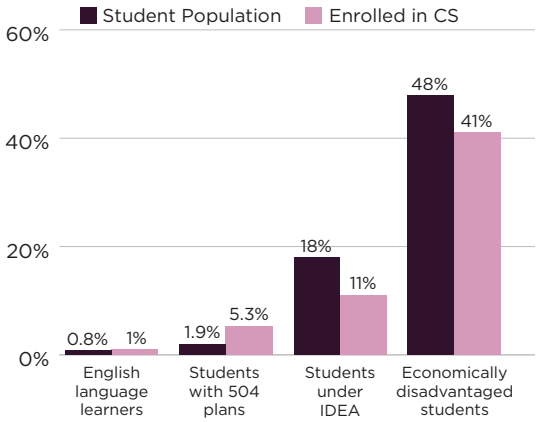


Data provided primarily by the Department of Education, based on 130 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

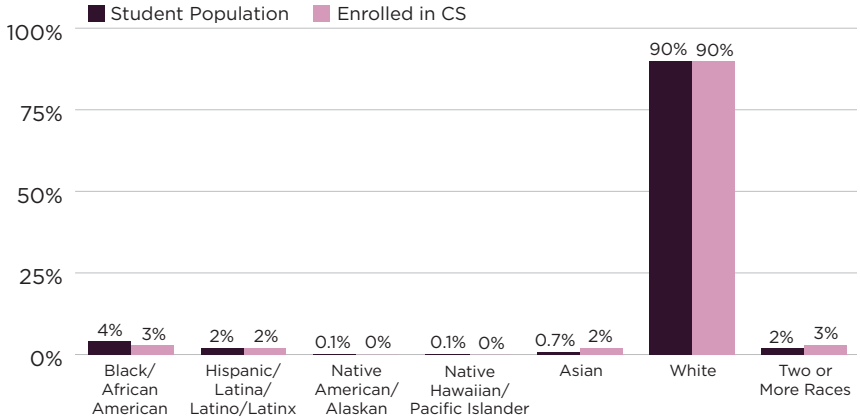
87% of WV high school students attend a school that offers computer science, but only 3.5% of students are enrolled in a foundational computer science course. 30% of students enrolled in computer science courses are female. Black/African American students are 1.6 times less likely than their white and Asian peers to enroll in computer science, and no Native American or Native Hawaiian/Pacific Islander students enrolled in computer science.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals. Participation data was masked at low counts.

Wisconsin

State Plan	Standards	Funding
In Progress	Yes	No
Certification	**Preservice**	**Supervisor**
Yes	Yes	No
All HS Offer	**Grad Credit**	**Admissions**
Other	Yes	No

State Plan: WI is in the process of creating a plan for K–12 computer science (CS).

Standards: WI adopted K–12 CS standards in 2017.

Certification: Teachers with existing licensure can obtain a 4–12 supplementary license by passing the Praxis CS exam. An initial license in CS requires completing a state-approved preparation program.

Preservice: The WI Department of Public Instruction has approved teacher preparation programs leading to CS certification and lists these programs publicly.

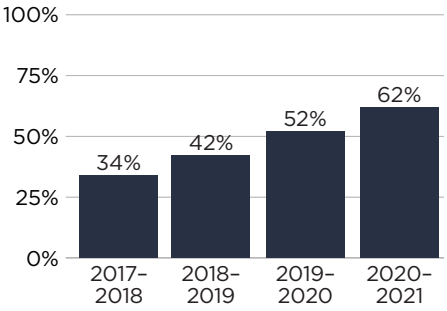
All HS Offer: State statute requires each school board to provide an instructional program designed to give students knowledge in CS, including problem-solving, computer applications, and the social impact of computers.

Grad Credit: CS courses that meet the department's definition of CS can count as a mathematics credit for graduation.

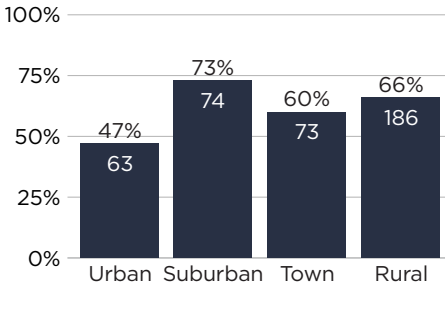
WI has a regional CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

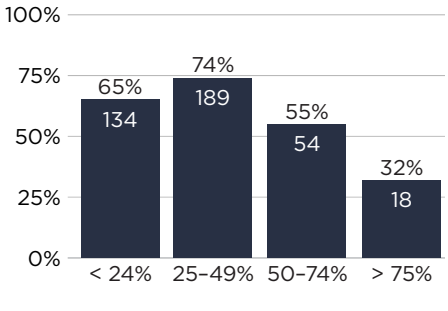
Access by School Year



Access by Geography



Access by % FRL in the School

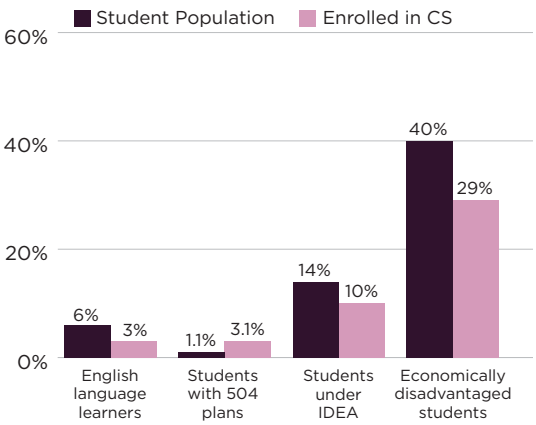


Data provided primarily by the Department of Public Instruction and school catalogs, based on 638 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

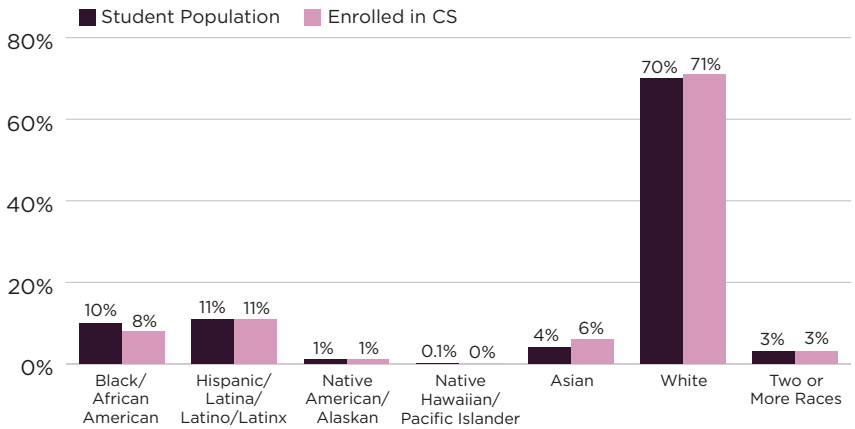
86% of WI high school students attend a school that offers computer science, but only 4.6% of students are enrolled in a foundational computer science course. 23% of students enrolled in computer science courses are female. Black/African American students are 1.4 times less likely than their white and Asian peers to attend a school that offers computer science. Only 47% of schools in urban areas offer computer science, compared to 73% in suburban areas.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Asian and Native Hawaiian/Pacific Islander students are reported under Asian. Participation data was masked at low counts.

Wyoming

State Plan	Standards	Funding
Yes	Yes	Other

Certification	Preservice	Supervisor
Yes	No	Yes

All HS Offer	Grad Credit	Admissions
Yes	Yes	Yes

State Plan: In 2017, the WY Dept. of Ed. created a task force to develop a computer science (CS) state plan.

Standards: In 2020, WY adopted K–12 CS standards.

Funding: Although WY does not provide dedicated state funding, the WY Trust Fund for Innovative Education prioritized computer science applications in 2018–2021.

Certification: Teachers with existing licensure can obtain a K–12 CS endorsement through a licensure program or coursework and the Praxis CS exam. Another pathway requires coursework and work experience.

Supervisor: The WY Dept. of Ed. has a Mathematics and CS Consultant.

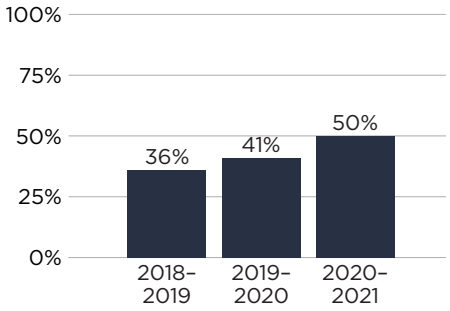
All HS Offer: All schools must include CS and computational thinking courses by the 2022–23 school year.

Grad Credit and Admissions: CS courses aligned with the standards can count as a science credit for graduation and can count as one year of science, fourth-year mathematics (for state scholarship), or career credits required for admission at IHEs.

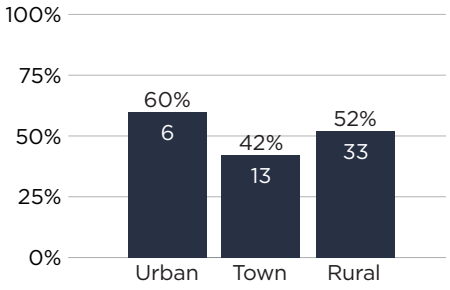
WY has a statewide CSTA chapter.

