CODE Advocacy Coalition · CSTA · ECEP Expanding Computing Education Pathways

2023 State of Computer Science Education

Thank You for Helping to Build a Movement

The Code.org Advocacy Coalition, Computer Science Teacher Association, and the Expanding Computing Education Pathways Alliance wishes to thank the hundreds of thousands of local champions and advocates, 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.

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EXECUTIVE SUMMARY

The rapid pace of technological advancement, as seen with the widespread integration of generative artificial intelligence (AI), underscores the need for foundational knowledge in computer science for all students. In an era where technology permeates nearly every aspect of our lives, it is imperative that students become informed consumers and creators, not merely users. This report calls upon advocates to revamp school curricula to align with the demands of the 21st century, including **requiring that all students learn computer science.** Ensuring diverse enrollment in computer science classes lays the foundation for a computing ecosystem that more accurately reflects the needs and experiences of the whole population.

Currently, 57.5% of public high schools in the United States (U.S.) offer a foundational computer science class—**an achievement marking the largest percentage growth in the last five years**. This upswing is due to both an increasing number of schools offering computer science and greater collaboration from State Education Agencies. Across the 35 states* where data is available, 5.8% of high school students are enrolled in foundational computer science. Even with growing access, large disparities in participation still exist, and we must continue to focus on eliminating gaps.

Although there has been significant growth in the number of schools offering computer science courses and students participating in these courses, over 10,000 high schools still do not offer a single course. Most schools not offering computer science enroll fewer than 500 students, a theme we explore in this report. The students at these schools have no opportunity to take computer science, creating gaps in access and participation.

State and federal policy are crucial levers for accelerating growth, advancing equity, and creating sustainability in computer science education. This year, the Code.org Advocacy Coalition marked a significant milestone by unveiling its tenth policy, advocating for all states to require computer science to earn a high school diploma with appropriate timelines for implementation. Business leaders, teacher unions, and nonprofit organizations have all recognized the urgency of adding computer science to the K–12 curriculum[1]. The *2023 State of Computer Science* report presents a comprehensive dataset and offers guidance for extending computer science education to every student.

Highlights related to access and participation:

- 2023 is the year of the **largest growth** in the percentage of high schools offering foundational computer science since 2018.
- **57.5% of U.S. public high schools offer foundational computer science** (up from 53% last year), **but disparities in access persist.**
- Rural schools, urban schools, and smaller schools are less likely to offer foundational computer science;
- Black/African American students, Hispanic/Latino/Latina/Latinx students, and Native American/Alaskan students are less likely to attend a school that offers foundational computer science.
- Across 35 states, **5.8% 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 foundational computer science courses at similar rates** as their overall population; however, in many states, disparities exist.
- Nationally, **Hispanic/Latino/Latina/Latinx 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.
- Nationally, **multilingual learners, students with disabilities, and economically disadvantaged students are underrepresented** in foundational computer science compared to their overall population.
- Nationally, **31% of students enrolled in foundational computer science are young women.**
- Across 31 states, **at least 46% of middle schools offer foundational computer science.** Disparities in enrollment are smaller across all demographic groups in middle school compared to high school.

*AL, AR, AZ, CT, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, MS, NC, ND, NE, NJ, NM, NV, NY, OK, OR, PA, RI, TN, TX, UT, VA, VT, WI, WV

Highlights related to state policy adoption:

- **Twenty nine states** have now adopted at least seven of the ten policies recommended by the Code.org Advocacy Coalition.
- States that have adopted at **least seven policies have 73%** of their high schools offering foundational computer science, compared with 50% in states that adopted fewer than seven policies.
- **Ten states have adopted nine or ten policies:** Alabama, Arkansas, Georgia, Idaho, Indiana, Maryland, Nevada, Rhode Island, Tennessee, and Washington.
- North Carolina, North Dakota, and Rhode Island **adopted a graduation requirement in computer science.**
- Illinois, Louisiana, Michigan, Minnesota, and New Hampshire **funded computer science education for the first time.**
- **More than $120 million was allocated for computer science in state budgets** when this report was published in 2023, the most ever allocated in one year.

This year's report contains policy recommendations for incorporating AI in education and a discussion of the future of computer science education in an age of AI.