Percentage of Public High Schools Offering Foundational Computer Science

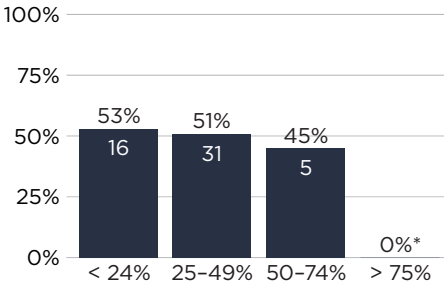
Access by School Year



Access by Geography



Access by % FRL in the School



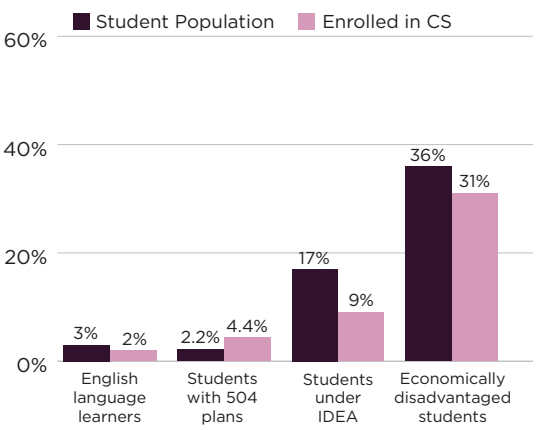
*Only three schools have 75–100% FRL enrollment and none offer computer science

Data provided primarily by the Department of Education, based on 105 schools with high school grades. See Appendix 2 for data sources and descriptions. Numbers inside the bars represent the total number of public high schools offering computer science in that category.

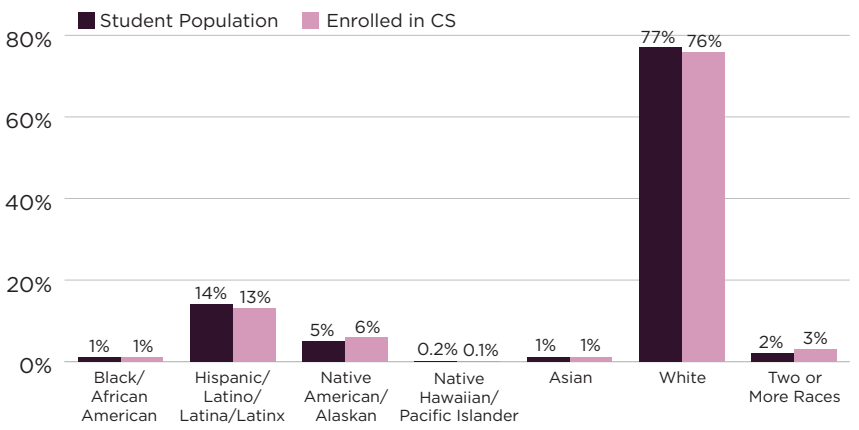
73% of WY high school students attend a school that offers computer science, but only 6.1% of students are enrolled in a foundational computer science course. 28% of students enrolled in computer science courses are female. Native American students are 1.6 times less likely than their white and Asian peers to attend a school that offers computer science. Computer science is not offered in any of the three schools in the state with over 75% of their students qualifying for free and reduced-price meals.

Participation in Foundational High School Computer Science Courses by Demographic

CS Enrollment by Subgroup



CS Enrollment by Race/Ethnicity



Appendices

Appendix 1: State-by-State Policy Table and Policy Rubrics

State-by-State Policy Adoption

State	State Plan	Standards	Funding	Certification	Preservice Incentives	State CS Supervisor	Require All HS Offer	Grad Credit/ Requirement	Higher Ed Admission
AK	No	Yes	No	No	No	No	No	District Decision	No
AL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	CS Grad Requirement	Yes
AZ	No	Yes	Yes	Yes	No	In progress	No	District Decision	No
CA	Yes	Yes	Yes	Yes	No	In progress	No	District Decision	Yes
CO	No	No	Yes	No	No	Yes	No	District Decision	Yes
CT	Yes	Yes	No	Yes	Yes	Yes	Yes	District Decision	No
DC	No	No	No	Yes	No	No	No	Yes	No
DE	No	Yes	No	No	No	No	Yes	Yes	No
FL	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No
GA	Yes	In progress	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HI	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No
IA	In progress	Yes	Yes	Yes	No	Yes	Yes	District Decision	Yes
ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IL	No	In progress	No	Yes	No	No	Yes	Yes	Yes
IN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
KS	No	Yes	No	In progress	No	Yes	No	District Decision	No
KY	In progress	Yes	Yes	Yes	No	Yes	No	District Decision	Yes
LA	No	No	No	Yes	No	No	No	Yes	Yes
MA	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
MD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ME	Yes	No	Yes	No	No	Yes	No	District Decision	No
MI	No	Yes	No	No	No	Yes	No	Yes	No
MN	No	No	No	No	No	Yes	No	Yes	No
MO	No	Yes	Yes	Yes	No	No	No	Yes	No
MS	In progress	Yes	Yes	Yes	No	No	Yes	Yes	Yes
MT	No	Yes	Yes	Yes	Yes	No	No	District Decision	No
NC	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
ND	In progress	Yes	No	Yes	No	No	No	Yes	No
NE	In progress	No	No	No	No	No	No	District Decision	No
NH	Yes	Yes	No	Yes	Yes	Yes	Yes	District Decision	No
NJ	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
NM	Yes	Yes	Yes	In progress	No	Yes	No	Yes	No
NV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	CS Grad Requirement	Yes
NY	No	Yes	Yes	Yes	Yes	No	No	District Decision	No
OH	In progress	Yes	No	Yes	Yes	Yes	No	Yes	Yes
OK	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
OR	No	No	No	No	No	No	No	District Decision	No
PA	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No
RI	Yes	Yes	Yes	Yes	No	Yes	Other*	Yes	No
SC	In progress	Yes	Yes	Yes	No	Yes	Yes	CS Grad Requirement	Yes
SD	No	No	No	Yes	No	No	No	Yes	No
TN	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
TX	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes
UT	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
VA	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
VT	No	No	No	Yes	Yes	No	No	District Decision	No
WA	In progress	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WI	In progress	Yes	No	Yes	Yes	No	Other*	Yes	No
WV	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
WY	Yes	Yes	Other*	Yes	No	Yes	Yes	Yes	Yes

*RI has a goal for all high schools to offer CS, but no requirement.
*WI state statute requires each school board to provide CS, but does not require each school nor does it require a full course.
*WY does not provide dedicated state funding but state grant funds prioritize computer science.

Policy Rubrics

State Plan for K–12 Computer Science Education

A state is considered to have a plan for K–12 computer science education if the plan meets all four of the following criteria:

- Developed by a state education agency;
- Specific to computer science education;
- Includes a timeline, goals, and strategies for achieving the goals; and
- The plan is publicly accessible.

K–12 Computer Science Standards

A state is considered to have K–12 computer science standards if the standards meet both of the following criteria:

- Form a coherent progression that aligns elementary, middle, and high school expectations; and
- Are publicly accessible on the state's website.

State-Level Funding for K–12 Computer Science Professional Learning

A state is considered to have dedicated state-level funding to K–12 computer science professional learning if the funding meets all three of the following criteria:

- The funds are allocated via the approved state budget or state legislation;
- A description of the funds is publicly accessible; and
- The state has allocated funds to computer science during the last two fiscal years.

If the state does not meet the last criteria (allocating funds within the last two fiscal years) but previously allocated funds, and over 75% of its high schools offer computer science, the state is considered to have met the rubric.

State Computer Science Certification

A state is considered to have computer science teacher certification if the certification (or endorsement, licensure, or authorization) meets both of the following criteria:

- Explicitly names "computer science" or has a related name (e.g., computer programming); and
- Enables a teacher to teach computer science courses.

State-Approved Preservice Teacher Preparation at Institutions of Higher Education

A state is considered to have approved preservice teacher preparation in computer science at institutions of higher education if any of the following criteria are met:

- The state requires all preservice teachers (from any subject) be exposed to computer science content and/or pedagogy within a teacher's preservice program;
- The state provides scholarships for preservice teachers to take computer science;
- The state provides funds to teacher preparation institutions to establish preservice computer science education programs; or
- The state approves programs at institutions of higher education that prepare preservice teachers to teach computer science and lists those programs publicly.

Note that each of the above involves a state-led effort; individual programs led by universities are not sufficient to meet this state policy.

State-Level Computer Science Supervisor

A state is considered to have a state-level computer science supervisor if the position meets all three of the following criteria:

- Located in a state agency;
- The title reflects a focus on K–12 computer science; and
- Clearly able to develop state policy/regulations and create programs around computer science.

A Requirement for All High Schools to Offer Computer Science

A state is considered to require all high schools to offer computer science if the policy meets both of the following criteria:

- Requires all public high schools in the state to offer one or more computer science courses; and
- A description of the requirement is publicly accessible.

Computer Science Can Satisfy a Core High School Graduation Requirement

A state is considered to allow computer science to count towards a core graduation requirement if the policy meets both criteria:

- Allows computer science to satisfy a core graduation requirement (not an elective) for a subject such as mathematics, science, technology, or language other than English; and
- A description of the policy is publicly accessible.

Computer Science Can Satisfy a Core Admission Requirement at Institutions of Higher Education

A state is considered to allow computer science to count towards a core admission requirement if the policy meets both criteria:

- Allows computer science to satisfy one of the core credits for entry (not an elective); and
- A description of the policy is publicly accessible.

Appendix 2: Computer Science Access and Participation Methodology

9–12 Computer Science Access Report Methodology

The high school data set includes 100% of all public and public charter high schools from every state and D.C. Based on this data, at least 13,504 public high schools in the U.S. offer foundational computer science (there are 26,326 public high schools in the nation). Data was collected between spring and summer 2021 for the most recent school year with available data.

The majority of high school data was collected from state education agencies through direct collaboration or via requests submitted through an online portal. State-provided data included school IDs, course codes, course descriptions, and course enrollment. For states without this information in their data systems, data was collected for each school through a combination of approaches, including direct contact with school employees and school course catalogs. The main source(s) of data for each state are included in Appendix 3. State education agencies and organizations interested in providing statewide course offerings and enrollment data should contact accessreport@code.org. School-level computer science course offerings can be found and/or submitted at code.org/yourschool.

School IDs were cross-referenced with data from the U.S. Department of Education to determine each school's geography (city/urban, suburban, town, or rural), the percentage of students from each race or ethnicity, the percentage of economically disadvantaged students (defined as students who are eligible for free and reduced-price meals under the National School Lunch Program), the percentage of students qualifying for special education services under the Individuals with Disabilities Education Act (IDEA) or section 504 of the Rehabilitation Act, and the percentage of students identified as English language learners.

High Schools

For the school list, we use the 2019–20 NCES list of schools that enroll students in at least one high school grade (9–12) and remove schools that we know have since closed, do not offer academic courses, or serve transient populations (e.g., some specialized programs or some juvenile detention centers), and CTE centers that are co-located with a high school. A list of the schools in the Access Report can be found at code.org/yourschool/accessreport.

Courses

The Access Report describes access to *foundational* computer science, a subset of all computer science courses. The operating definition of "a course that teaches foundational computer science" is based on the definition of computer science by the Computer Science Teachers Association and the K–12 Computer Science Framework: *Computer science is the study of computers and algorithms, including their principles, their hardware and software designs, their implementation, and their impact on society.* High school courses must be offered during the school day and include at least 20 hours of programming to count as foundational computer science.

Data Sources

Data	Data Source
All schools in the U.S.	NCES Common Core of Data (CCD) Public Elementary/ Secondary School Universe Survey (2019–20), generated from the ElSi Table Generator
School characteristics (grades offered)	
Student demographics (race/ethnicity)	
School enrollment	
Percentage of students who qualify for free and reduced-price meals programs (per school)	
School locale code/geography	NCES *Education* Demographic and Geographic Estimates (2019–20)
Percentage of students who qualify for services under IDEA	NCES Digest of Education Statistics Table 204.70 (2018–19)
Percentage of students who qualify for services under Section 504 of the Rehabilitation Act	Civil Rights Data Collection School-Level Data (2017–18)
Percentage of students identified as English language learners	NCES Digest of Education Statistics Table 204.20 (fall 2018)
Percentage of students who qualify for free and reduced-price meals programs (statewide)	NCES Digest of Education Statistics Table 204.10 (2018–19)
Percentage of students identified as economically disadvantaged (AZ, DE, MA, NY, UT, TN, TX, WA, and WV only)	State education agencies; only for states that do not report on computer science course enrollment by FRL
Course codes	School Courses for the Exchange of Data (SCED), state education agency course catalogs, and local course catalogs
Course offerings per school	• State education agencies; • National or state-specific organizations (e.g., the College Board, Technology Education and Literacy in Schools (TEALS), Project Lead the Way, BootUp); • District/school course catalogs or direct contact with school employees; and • Survey responses from teachers, administrators, and parents at code.org/yourschool and collected by the Nevada Department of Education
Course enrollment, including demographics	State education agencies and the University of Texas at Austin

We examined the SCED and state-level course catalogs for the current year to identify courses (including CTE courses) that met the definition of foundational computer science, in consultation with the state education agency and other key stakeholders. If the course title does not explicitly include "computer science," then the course descriptions must include instruction in the fundamentals of a programming language.

The lists of courses vary slightly from year to year, as new courses are added to or deleted from course catalogs, new state course descriptions fit the definition, or local courses are identified by individual schools as meeting the definition. Course lists differ slightly for each state based on state course descriptions (e.g., for some states, robotics course descriptions include programming).

Data Carryover

Each year, unless new data is provided, it is inferred that if a school offered computer science in the previous year, the school is still offering computer science. This ensures any data obtained from a school course catalog or survey (and not reported from the state education agency or a national organization) is carried forward to the new year. This data is only carried over for a maximum of two years before it is replaced with new data.

K–8 Data

Several state education agencies provided data on elementary and middle school computer science offerings and enrollment. For grades K–8, access and participation data only includes courses that take place during the school day and include at least 10 hours of programming. A school is included in the middle school data set if it offers at least one of the 6–8 grades. A school is included in the elementary school data set if it offers at least one of the K–5 grades. Thus, schools that offer grade levels in multiple bands (e.g., K–8 or K–12) are included in multiple data sets. Although this report has chosen to classify grade 6 as a middle school grade, some schools and states consider it an elementary school grade.

Access: The percentage of schools offering computer science in grades K–8 includes 19 states in which the state education agencies provided grades 6–8 course code data. Also included is K–8 survey data from teachers and administrators, provider data from BootUp, and grades K–5 course code data from nine state education agencies.

Participation: The K–5 and 6–8 computer science enrollment data sets only include information related to course codes provided by the state education agency; this does not include enrollment from schools identified as offering computer science from survey data or provider data.

Enrollment data as reported here is likely lower than actual enrollment due to several factors:

- Overall participation is calculated by dividing the number of students participating in computer science by the total enrollment in the school.
- Enrollment data does not include masked data due to low numbers.
- Many elementary schools offer integrated computer science, which may not be reflected in the course code and enrollment data reported to the state.

Changes to the Access Report

This year, the Access Report has changed terminology to report on schools that offer foundational computer science rather than schools that teach foundational computer science. This change aligns the terminology used in data collection to whether a course is on the school catalog, not whether students are enrolled in the course.

The full Access Report data set for this report year is now available for the public to view, filter, and download at code.org/yourschool/accessreport.

Disparity Index Methodology

A disparity index[35] is used to quantify the difference in access and participation for each underrepresented racial and ethnic group. It compares the ratios of students from specific populations underrepresented in computer science to populations overrepresented in computer science. An example of a disparity index formula for Native American/Alaskan student participation is:

$$\frac{\left(\begin{array}{c}\textit{number of}\\ \textit{white and Asian students}\\ \textit{who took the exam}\end{array} \div \begin{array}{c}\textit{number of}\\ \textit{white and Asian students}\\ \textit{in the school population}\end{array}\right)}{\left(\begin{array}{c}\textit{number of}\\ \textit{Native American/Alaskan students}\\ \textit{who took the exam}\end{array} \div \begin{array}{c}\textit{number of}\\ \textit{Native American/Alaskan students}\\ \textit{in the school population}\end{array}\right)}$$

The disparity index for *participation* is computed by dividing the rate of participation for one demographic group by the rate of participation for another demographic group. The rate of participation is calculated by dividing the number of participating students for a given group by the total number of students of that group who attend schools that offer foundational computer science. The disparity index *for access* is calculated by comparing the rate of access for each demographic group, which is the ratio of the number of students of a demographic who attend schools that offer foundational computer science compared to the total number of students of that demographic in the state.

The disparity index is used to describe the disparity in access or participation for each underrepresented racial and ethnic group (e.g., *Hispanic/Latino/Latina/Latinx students are 1.4 times less likely to enroll in computer science as their white and Asian peers, even when they attend a school that offers it*). White and Asian students are overrepresented in computer science, and so these populations of students are used to calculate the disparity in access and participation for each underrepresented racial and ethnic group. Statewide and school demographics are from the National Center for Education Statistics (NCES). AP data is used for states that do not have participation data in foundational computer science.

[35] Warner, J. R., Childs, J., Fletcher, C. L., Martin, N. D., & Kennedy, M. (2021), Quantifying disparities in computing education: Access, participation, and intersectionality

Appendix 3: Computer Science Access and Participation Data Tables

All data included in this appendix and additional data (including total numbers of schools and numbers in each category) can be downloaded from *advocacy.code.org/stateofcs*.