Clarity
1. Create a statewide plan for K-12 computer science
2. Define computer science and establish standards for K-12 computer science

Capacity
3. Allocate funding for rigorous computer science teacher professional learning
4. Implement clear certification pathways for computer science teachers at elementary and secondary levels
5. Create programs at institutions of higher education to encourage all preservice teachers to gain exposure to computer science

Leadership
6. Establish dedicated computer science positions in a state education agency

Sustainability
7. Require that all schools offer computer science with appropriate implementation timelines
8. Allow computer science to count toward a core graduation requirement
9. Allow computer science to satisfy an admission requirement at higher education institutions
10. Require that all students take computer science to earn a high school diploma

INTRODUCTION

The 2023 State of Computer Science Education, now in its seventh year, provides an update on national and state-level computer science education policy, access, and participation. The report is a collaboration of Code.org Advocacy Coalition, Computer Science Teacher Association, the Expanding Computing Education Pathways Alliance and made possible through a grant from Workiva.

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;
- New data on elementary and middle school course offerings and enrollment;
- A description of ten recommended state policies to expand computer science education equitably; and
- Summaries of policy, access, and participation data for each state.

The State of K–12 Education Over the Past Year

This past school year showed the lasting impact of a very challenging few years on our students and teachers. The release of the National Assessment of Educational Progress (NAEP) scores in the fall of 2022 served as a call to address the state of student achievement[2] with a renewed sense of urgency. However, interpreting these scores merely as a need to return to traditional math and reading instruction would be a misstep. Instead, they invite us to improve and innovate our education system. We must harness the potential of computer science, not just as a standalone subject but also as an instrumental tool to enrich subjects across the curriculum. Multiple studies have demonstrated that learning computer science correlates with stronger outcomes for students in math, science, and reading[3]. Embedding computer science education can help address some of the most pressing challenges facing K–12 education.

The influence of generative artificial intelligence (AI) amplifies the need for computer science education. It is imperative that policies are developed to help educators and students become thoughtful users and creators of these technologies. In addition to making computer science a graduation requirement, states and districts can convene an AI task force, include AI concepts in academic standards (especially computer science), provide fundamental training for every teacher on AI literacy, and equip schools with guidance on the safe and responsible use of AI.

> This is an important enough skill that we cannot leave it up to chance and choice anymore.
>
> - **Kirsten Baesler, State Superintendent, Department of Public Instruction, North Dakota**

> We must ensure every child has the knowledge and skills to successfully navigate the challenges of the future–that's why in Indiana, we believe all students must have the opportunity to learn computer science.
>
> - **Dr. Katie Jenner, Indiana Secretary of Education**

Ten Policies to Make Computer Science Foundational

In 2017, the Code.org Advocacy Coalition developed nine policy recommendations to make computer science a fundamental part of the state education system. A tenth policy, graduation requirement in computer science, was added this year. Adopting a graduation policy helps ensure all students have the opportunity to learn computer science and builds upon a state's commitment to expanding access for every student. These ten policies promote access to and equity within foundational computer science courses. The Computer Science Education Policy chapter (page 10) describes major policy initiatives in states in greater detail. Our policies support a vision built on five principles: Clarity, Capacity, Leadership, Sustainability, and Equity and Diversity.

Clarity around the definition of computer science, shared goals, and strategies strengthen state efforts to expand access to computer science for all students. 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 **leaders** are essential for prioritizing computer science and guiding implementation. Dedicating 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 factors influencing students to engage in computer science education and the systemic barriers that continue to make computer science inaccessible to marginalized students. Additionally, some students are less likely to have access to high-quality computer science courses; this includes students from rural areas, students with disabilities, students with economic disadvantages, and students from underrepresented racial and ethnic groups. When disparities are unaddressed, we miss out on the innovations and contributions from diverse creators. Equity and diversity are overarching values reflected in each of the ten policies and must be addressed explicitly in policy development to avoid perpetuating disparities.

Principle	No.	Policy
Clarity	1.	Create a statewide plan for K-12 computer science
Clarity	2.	Define computer science and establish standards for K-12 computer science
Capacity	3.	Allocate funding for rigorous computer science teacher professional learning
Capacity	4.	Implement clear certification pathways for computer science teachers at elementary and secondary levels
Capacity	5.	Create programs at institutions of higher education to encourage all preservice teachers to gain exposure to computer science
Leadership	6.	Establish dedicated computer science positions in a state education agency
Sustainability	7.	Require that all schools offer computer science with appropriate implementation timelines
Sustainability	8.	Allow computer science to count toward a core graduation requirement
Sustainability	9.	Allow computer science to satisfy an admission requirement at higher education institutions
Sustainability	10.	Require that all students take computer science to earn a high school diploma

These ten policies are designed to provide a framework and a strong starting position for states, although they may need to be modified to best fit individual state needs. 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 and equitable outcomes for every student. Policies must also be continually revisited and adjusted to meet student and teacher needs.