Percentage of High Schools Offering Foundational Computer Science Courses

	Percentage of schools offering CS by school year					
State	**2016–17**	**2017–18**	**2018–19**	**2019–20**	**2020–21**	**Data source**
U.S.*	**–**	**35%**	**45%**	**47%**	**51%**	
AK	–	–	19%	32%	42%	State Education Agency and school catalogs
AL*	–	39%	49%	57%	82%	State Education Agency
AR	–	64%	78%	89%	92%	State Education Agency
AZ*	–	–	–	38%	–	State Education Agency
CA*	45%	47%	41%	–	–	State Education Agency
CO	–	38%	–	–	42%	School catalogs
CT	–	–	67%	82%	–	State Education Agency
DC	–	–	20%	41%	37%	State Education Agency and school catalogs
DE	–		65%	68%	55%	State Education Agency
FL	–	23%	30%	33%	38%	State Education Agency
GA	–	50%	52%	55%	61%	State Education Agency
HI*	–	47%	57%	62%	72%	State Education Agency and school catalogs
IA	–	49%	58%	66%	64%	State Education Agency
ID	–	–	–	38%	40%	State Education Agency
IL	–	37%	45%	43%	–	State Education Agency
IN	–	51%	62%	72%	74%	State Education Agency
KS*	–	26%	28%	27%	–	State Education Agency
KY	–	39%	–	45%	51%	State Education Agency
LA	–	15%	23%	23%	29%	State Education Agency
MA	58%	67%	75%	82%	–	State Education Agency
MD	–	62%	83%	90%	–	State Education Agency
ME	–	–	–	56%	60%	State Education Agency and school catalogs
MI	–	–	–	37%	44%	School Catalogs
MN	–	–	19%	24%	–	State Education Agency and school catalogs
MO*	–	32%	38%	50%	–	State Education Agency
MS	–	28%	47%	48%	65%	State Education Agency
MT	–	25%	31%	36%	37%	State Education Agency
NC	–	45%	–	51%	59%	State Education Agency
ND	–	23%	41%	44%	43%	State Education Agency
NE	–	40%	44%	46%	–	State Education Agency
NH	–	–	49%	67%	78%	School catalogs
NJ	–	59%	67%	68%	–	State Education Agency
NM	–	–	23%	32%	44%	State Education Agency
NV	–	–	57%	77%	83%	State Education Agency, school catalogs, and school survey data
NY	38%	44%	48%	50%	–	State Education Agency
OH	–	–	42%	50%	–	State Education Agency and school catalogs
OK*	–	29%	–	37%	53%	State Education Agency
OR	31%	37%	54%	–	55%	State Education Agency and school catalogs
PA	–	56%	59%	63%	–	State Education Agency
RI	85%	86%	86%	86%	86%	State Education Agency
SC	–	43%	69%	80%	92%	State Education Agency
SD	–	–	–	38%	40%	State Education Agency and school catalogs
TN	–	–	–	50%	54%	State Education Agency
TX	–	–	46%	49%	–	State Education Agency and the University of Texas at Austin (for enrollment data)
UT	–	58%	66%	70%	74%	State Education Agency
VA	63%	66%	73%	73%	–	State Education Agency
VT	–	–	27%	60%	64%	State Education Agency and school catalogs
WA*	–	33%	43%	49%	–	State Education Agency
WI	–	34%	42%	52%	62%	State Education Agency and school catalogs
WV	–	–	46%	75%	76%	State Education Agency
WY	–	–	36%	41%	50%	State Education Agency

*U.S.: Overall data for each report year is based on the most recent data from each state. 2017–18 data is from 24 states; 2018–19 data is based on 39 states.
*AL: Reflects a correction of previous years' published numbers
*AZ: Re-reporting last year's number with some additional data
*CA: Decrease may be due to course code changes in SY 2017–18
*HI: Data includes public DOE and public charter schools
*KS: Re-reporting last year's number with some additional data
*MO: Re-reporting last year's number with some additional data
*OK: 2020–21 data includes CareerTech courses for the first time
*WA: Re-reporting last year's number with some additional data

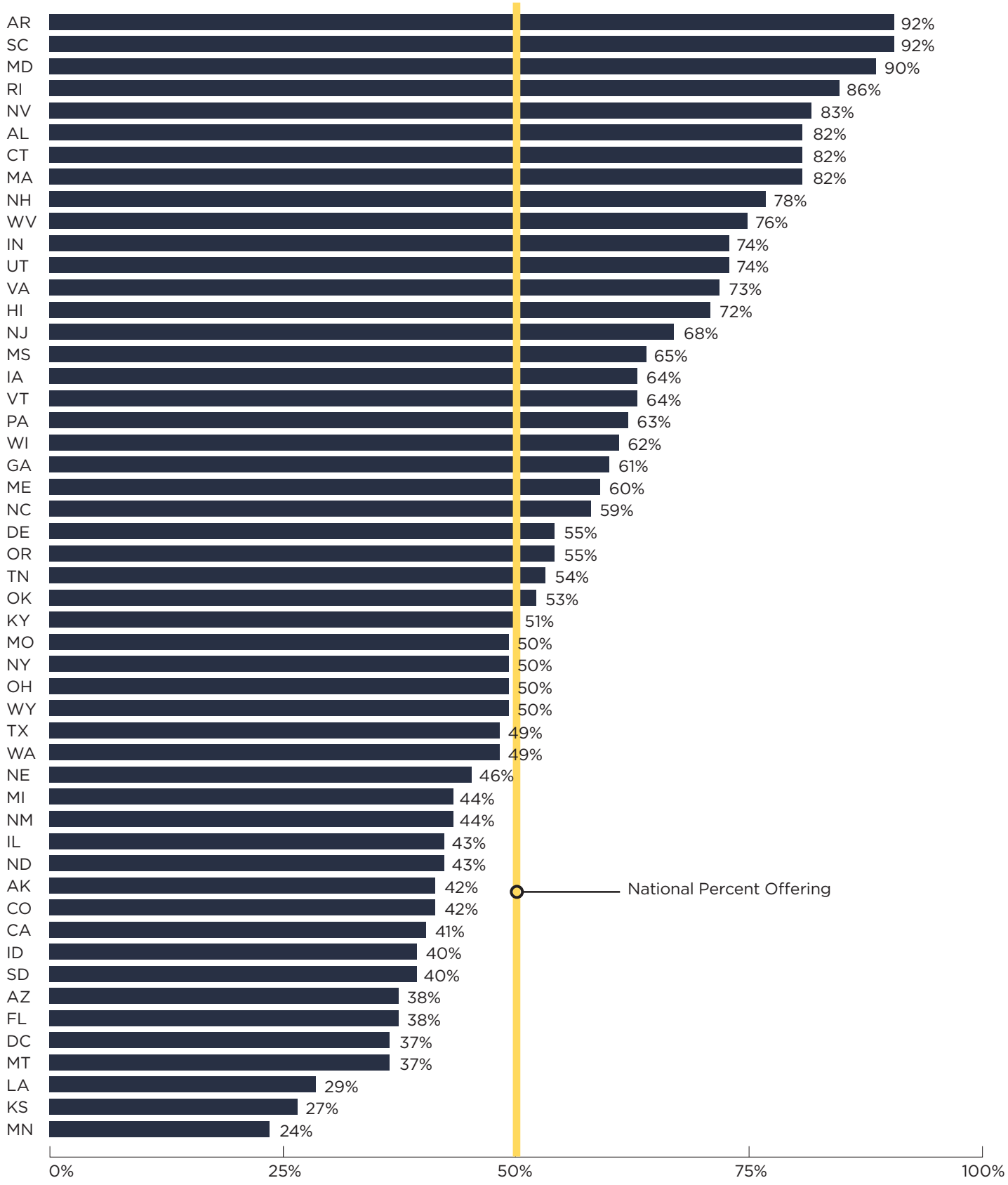
Percentage of schools in each category that offer CS (for the most recent school year reported)								
State	**City/ Urban**	**Suburban**	**Town**	**Rural**	**Less than 24% students qualify for FRL**	**Between 25–49% students qualify for FRL**	**Between 50-74% students quality for FRL**	**Greater than 75% students qualify for FRL**
U.S.	**48%**	**61%**	**46%**	**49%**	**57%**	**61%**	**49%**	**41%**
AK	40%	71%	49%	40%	40%	58%	58%	37%
AL	81%	88%	78%	81%	90%	86%	85%	88%
AR	88%	96%	100%	91%	100%	92%	95%	88%
AZ	46%	49%	19%	29%	38%	64%	52%	37%
CA	43%	47%	26%	31%	53%	58%	39%	33%
CO	41%	50%	43%	38%	52%	49%	28%	33%
CT	68%	91%	60%	88%	98%	85%	69%	65%
DC	37%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE	18%	54%	80%	77%	N/A	N/A	N/A	N/A
FL	35%	45%	28%	30%	25%	53%	48%	32%
GA	57%	76%	48%	56%	72%	82%	66%	42%
HI	64%	83%	74%	63%	83%	73%	63%	83%
IA	64%	82%	64%	63%	78%	65%	55%	33%
ID	53%	37%	42%	35%	41%	46%	27%	22%
IL	48%	54%	37%	29%	58%	47%	30%	39%
IN	62%	79%	84%	75%	87%	80%	70%	38%
KS	73%	65%	25%	17%	34%	24%	27%	41%
KY	48%	63%	46%	53%	31%	59%	56%	27%
LA	35%	39%	33%	22%	40%	37%	28%	16%
MA	73%	84%	91%	89%	N/A	N/A	N/A	N/A
MD	90%	90%	100%	89%	94%	96%	82%	73%
ME	80%	81%	55%	55%	75%	59%	52%	N/A
MI	38%	45%	40%	47%	64%	62%	38%	25%
MN	19%	21%	25%	28%	33%	36%	15%	17%
MO	53%	68%	47%	46%	75%	57%	50%	38%
MS	91%	82%	58%	64%	50%	89%	72%	57%
MT*	78%	0%	48%	33%	43%	36%	44%	24%
NC	63%	68%	54%	56%	73%	73%	48%	38%
ND	70%	75%	62%	38%	57%	39%	13%	16%
NE	95%	100%	67%	35%	48%	48%	40%	44%
NH	73%	79%	65%	85%	84%	75%	50%	N/A
NJ	40%	71%	80%	71%	80%	70%	60%	52%
NM	46%	50%	38%	43%	42%	60%	47%	35%
NV	80%	92%	85%	81%	75%	86%	89%	83%
NY	45%	69%	49%	41%	60%	56%	48%	42%
OH	34%	67%	50%	48%	49%	57%	45%	36%
OK	70%	86%	63%	45%	71%	59%	55%	37%
OR	73%	61%	57%	43%	49%	71%	49%	42%
PA	52%	74%	65%	57%	74%	75%	56%	55%
RI	81%	94%	N/A	67%	100%	93%	67%	81%
SC	81%	95%	100%	92%	90%	95%	100%	85%
SD	65%	100%	47%	34%	41%	44%	38%	32%
TN*	55%	74%	44%	52%	53%	67%	49%	0%
TX	50%	65%	39%	45%	59%	56%	48%	42%
UT	63%	77%	77%	77%	82%	80%	68%	47%
VA	71%	78%	70%	71%	83%	81%	72%	57%
VT	100%	100%	64%	59%	73%	63%	75%	N/A
WA	45%	54%	39%	55%	43%	64%	50%	46%
WI	47%	73%	60%	66%	65%	74%	55%	32%
WV	89%	83%	74%	74%	100%	88%	59%	N/A
WY*	60%	N/A	42%	52%	53%	51%	45%	0%