How to Use This Report

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 leaders and advocates within 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?
- **Advocacy:** Consider the opportunities that all students currently have to access computer science and ways to broaden participation for all students. Increasing diversity in computer science requires that advocates comprehensively understand 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

- National Governors Association Toolkit[4]
- The ECEP Alliance and NCWIT State Summit Toolkit[5]
- Code.org and ECEP's State Computer Science Planning Toolkit[6]
- CSTA's Resources and Guidance: CSTA Standards for CS Teachers[7]
- The ECEP Alliance Landscape Report Toolkit[8]
- CSTA, Kapor Center, and AiiCE's CS Teacher Landscape Survey Report[9]

Links to resources are in Appendix 4

COMPUTER SCIENCE EDUCATION POLICY

This chapter presents updated data on the adoption of the policies developed by the Code.org Advocacy Coalition for expanding K–12 computer science education.

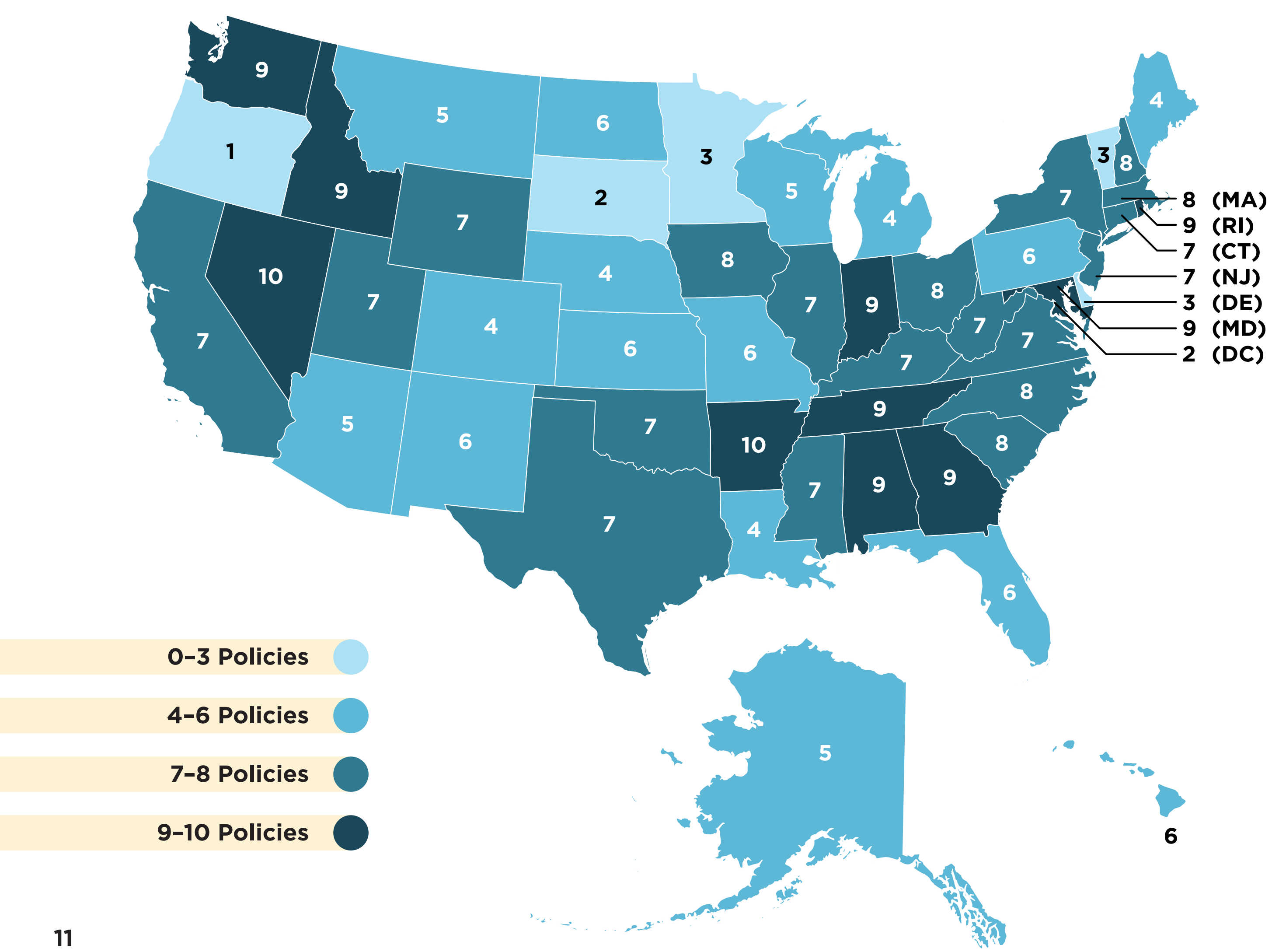
Policy is Crucial

In 2023, 34 states have adopted or updated 38 policies to make computer science foundational, including 28 states that funded computer science education. As more states pass policies, the focus remains on encouraging equitable access and participation in this critical subject area. Statewide policy creates a sustainable and equitable computer science education environment. Thanks to the tireless work of state leaders, advocates, and stakeholders, computer science education across the U.S. looks remarkably different from just a few years ago.

The ten policies recommended by the Code.org Advocacy Coalition have accelerated the availability of computer science opportunities across schools nationwide. This chapter provides updates and additional guidance on five of those policies.

Highlights from the past year include

- Ten states have adopted nine or ten policies: Alabama, Arkansas, Georgia, Idaho, Indiana, Maryland, Nevada, Rhode Island, Tennessee, and Washington.
- In the last legislative session:
- North Carolina, North Dakota, and Rhode Island adopted a graduation requirement in computer science;
- Illinois, Louisiana, Michigan, Minnesota, and New Hampshire funded computer science education for the first time; and
- More than $120 million was allocated for computer science in state budgets when this report was published in 2023.



State Plan for K–12 Computer Science Education

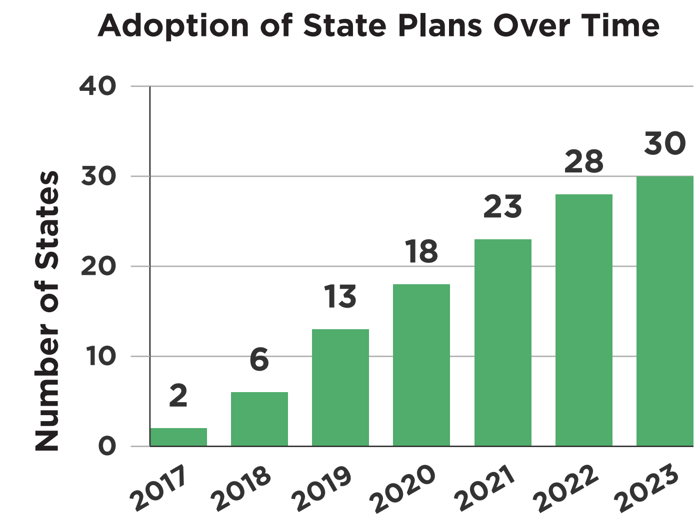
Since the last report, Alaska and Ohio adopted state plans, and Minnesota passed legislation requiring a state plan to be written. Several other states remain in the process of writing their plans, and we encourage these states to publish those plans in the near future.

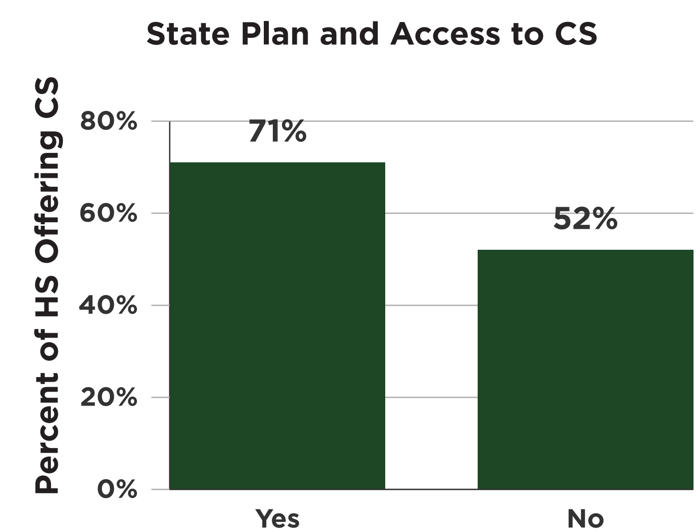
State plans are instrumental in aligning efforts, resources, and outcomes for computer science education. Involving diverse groups of advocates, including teachers, parents, students, higher education institutions, nonprofit organizations, and industry partners in the development of state plans can lead to a stronger commitment to action and reflect the needs of priority populations of students.