*MT: Only one school is located in a suburban geographic area and it does not offer CS
*TN: Only four schools have 75–100% FRL enrollment and none offer CS
*WY: Only three schools have 75–100% FRL and none offer CS

Students who attend a school that offers CS (for the most recent school year reported)								
State	**Overall**	**Black/African American**	**Hispanic/Latina/ Latino/Latinx***	**Native American/ Alaskan**	**Native Hawaiian/ Pacific Islander**	**Asian**	**White**	**Two or More Races**
U.S.	**78%**	**73%**	**76%**	**59%**	**82%**	**89%**	**79%**	**79%**
AK	67%	69%	72%	49%	72%	78%	75%	73%
AL	90%	90%	93%	94%	90%	93%	89%	94%
AR	97%	94%	97%	98%	100%	99%	97%	99%
AZ	79%	82%	78%	54%	77%	87%	81%	80%
CA	75%	70%	72%	58%	77%	88%	78%	78%
CO	66%	70%	58%	61%	70%	79%	70%	70%
CT	89%	78%	82%	85%	78%	97%	94%	90%
DC	51%	45%	58%	49%	61%	69%	77%	59%
DE	74%	64%	71%	61%	67%	81%	80%	75%
FL	75%	73%	77%	65%	77%	85%	73%	74%
GA	84%	80%	88%	86%	84%	95%	84%	86%
HI	87%	94%	89%	85%	82%	92%	87%	89%
IA	73%	71%	64%	52%	74%	73%	74%	74%
ID	60%	67%	59%	42%	66%	64%	60%	60%
IL	80%	71%	86%	82%	83%	94%	79%	81%
IN	87%	86%	88%	88%	71%	91%	87%	88%
KS	57%	76%	67%	45%	65%	77%	51%	63%
KY	81%	78%	81%	80%	83%	91%	82%	83%
LA	45%	45%	48%	36%	52%	64%	45%	43%
MA	90%	85%	87%	89%	88%	92%	93%	90%
MD	96%	94%	92%	96%	97%	99%	99%	98%
ME	72%	91%	75%	78%	77%	86%	71%	73%
MI	72%	60%	74%	63%	74%	81%	75%	73%
MN	69%	65%	67%	48%	71%	82%	70%	68%
MO	74%	71%	80%	69%	84%	88%	74%	79%
MS	76%	72%	83%	43%	79%	80%	79%	79%
MT	65%	75%	72%	52%	68%	74%	66%	66%
NC	78%	75%	77%	44%	72%	89%	80%	78%
ND	71%	90%	75%	35%	78%	93%	75%	83%
NE	77%	95%	83%	48%	81%	94%	73%	89%
NH	94%	97%	97%	94%	98%	97%	94%	95%
NJ	88%	77%	81%	83%	89%	94%	95%	91%
NM	63%	72%	63%	49%	66%	75%	69%	74%
NV	95%	95%	96%	92%	96%	95%	96%	96%
NY	66%	57%	63%	59%	66%	79%	70%	67%
OH	65%	52%	64%	61%	67%	81%	68%	64%
OK	77%	82%	81%	69%	84%	91%	77%	77%
OR	82%	88%	83%	56%	90%	91%	81%	82%
PA	81%	67%	80%	81%	80%	88%	84%	80%
RI	96%	91%	91%	95%	96%	98%	98%	96%
SC	98%	98%	99%	98%	98%	99%	98%	99%
SD	67%	91%	76%	47%	70%	72%	70%	80%
TN	71%	66%	72%	73%	85%	82%	72%	79%
TX	78%	80%	76%	78%	87%	92%	78%	81%
UT	90%	87%	91%	90%	89%	92%	89%	89%
VA	86%	78%	90%	85%	90%	94%	87%	88%
VT	71%	85%	71%	53%	66%	87%	70%	65%
WA	86%	86%	84%	54%	89%	94%	87%	86%
WI	86%	65%	83%	78%	90%	93%	89%	87%
WV	87%	95%	94%	91%	98%	96%	86%	94%
WY	73%	80%	79%	46%	72%	78%	73%	78%

*Hispanic/Latino/Latina/Latinx: Some states and the NCES collect data and report on Hispanic/Latino/Latina/Latinx students differently. Ethnicity and race may be asked simultaneously or in a two-part question. Students who select Hispanic and an additional race may be included in either the Hispanic counts or in the two or more races counts.

Percent of Public High Schools Offering Foundational Computer Science*



*For the most recent school year reported by each state

K–8 Access and 6–8 Enrollment in Foundational Computer Science

State	K-8 CS Access		6–8 CS Enrollment*													
	Schools that offer CS	School year	Total	Female	Male	Black/African American	Hispanic/Latino Latina/Latinx*	Native American/ Alaskan	Native Hawaiian/ Pacific Islander	Asian	White	Two or more races	English language learners	Students with 504 plans	Students under IDEA*	Economically disadvantaged*
U.S.	**30%***	**-**	**3.9%**	**44%**	**56%**	**22%**	**17%**	**1.0%**	**1.0%**	**4%**	**48%**	**7%**	**9%**	**2.4%**	**12%**	**46%**
AL	**33%**	2020	4.8%	42%	58%	25%	12%	3.3%	0.2%	1%	56%	3%	5%	1%	10%	54%
DE	**19%**	2020	1.6%	45%	55%	21%	13%	0.9%	0	6%	55%	4%	2.4%	-	13%	15%
FL*	**35%**	2020	2.5%	41%	59%	19%	30%	0.2%	0.2%	4%	42%	4%	7%	-	12%	48%
GA*	**27%**	2020	4.2%	47%	53%	31%	18%	0.2%	0.1%	3%	43%	4%	8%	-	14%	61%
HI*	**42%**	2020	13%	43%	57%	1%	20%	0.1%	25%	27%	9%	18%	8%	3.7%	10%	53%
IN*	**35%**	2020	3%	47%	53%	19%	13%	0.1%	0.1%	1%	61%	5%	-	-	14%	54%
KY	**18%**	2020	2.1%	46%	54%	10%	10%	0.1%	0.1%	2%	72%	6%	4%	-	12%	62%
MA*	**29%**	2019	2.6%	46%	54%	6%	17%	0.1%	0.1%	6%	68%	3%	5%	-	16%	30%
MD*	**43%**	2019	15%	46%	54%	51%	20%	0.3%	0.2%	4%	21%	3%	9%	3.1%	13%	51%
NC	**26%**	2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NE	**26%**	2019	6.4%	45%	55%	5%	21%	0.4%	0.2%	3%	65%	6%	4%	2.1%	14%	49%
NV*	**77%**	2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OK*	**12%**	2020	1.8%	43%	57%	11%	24%	11%	0.2%	2%	42%	10%	12%	2.5%	15%	35%
SC	**30%**	2020	2.7%	46%	54%	37%	7%	1.4%	0.5%	3%	51%	0	4%	0.2%	6%	48%
TN*	**30%**	2020	9.1%	48%	52%	14%	11%	1.2%	0.3%	1%	58%	14%	17%	1.4%	12%	34%
UT	**31%**	2020	5.4%	31%	69%	1%	16%	1%	1.4%	2%	77%	1%	1.4%	3.5%	10%	32%
VA	**24%**	2019	0.4%	33%	67%	27%	8%	0.3%	0.1%	3%	54%	8%	4%	6.7%	11%	45%
WA	**31%**	2019	0.9%	33%	67%	0	27%	2.7%	0	21%	42%	7%	12%	5.2%	9%	39%
WI	**19%**	2020	2%	42%	58%	4%	14%	1.1%	0	5%	71%	5%	6%	2.5%	11%	39%

*Data is from 41% of schools across 19 states.
*These states include K-5 course code data
*Race/ethnicity enrollment: In AL, SC, TN, the same students may be represented in multiple race/ethnicity columns as race and ethnicity are reported separately.
*Economically disadvantaged: Most states report on the percent of students who qualify for free and reduced-price meals. DE, MA, NY, TN, UT, and WA report on economically disadvantaged or low-income students.
*IDEA: In MA, both IDEA and 504 students are reported under the IDEA column.

K–5 Enrollment in Foundational Computer Science Courses

State	K-5 CS Enrollment													
	Total	Female	Male	Black/African American	Hispanic/Latino Latina/Latinx	Native American/ Alaskan	Native Hawaiian/ Pacific Islander	Asian	White	Two or more races	English language learners	Students with 504 plans	Students under IDEA	Economically disadvantaged
U.S.	**7.3%**	**49%**	**51%**	**21%**	**21%**	**0.5%**	**1.1%**	**4%**	**46%**	**7%**	**14%**	**1.1%**	**15%**	**50%**
FL	13%	49%	51%	23%	27%	0.3%	0.2%	3%	41%	5%	12%	-	15%	53%
GA	1.4%	50%	50%	44%	13%	0.1%	0.2%	3%	35%	4%	9%	-	10%	63%
HI	14%	46%	54%	1%	18%	0.1%	26%	32%	7%	16%	15%	2.4%	10%	56%
IN	7.3%	48%	52%	18%	16%	0.2%	0.1%	2%	59%	5%	-	-	15%	56%
MA	0.2%	44%	56%	3%	35%	0	0.1%	3%	54%	4%	17%	-	20%	45%
MD	2.6%	50%	50%	68%	20%	0.2%	0.1%	1%	9%	1%	14%	-	13%	46%
OK	3.1%	48%	52%	11%	14%	3.3%	0.3%	4%	57%	11%	9%	2.5%	14%	27%
TN	11%	49%	51%	12%	11%	0.8%	0.2%	2%	61%	13%	21%	0.8%	15%	36%

High School Enrollment in Foundational Computer Science Courses (for the most recent school year reported)

State	Total CS enrollment	% Student population in CS	Gender			Race/ethnicity							Other demographics			
			Male	Female	Another/ nonbinary	Black/African American	Hispanic/Latino/ Latina/Latinx	Native American/ Alaskan	Native Hawaiian/ Pacific Islander	Asian	White	Two or more races	English language learners	Students with 504 plans	Students under IDEA	Economically disadvantaged
U.S.	**538,809**	**4.7%**	**69%**	**31%**	**0.03%**	**16%**	**20%**	**1.2%**	**0.4%**	**12%**	**47%**	**3%**	**6%**	**3.5%**	**9%**	**38%**
AL*	11,837	4.5%	62%	38%	-	28%	7%	2%	0.2%	3%	56%	2%	2%	1%	7%	40%
AR	10,300	6.5%	71%	29%	-	19%	12%	0.7%	0.4%	4%	61%	3%	5%	7.5%	8%	56%
AZ*	11,984	2.9%	79%	21%	-	5%	37%	2%	0	7%	43%	6%	1%	-	10%	48%
CT	8,960	5.3%	76%	24%	-	11%	19%	0.1%	0.1%	12%	54%	3%	4%	-	9%	31%
DE*	1,701	3.4%	79%	21%	-	26%	11%	0.2%	0.1%	12%	47%	4%	1%	-	6%	9%
FL	23,299	2.5%	71%	29%	-	13%	31%	0.3%	0.2%	10%	41%	4%	4%	-	6%	36%
GA	18,041	3.3%	73%	27%	-	27%	12%	0.3%	0.1%	20%	38%	3%	2%	-	6%	44%
HI*	2,294	3.9%	74%	26%	-	2%	10%	0.2%	19%	42%	15%	11%	3%	5.1%	7%	33%
IA	5,799	3.5%	82%	18%	-	3%	7%	0.3%	0.1%	6%	80%	3%	2%	-	7%	28%
ID*	2,322	2%	77%	23%	-	0	11%	0	0	3%	83%	2%	1%	6.6%	6%	11%
IL*	25,312	4.1%	63%	37%	-	23%	36%	0.2%	0.2%	9%	29%	2%	-	-	-	-
IN*	16,093	4.7%	79%	21%	-	12%	12%	0.2%	0.1%	5%	66%	5%	3%	-	12%	38%
KS*	4,744	3%	85%	15%	-	5%	18%	0.2%	0	9%	64%	4%	-	-	6%	33%
KY	7,626	3.6%	76%	24%	-	9%	6%	0.2%	0.1%	7%	75%	3%	2%	-	6%	45%
LA	4,578	1.9%	61%	39%	-	49%	6%	0	0	5%	39%	1%	1%	8.3%	6%	37%
MA*	19,267	5.9%	75%	25%	0.12%	8%	13%	0.2%	0.1%	15%	60%	4%	3%	-	9%	22%
MD	33,931	12.5%	59%	41%	-	36%	13%	0.1%	0.2%	14%	34%	4%	4%	4.9%	7%	28%
MO*	9,235	3.3%	75%	25%	-	12%	6%	0	0	5%	74%	3%	2%	-	8%	40%
MS*	8,151	5.2%	53%	47%	-	46%	4%	0.2%	0	1%	47%	3%	2%	1.5%	11%	100%
MT*	1,474	3.4%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND*	1,436	3.9%	83%	17%	-	-	-	-	-	-	-	-	-	-	-	-
NE	2,697	2.6%	78%	22%	-	5%	12%	0.5%	0.04%	7%	72%	4%	2%	3%	9%	34%
NJ	31,754	7.1%	72%	28%	-	11%	17%	0.2%	0.3%	26%	44%	2%	2%	-	8%	22%
NM*	2,492	2.3%	72%	28%	-	1%	55%	10%	0	3%	27%	3%	11%	1.4%	12%	55%
NV*	7,652	4.8%	68%	32%	-	7%	42%	0.8%	1%	12%	31%	6%	7%	-	6%	66%
NY*	41,026	4.3%	66%	34%	-	17%	23%	0.6%	0.4%	21%	36%	2%	2%	-	9%	51%
OK	14,145	7.2%	64%	36%	-	7%	16%	15%	0.4%	3%	51%	9%	4%	3.5%	16%	39%
OR*	5,303	2.7%	76%	24%	0.04%	1%	22%	1%	0.7%	7%	62%	6%	18%	5.2%	13%	48%
SC	49,886	21%	54%	46%	-	31%	9%	3%	0.5%	2%	54%	0	7%	0.1%	11%	44%
TN*	15,541	5%	70%	30%	-	20%	8%	1%	0.3%	4%	55%	11%	7%	1.4%	9%	26%
TX*	64,987	3.8%	73%	27%	-	9%	40%	0.3%	0.1%	18%	30%	3%	19%	-	6%	41%
UT*	26,858	9.4%	65%	35%	-	2%	19%	1%	2%	3%	71%	3%	6%	5.4%	11%	28%
VA	15,491	3.8%	75%	25%	-	14%	11%	0.2%	0.1%	20%	48%	6%	7%	4.5%	7%	26%
WA*	15,045	4%	74%	25%	1%	4%	16%	0.6%	0.6%	21%	50%	8%	6%	6.7%	8%	33%
WI*	12,912	4.6%	77%	23%	-	8%	11%	1%	-	6%	71%	3%	3%	3.1%	10%	29%
WV*	2,798	3.5%	70%	30%	-	3%	2%	0	0	2%	90%	3%	1%	5.3%	11%	41%
WY	1,838	6.1%	72%	28%	-	1%	13%	6%	0.1%	1%	76%	3%	2%	4.4%	9%	31%

*We do not have participation data for AK, CA, CO, DC, ME, MI, MN, NC, NH, PA, RI, SD, and VT.

*AL, SC, TN: Some students may be represented in multiple race/ethnicity columns as the state reports race and ethnicity separately.

*AZ, DE, ID, IL, IN, KS, MO, MT, ND, NM, NV, TN, UT, WA, WI, WV: Participation data was masked at low counts.

*AZ, MA, NY, TN, TX, UT, WA, WV: The state reports economically disadvantaged students rather than students who qualify for free and reduced-price meals.

*AZ: The IDEA column includes students with disabilities.

*CT: Female and non-binary students are reported under female.

*DE: The state reports low-income students rather than students who qualify for free and reduced-price meals.

*HI: Participation data includes only public DOE school data, and access report data includes both public and public charter school data.

*KS: Participation data is from the 2018–19 school year, and access report data is from the 2019–20 school year.