State plans should:

- Be specifically focused on computer science education;
- Include timelines, goals, and strategies for achieving these goals, and a schedule for how often it will be revisited and updated; and
- Be publicly available.

Nearly half of states with a plan created them in 2019 or earlier. As these plans are now at least four years old, states should take steps to reflect on the effects of the implementation. We encourage all states to revise and update plans, keeping them current to ensure continued effectiveness. This is particularly important given the increased attention placed on artificial intelligence (AI), which should be rooted as an extension of a foundational computer science educational system.





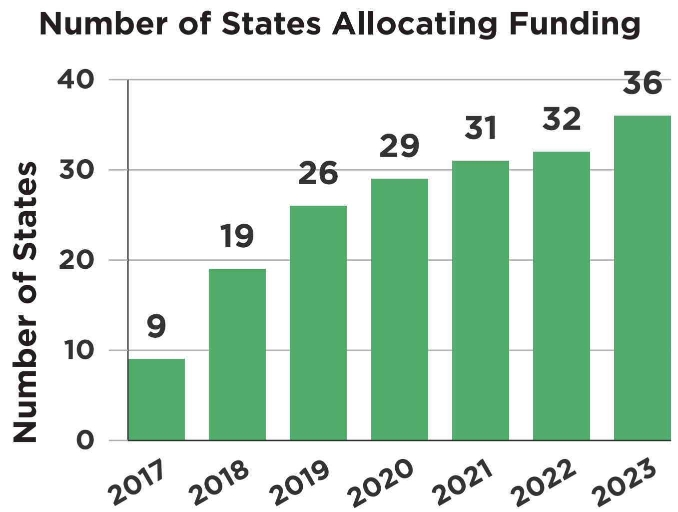
Ohio

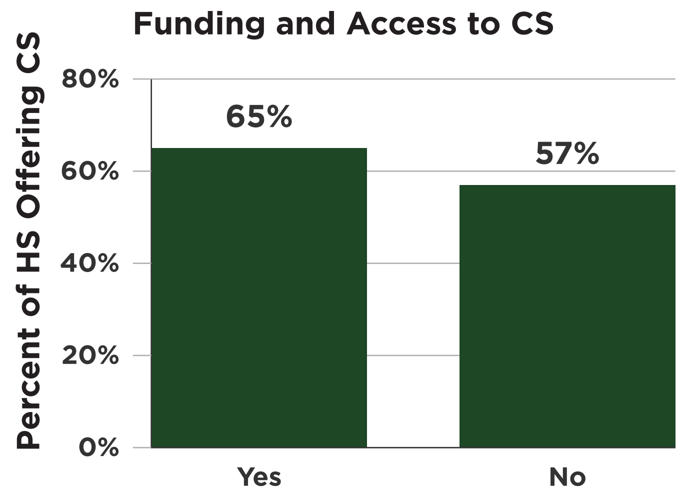
HB 110 (2021) required the Department of Education and Chancellor of Higher Education to establish a state committee on computer science to develop a state plan for K–12 computer science. The committee of 26 individuals, including teachers, administrators, startups, and advocacy organizations, was charged with enabling Ohio to become a leader in computer science education. The adopted state plan is comprehensive and includes ten state-specific recommendations to expand computer science education, including a call for a statewide graduation requirement.

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

Since the last report, Illinois, Louisiana, Michigan, Minnesota, and New Hampshire have begun allocating state-level funding for K–12 computer science professional learning. In 2023, 25 states have passed over $120 million for computer science education.

Training teachers is necessary to implement and sustain courses, and funding provides the resources to ensure those teachers have the skills and knowledge needed to teach computer science effectively. Ongoing funding helps train new teachers and supports existing computer science teachers. Artificial intelligence has highlighted the need to ensure all teachers receive timely training on emerging technologies.





Many people from more urban areas would be surprised by the amount of computer science in farming. Those in rural communities easily see the connection and benefit of learning computer science. Farmers use computer science every day whether it is crop and weather data, using drones to evaluate crops and livestock, or self-driving tractors.

- **Michelle Meier, CS Consultant, Central Rivers AEA, Iowa**

Colorado

The Computer Science Teacher Education Grant (CSEd) Program is a state-funded grant program designed to increase the number of teachers able to provide computer science education in Colorado. The program provides funding to help local education agencies (LEAs) train teachers in computer science education. Funding has been appropriated to this grant program since 2017, and thousands of teachers have been trained in Colorado, impacting tens of thousands of students[10].

Minnesota

In Minnesota, first-time funding was allocated for computer science education during the 2023 legislative session. This legislation seeks to build on the grassroots efforts of many groups across the state to provide teacher training by allocating $1 million of funding over the next two years[11].

Preservice Teacher Preparation at Institutions of Higher Education

When the Advocacy Coalition first created our recommendations, our preservice policy was focused on states providing incentives for higher education to offer computer science to preservice teachers. However, we have realized this recommendation is not strong enough to impact the teaching pool, and we are adjusting our policy rubric to focus on all preservice teachers gaining exposure to computer science during their training.

While 23 states have state-level initiatives focused on preservice teachers, only five states require preservice teachers to gain computer science exposure: Arkansas, Connecticut, Indiana, Nevada, and Ohio. A computer science module or entire course during preservice teacher programs provides a foundational background for teachers to meet the needs of their students, regardless of grade or subject matter. We will not be able to meet the growing demand for computer science education simply by providing inservice teachers with professional development; we must develop sustainable systems that ensure all incoming teachers are prepared to teach computer science. A potential lever for change would be for preservice programs to create specific pathways for preservice teachers interested in further pursuing computer science to gain certification.

Indiana

Indiana requires all preservice elementary teachers to have a broad and comprehensive understanding of the knowledge and skills to help students prepare for the challenges and opportunities of the twenty-first century. This includes fundamental concepts and applications of computer science.

Nevada

Nevada requires all preservice teachers to receive training in computer literacy and computer science. This preservice requirement bridges existing gaps in teacher capacity and required standards. Elementary school educators in Nevada are required to teach computer science and computer literacy standards but have not traditionally completed coursework prior to entering the profession. This required extensive professional learning for inservice teachers to increase computer science pedagogical content knowledge. The need and frequency of intensive professional learning focused on computing concepts will naturally decline as more educators enter the field prepared to teach computing education, leaving a more prepared teaching force.

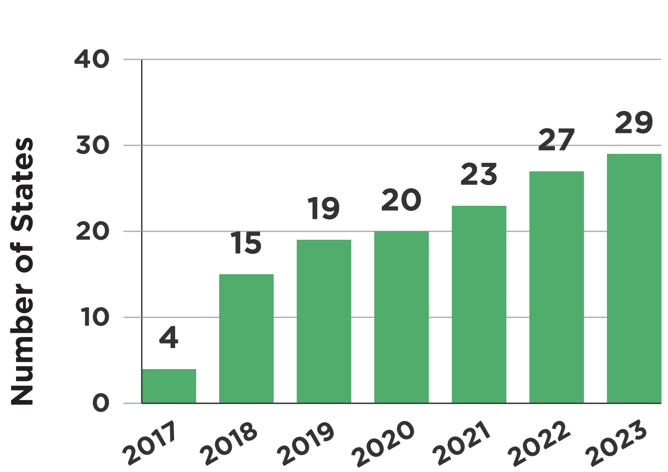
Empowering pre-service teachers should be part of any state's implementation plan to scale K–12 computer science education. As districts emerge from the pandemic and invest heavily in literacy and numeracy addressing skill gaps, it is important to recognize that computing is a foundational skill, equipping students for the technologically advanced labor market and society that they will live in.

- **Susan Auchincloss, CS-PLAN Project Director, Connecticut**

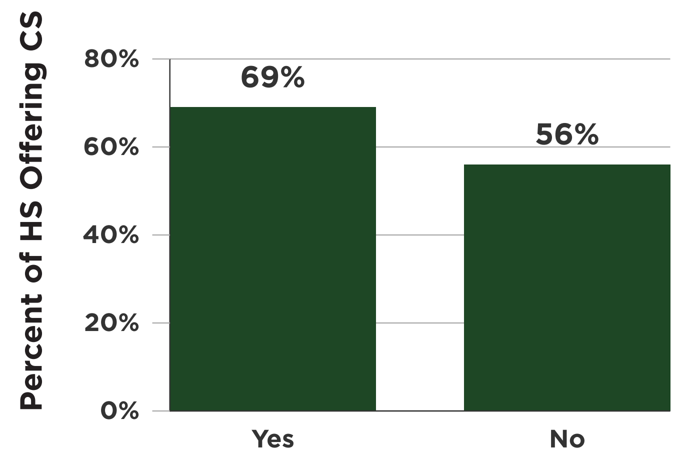
Requirement for All Schools to Offer Computer Science

There are 30 states that require their schools to offer computer science. Of these states, 17 require all K–12 schools to offer computer science, three states require elementary or middle schools and high schools to offer computer science, and nine states just require high schools to offer computer science. Given the importance of this subject and the value of early exposure[12], all states should work towards requiring all K–12 schools to offer computer science. It is crucial that states track implementation rates and provide support to schools to enable this shift.