*MA, NV: The IDEA column includes both IDEA and 504 students.

*MS: All students receive free and reduced-price meals.

*NY: The IDEA column includes special education students.

*OR: Participation data is from the 2018–19 school year, and access report data is from the 2020–21 school year.

*WI: Asian and Native Hawaiian/Pacific Islander students are reported under Asian

Overall High School and K–12 Population Demographics (for comparison purposes)

State	High school population by race/ethnicity							Other demographics (K–12 student population)			
	Black/African American	Hispanic/Latino/ Latina/Latinx	Native American/Alaskan	Native Hawaiian/ Pacific Islander	Asian	White	Two or more races	English language learners	Students with 504 plans	Students under IDEA	Economically disadvantaged*
U.S.	**15%**	**26%**	**1.1%**	**0.4%**	**5%**	**48%**	**4%**	**10%**	**2.7%**	**14%**	**52%**
AK	2%	6%	32%	2%	5%	45%	9%	12%	1.5%	15%	48%
AL	29%	8%	1%	0.1%	1%	58%	2%	4%	1.5%	13%	55%
AR	19%	13%	0.6%	0.9%	2%	63%	3%	8%	4%	15%	64%
AZ	5%	44%	5%	0.3%	3%	39%	4%	7%	1.5%	13%	44%
CA	5%	54%	0.6%	0.5%	12%	23%	4%	19%	1.4%	13%	59%
CO	4%	34%	0.7%	0.3%	3%	54%	4%	11%	2.3%	12%	41%
CT	15%	25%	0.3%	0.1%	5%	53%	3%	8%	5.3%	16%	42%
DC	67%	21%	0.2%	0.1%	2%	9%	2%	11%	2%	16%	76%
DE	30%	16%	0.6%	0.1%	5%	45%	4%	10%	3.1%	18%	27%
FL	22%	33%	0.3%	0.2%	3%	39%	3%	10%	3.4%	14%	55%
GA	36%	16%	0.2%	0.1%	4%	40%	3%	7%	2.5%	12%	60%
HI	2%	10%	0.3%	32%	33%	13%	10%	9%	2.3%	11%	46%
IA	6%	11%	0.4%	0.3%	3%	77%	4%	7%	1.9%	13%	43%
ID	1%	17%	1%	0.3%	1%	76%	3%	6%	3.1%	11%	39%
IL	16%	26%	0.2%	0.1%	5%	49%	3%	12%	3.1%	15%	49%
IN	13%	12%	0.2%	0.1%	2%	68%	4%	6%	2.2%	17%	49%
KS	7%	19%	0.9%	0.2%	3%	65%	5%	9%	1.5%	15%	47%
KY	11%	7%	0.1%	0.1%	2%	77%	3%	4%	2.1%	16%	57%
LA	40%	7%	0.8%	0.1%	2%	48%	2%	4%	5.6%	12%	54%
MA	11%	20%	0.3%	0.1%	7%	58%	3%	10%	4.5%	18%	33%
MD	34%	18%	0.2%	0.1%	7%	37%	4%	10%	3.2%	12%	46%
ME	4%	2%	0.8%	0.1%	2%	89%	2%	3%	4.9%	19%	44%
MI	17%	8%	1%	0.1%	3%	67%	4%	7%	1.6%	13%	50%
MN	11%	9%	2%	0.1%	6%	67%	4%	9%	1.9%	16%	36%
MO	14%	7%	0.4%	0.3%	2%	73%	4%	4%	2%	15%	50%
MS	45%	4%	0.6%	0.1%	1%	48%	2%	3%	0.7%	15%	74%
MT	1%	5%	11%	0.2%	1%	79%	3%	2%	2.3%	13%	39%
NC	24%	17%	1%	0.1%	3%	50%	5%	8%	1.7%	13%	56%
ND	4%	5%	12%	0.2%	2%	75%	2%	4%	2.3%	14%	30%
NE	6%	19%	1%	0.2%	3%	68%	3%	7%	1.2%	16%	45%
NH	2%	5%	0.3%	0.1%	3%	86%	3%	3%	6.3%	17%	27%
NJ	16%	29%	0.1%	0.2%	10%	43%	2%	6%	2.8%	17%	38%
NM	2%	60%	13%	0.1%	1%	23%	2%	16%	1%	16%	72%
NV	11%	42%	0.9%	2%	6%	32%	6%	15%	1.6%	12%	61%
NY	18%	26%	0.7%	0.3%	9%	44%	2%	9%	2.4%	20%	57%
OH	17%	6%	0.1%	0.1%	2%	69%	5%	3%	2.8%	16%	45%
OK	9%	17%	14%	0.4%	2%	50%	8%	8%	1.5%	17%	60%
OR	2%	22%	1%	0.7%	4%	64%	6%	9%	2.5%	15%	49%
PA	15%	12%	0.2%	0.1%	4%	66%	3%	4%	2.4%	19%	51%
RI	9%	27%	0.8%	0.2%	3%	57%	4%	9%	3.7%	17%	47%
SC	32%	10%	0.3%	0.1%	2%	53%	4%	6%	2.3%	14%	62%
SD	3%	6%	19%	0.1%	2%	68%	3%	4%	1.8%	16%	37%
TN	21%	11%	0.2%	0.1%	2%	63%	3%	5%	1.7%	13%	31%
TX	12%	52%	0.4%	0.2%	5%	28%	2%	19%	6%	10%	60%
UT	1%	17%	1%	1%	2%	75%	3%	8%	1.6%	13%	33%
VA	21%	16%	0.3%	0.2%	7%	49%	5%	9%	2.1%	14%	44%
VT	2%	2%	0.4%	0.1%	2%	90%	3%	2%	5.5%	17%	36%
WA	4%	23%	2%	1%	8%	55%	8%	12%	2.9%	13%	45%
WI	10%	11%	1%	0.1%	4%	70%	3%	6%	1.1%	14%	40%
WV	4%	2%	0.1%	0.1%	0.7%	90%	2%	0.8%	1.9%	18%	48%
WY	1%	14%	5%	0.2%	1%	77%	2%	3%	2.2%	17%	36%

* Most states report on the percent of students who qualify for free and reduced-price meals. AZ, DE, MA, NY, UT, TN, TX, WA, and WV report on economically disadvantaged or low-income students.

Access and Participation for AP Computer Science (2019–20)

The AP exam participation data includes students attending both public and private schools. For more data on AP exam participation, including intersectional gender and race/ethnicity data, visit code.org/ap or see Dr. Barbara Ericson's analyses at cs4all.home.blog.

State	Population in schools that offer AP CS							AP CS exams taken										
									Gender			Race/Ethnicity						
	Black/African American	Hispanic/Latino/Latina/Latinx	Native American/Alaskan	Native Hawaiian/Pacific Islander	Asian	White	Two or more races	Overall	Male	Female	Another	Black/African American	Hispanic/Latino/Latina/Latinx	Native American/Alaskan	Native Hawaiian/Pacific Islander	Asian	White	Two or more races
U.S.	**13%**	**26%**	**0.5%**	**0.4%**	**8%**	**48%**	**4%**	**179,188**	**69%**	**31%**	**0.2%**	**6%**	**16%**	**0.5%**	**0.2%**	**27%**	**45%**	**5%**
AK	3%	8%	10%	3%	9%	55%	12%	108	85%	15%	0%	0%	8%	1%	0%	13%	69%	9%
AL	27%	7%	0.8%	0.1%	2%	60%	2%	2,202	63%	37%	0.3%	15%	8%	1%	0.1%	10%	61%	5%
AR	16%	17%	0.6%	1%	3%	58%	3%	1,344	67%	33%	0.4%	9%	11%	1%	0.1%	10%	63%	5%
AZ	6%	35%	2%	0.3%	6%	48%	4%	1,788	73%	27%	0%	3%	23%	0.9%	0.1%	23%	43%	6%
CA	5%	47%	0.4%	0.6%	16%	27%	5%	32,263	68%	32%	0.1%	2%	24%	0.4%	0.2%	43%	25%	6%
CO	4%	27%	0.6%	0.3%	4%	59%	4%	2,700	73%	27%	0.1%	2%	15%	0.3%	0.1%	14%	64%	5%
CT	10%	19%	0.2%	0.1%	6%	61%	3%	3,448	72%	28%	0.1%	4%	10%	0.3%	0.1%	23%	58%	5%
DC	47%	24%	0.2%	0.1%	2%	24%	2%	424	59%	41%	0.2%	50%	12%	0.5%	0%	4%	27%	6%
DE	23%	13%	0.4%	0.1%	7%	53%	4%	552	73%	27%	0.2%	12%	8%	0.2%	0%	19%	54%	7%
FL	19%	34%	0.3%	0.2%	4%	39%	3%	14,230	69%	31%	0.2%	8%	32%	0.6%	0.1%	13%	41%	4%
GA	28%	17%	0.2%	0.1%	7%	45%	4%	6,766	71%	29%	0.1%	11%	10%	0.4%	0.1%	31%	44%	4%
HI	2%	8%	0.3%	32%	36%	12%	10%	744	66%	34%	0.3%	0.1%	13%	0.1%	4%	44%	13%	25%
IA	9%	14%	0.5%	0.5%	4%	67%	4%	596	79%	20%	0.5%	3%	8%	0.4%	0%	16%	67%	5%
ID	2%	19%	0.5%	0.4%	2%	73%	2%	475	72%	28%	0%	0.7%	9%	0.7%	0.5%	13%	69%	7%
IL	13%	28%	0.2%	0.1%	8%	47%	3%	8,381	69%	31%	0.04%	5%	18%	0.2%	0.1%	27%	46%	4%
IN	14%	13%	0.2%	0.1%	4%	64%	5%	2,903	76%	24%	0.4%	5%	8%	0.5%	0.1%	13%	68%	5%
KS	8%	16%	0.7%	0.2%	5%	64%	5%	297	84%	16%	0%	2%	11%	0.4%	0%	23%	57%	7%
KY	10%	7%	0.2%	0.1%	3%	77%	3%	1,788	69%	30%	0.6%	3%	5%	0.9%	0%	12%	74%	4%
LA	34%	8%	0.2%	0.1%	4%	51%	2%	1,002	65%	35%	0.2%	13%	10%	0.4%	0.3%	10%	62%	4%
MA	10%	17%	0.2%	0.1%	8%	61%	3%	5,598	70%	30%	0.1%	6%	9%	0.3%	0.1%	24%	56%	4%
MD	27%	16%	0.2%	0.1%	8%	44%	5%	7,621	63%	36%	0.1%	13%	8%	0.6%	0.1%	28%	45%	5%
ME	3%	2%	1%	0.1%	3%	89%	2%	300	70%	29%	0.7%	1%	4%	0.4%	0%	9%	83%	2%
MI	13%	8%	0.6%	0.1%	5%	70%	3%	4,613	71%	29%	0.2%	4%	5%	0.2%	0.1%	19%	69%	3%
MN	13%	9%	0.6%	0.1%	9%	64%	5%	1,809	77%	23%	0.2%	5%	7%	0.3%	0.1%	22%	60%	6%
MO	13%	6%	0.4%	0.3%	3%	72%	4%	1,075	80%	20%	0.3%	6%	4%	0.7%	0.1%	17%	68%	5%
MS	44%	4%	0.1%	0.1%	2%	47%	2%	316	62%	38%	0.6%	18%	6%	0.3%	0%	10%	59%	6%
MT	2%	6%	6%	0.3%	1%	81%	3%	38	87%	13%	0%	3%	17%	0%	0%	8%	67%	6%
NC	22%	16%	0.5%	0.1%	5%	51%	5%	5,367	68%	32%	0.3%	9%	10%	0.5%	0.1%	21%	54%	5%
ND	7%	5%	4%	0.3%	2%	78%	3%	112	77%	22%	0.9%	3%	3%	0.9%	0%	2%	85%	7%
NE	9%	20%	0.6%	0.1%	3%	63%	4%	397	74%	26%	0%	4%	4%	0.3%	0.3%	13%	72%	6%
NH	3%	7%	0.2%	0.1%	4%	82%	3%	506	73%	27%	0%	0.4%	6%	0.4%	0%	22%	68%	4%
NJ	11%	23%	0.1%	0.2%	12%	52%	2%	9,245	70%	30%	0.1%	4%	12%	0.5%	0.05%	38%	42%	4%
NM	2%	64%	5%	0.1%	2%	23%	3%	372	75%	25%	0.3%	2%	27%	2%	0%	17%	49%	2%
NV	10%	40%	0.7%	2%	7%	34%	6%	2,001	63%	37%	0.2%	4%	30%	0.8%	0.8%	21%	35%	9%
NY	14%	24%	0.6%	0.3%	12%	46%	2%	14,072	65%	35%	0.1%	10%	19%	0.5%	0.2%	30%	36%	4%
OH	11%	5%	0.1%	0.1%	5%	74%	5%	3,548	74%	26%	0.2%	7%	5%	0.6%	0.03%	15%	67%	5%
OK	10%	19%	7%	0.5%	4%	50%	9%	484	68%	31%	0.2%	3%	11%	3%	0%	15%	55%	12%
OR	2%	21%	0.9%	0.7%	5%	64%	6%	899	75%	25%	0.3%	1%	9%	0.4%	0.4%	21%	59%	8%
PA	11%	11%	0.2%	0.1%	6%	69%	3%	6,211	73%	27%	0.1%	5%	6%	0.6%	0.1%	21%	64%	4%
RI	7%	18%	0.6%	0.1%	3%	68%	3%	739	69%	31%	0.3%	5%	9%	0.1%	0.1%	13%	70%	4%
SC	24%	10%	0.3%	0.1%	3%	59%	4%	2,130	65%	34%	0.3%	9%	8%	0.8%	0.1%	10%	66%	6%
SD	5%	9%	4%	0.1%	2%	77%	4%	50	84%	14%	2%	2%	10%	2%	0%	14%	69%	2%
TN	16%	9%	0.2%	0.1%	4%	67%	3%	1,897	67%	33%	0.3%	14%	9%	0.8%	0.1%	17%	54%	5%
TX	13%	46%	0.4%	0.2%	7%	30%	3%	14,505	71%	29%	0.2%	4%	28%	0.5%	0.1%	31%	32%	4%
UT	2%	17%	0.5%	2%	4%	72%	3%	642	76%	24%	0.2%	1%	8%	0.5%	0.3%	12%	71%	7%
VA	18%	17%	0.3%	0.2%	10%	49%	6%	5,674	71%	29%	0.2%	7%	8%	0.3%	0.1%	34%	44%	7%
VT	1%	3%	0.2%	0.1%	4%	86%	3%	157	82%	18%	0%	1%	3%	0%	0%	21%	72%	3%
WA	5%	19%	0.7%	1%	11%	55%	8%	4,236	70%	30%	0.1%	2%	8%	0.5%	0.3%	38%	44%	8%
WI	6%	11%	0.8%	0.1%	6%	72%	4%	2,060	78%	21%	0.4%	1%	6%	0.6%	0.1%	11%	76%	4%
WV	4%	2%	0.1%	0.1%	1%	89%	3%	405	64%	36%	0%	2%	4%	0.8%	0%	9%	81%	4%
WY	2%	16%	2%	0.2%	1%	76%	3%	98	63%	36%	1%	0%	4%	2%	0%	8%	81%	4%

Appendix 4: References

Footnotes

1. See National Momentum: Access and Participation for more details about the definition of foundational computer science.
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Additional References

P. 6:

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- Code.org and the ECEP Alliance State Computer Science Planning Toolkit: http://bit.ly/statetoolkit
- CSTA's Resources and Guidance: CSTA Standards for CS Teachers: https://csteachers.org/page/standards-for-cs-teachers-resources/

P. 12:

- AI-4-All: https://ai-4-all.org/
- AI4K12: https://ai4k12.org/
- CYBER.ORG: https://cyber.org/
- Data Science 4 Everyone: https://www.datascience4everyone.org/
- National Q–12 Education Partnership: https://q12education.org/

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- Up-to-date policy information, narrative: https://code.org/advocacy/landscape.pdf
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P. 39:

- Up-to-date policy information, table: http://bit.ly/9policies
- Governors' Partnership for K–12 CS: https://www.governorsforcs.org/
- ECEP Alliance State Teams: http://ecepalliance.org
- CSTA Chapters: http://csteachers.org/chapters
- An interactive data visualization of computer science course access: http://code.org/yourschool/accessreport
- AP exam participation: https://code.org/ap

P. 40:

- College Board's AP program: http://research.collegeboard.org/programs/ap/data

P. 97:

- To submit school-level computer science offerings: https://code.org/yourschool
- Full Access Report data set: code.org/yourschool/accessreport

P. 108:

- Code.org AP CS analyses: http://code.org/ap
- Dr. Barbara Ericson's AP CS analyses: http://cs4all.home.blog

To view this report as a downloadable PDF or to download handouts, slides, graphics, and data sets, visit advocacy.code.org/stateofcs

To view and download the latest K–12 computer science access data by state, district, or school in an interactive data visualization, visit code.org/yourschool/accessreport

For up-to-date policy data and advocacy resources, visit advocacy.code.org

For more information on joining the CSTA or CSTA chapters, visit csteachers.org

For more information about ECEP, visit ecepalliance.org

About the Code.org Advocacy Coalition

Bringing together more than 90 industry, nonprofit, and advocacy organizations, the **Code.org Advocacy Coalition** is growing the movement to make computer science a fundamental part of K–12 education.

About the Computer Science Teachers Association

The Computer Science Teachers Association (**CSTA**) is a membership organization that supports and promotes the teaching of computer science. CSTA provides opportunities for K–12 teachers and their students to better understand computer science and to more successfully prepare themselves to teach and learn.

About the Expanding Computing Education Pathways Alliance

The Expanding Computing Education Pathways (**ECEP**) Alliance is an NSF-funded Broadening Participation in Computing Alliance (NSF-CNS-1822011). ECEP seeks to increase the number and diversity of students in computing and computing-intensive degrees by promoting state-level computer science education reform. Working with the collective impact model, ECEP supports an alliance of 22 states and Puerto Rico to identify and develop effective educational interventions, and expand state-level infrastructure to drive educational policy change.