Adoption of Requirements Over Time



Requirements to Offer Computer Science



> [We need to make] CS a graduation requirement. Right now the students have so many core classes and only have a limited amount of electives they can take. They do not have much CS experience coming into high school so many of them lack the knowledge or exposure to CS, which makes it challenging for them to really want to take CS compared to other subjects they already enjoy.
>
> **- CS Teacher from California**

Alabama

In 2019, Alabama passed legislation that phases in all schools offering computer science.

- "Beginning in the 2020-2021 school year, each public high school shall offer at least one authentic computer science course from a department-approved list."
- "Beginning in the 2021-2022 school year, each public middle school shall offer instruction in middle school computer science courses approved by the department."
- "Beginning in the 2022-2023 school year, each public elementary school shall offer instruction on the basics of computer science and computational thinking."

Alabama also has prioritized in-person learning and allows schools to utilize virtual learning only when in-person instruction is unavailable. Schools must be given flexibility to meet state requirements, especially for small schools; however, it is also essential to ensure all students have high-quality options available.

Requirement for All Students to Take Computer Science to Earn a High School Diploma

Eight states have now passed policies requiring students to take computer science to earn a high school diploma. As the data in this report has demonstrated, **enrollment does not reflect the broader student population even when all schools offer computer science courses.** There are persistent gaps for specific student demographics, such as female students, Hispanic students, and students with disabilities. We encourage all states to learn from the example these eight leading states set as they have implemented graduation requirements. Additionally, while Maryland and Mississippi do not have a computer science graduation requirement, computer science is the primary route to satisfying an existing requirement.

State	Year Adopted	Year of Implementation
Arkansas	2021	Class of 2026
Nebraska	2022	Class of 2028
Nevada	2017	Class of 2023
North Carolina	2023	Class of 2028
North Dakota	2023	Class of 2026
Rhode Island	2022	Class of 2028
South Carolina	2018	Class of 2024
Tennessee	2021	Class of 2028

North Carolina

Since 2018 North Carolina has prioritized expanding computer science education for all students. The Department of Public Instruction (NCDPI) and State Superintendent of Public Instruction Catherine Truitt worked closely together to further this expansion by advocating for a graduation requirement. In September 2023, House Bill 8 received strong bipartisan support and was passed by both the House and Senate and signed into law by Governor Cooper.

North Dakota

In 2015, the Department of Public Instruction initiated a collaborative effort to address the state's K–12 computer science needs, including developing computer science and cybersecurity standards and credentials for educators. In March 2023, HB 1398 passed, which requires computer science and cybersecurity for graduation. This was a direct result of the November 2021 special legislative session, when lawmakers directed State Superintendent Baesler to "collaborate with workforce development stakeholders and the K–12 Education Coordination Council to determine how best to integrate computer science and cybersecurity into elementary, middle, and high school."

Rhode Island

In 2020, the Rhode Island Department of Education (RIDE) began investigating the high school experience. They drew clear conclusions: many students were not feeling engaged in class and were unprepared for a 21st-century world. RIDE then looked to reform graduation requirements to meet students' needs better. In November 2022, the Board of Education approved new secondary regulations, including a requirement for students to demonstrate computer science proficiency.

Impact of Policy on State Access and Enrollment

Policy is crucial to creating an equitable and sustainable landscape for computer science education. State-specific data illustrates just how impactful policy can be for students We encourage all states to use student data to track progress and ensure accountability for statewide policy. While we are seeing dramatic increases in student enrollment, there is still work to do to reduce inequities in access and participation.

Arkansas

The 2022-2023 school year was the first year Arkansas's graduation requirement applied to its incoming freshman class, and the impacts on student enrollment were profound. More than 28,000 middle and high school students took foundational computer science in 2022-2023, more than double that of the previous school year. Additionally, the 9th grade class had 43% of young women enrolled in foundational computer science.

Georgia

Georgia's requirement for all high schools to offer computer science will come into effect in 2024-2025, but we are already seeing an impact on access and participation. Georgia has made steady progress over the last six years on expanding access, and as of 2022-2023, 71% of high schools offered foundational computer science. There have also been significant increases in the number of students enrolled; more than 30,000 high school students took foundational computer science in 2022-2023, a 60% increase from the previous year. Additionally, there has been increased representation of female students, Hispanic students, students with disabilities, and English language learners. However, despite the positive trend, parity has still not been reached for all these student groups.

Iowa

The 2022-2023 school year was the deadline for Iowa high schools to offer at least one course in foundational computer science. This past school year saw a huge increase from 71% to 83% of high schools offering foundational computer science. There has also been an increase in the number of students enrolled. While this increase in participation has reduced the participation gaps for many student groups, Iowa still has a lot of progress to achieve a representative enrollment in foundational computer science.

My computer science class taught me a creative approach to problem-solving, something I use across all subjects. It also empowered me to become the programming captain of the robotics team at my school. In this role, I am able to use leadership skills and collaborate with teammates to write code that is applicable in real world scenarios.

- **Tess and Willa Campion, 12th grade students, Minnesota**

Louisiana

Louisiana prioritized computer science in the last few years, passing numerous policies. In the past six years, Louisiana has more than doubled the number of high schools offering foundational computer science, which impacts student enrollment. More than 13,000 middle and high school students took foundational computer science in 2022-2023. This is more than double the number of students from the previous year. Louisiana has achieved race/ethnicity parity and has some of the highest participation rates for female students. While Louisiana still has a long way to go to ensure all students have access, this data is encouraging.

Mississippi

Mississippi's requirement for all high schools to offer computer science will come into effect in 2024-2025, but we are already seeing an impact on access and participation. This past school year saw a huge increase from 60% to 78% of high schools offering foundational computer science. There has also been a significant increase in the number of students enrolled; more than 20,000 middle and high school students took foundational computer science in 2022-2023, more than double the previous year. Mississippi also continues to be a national leader in representative computer science enrollment across all demographic groups.

Tennessee

Tennessee's graduation requirement will come into effect in 2024-2025, but we are already seeing an impact on student enrollment as schools prepare to meet this requirement. More than 22,000 high school students took foundational computer science in 2022-2023, almost double that of the previous school year. However, participation gaps remain consistent compared with the previous school year, with economically disadvantaged students particularly underrepresented.

Wyoming

The 2022-2023 school year was the deadline for all Wyoming schools to include computer science and computational thinking in the curriculum. Wyoming has made steady progress over the last five years on expanding access, with a particularly large jump this past year from 55% of high schools offering foundational computer science to 63%. There has also been a significant increase in the number of students enrolled. More than 2,000 middle and high school students took foundational computer science in 2022-2023, which is more than double from the previous year. In particular, enrollment by female students increased significantly.

NATIONAL CONVERSATIONS: ARTIFICIAL INTELLIGENCE

This chapter discusses policy recommendations for incorporating AI into an education system.

As of September 2023, there are 22 countries and 33 U.S. state education agencies participating in TeachAI. Visit TeachAI.org for more information and resources.

For education, 2023 will go down as the year of generative artificial intelligence (AI). While AI has been part of our lives for years—from spell check on our computers, face ID on our phones, spam filters, and far beyond—the surge in interest of AI in K–12 computer science education has only had a brief history. Efforts most relevant to the computer science education advocacy movement started in the last five years, such as AI4K12. The accessibility of generative AI tools, a type of artificial intelligence that can create content, has begun to have a transformative impact on education globally. While workers in other sectors may not feel that ChatGPT will have a major impact on their work, 44% of teachers believe that ChatGPT will have a major impact on their jobs[13]. **We cannot prepare students for a future with AI without teaching them the foundations of computer science.**

A Need for Comprehensive Policies

Due to the rapid rise of AI, many state and local education agencies are rushing to develop comprehensive policies governing appropriate and ethical AI use in the classroom[14-16]. With proper guidance, education can harness AI's potential to enhance learning and promote educational equity. To address this need for comprehensive policies, Code.org, in partnership with Educational Testing Service, the International Society for Technology in Education, Khan Academy, and the World Economic Forum, launched TeachAI, a global initiative to support education leaders and policymakers in aligning education with the needs of an increasingly AI-driven world and connecting the discussion of teaching with AI to teaching about AI and computer science.

The U.S. Department of Education has also made AI a priority. In May 2023, the U.S. Office of Education Technology, in collaboration with Digital Promise, a TeachAI advisory committee member, released a report titled Artificial Intelligence and the Future of Teaching and Learning[17] to spark the development of state and local-level guidance. The report addressed "the clear need for sharing knowledge, engaging educators, and refining technology plans and policies for artificial intelligence (AI) use in education."

Policy Recommendations to Promote AI and CS

With this rapidly developing work, states and local school districts recognize the need for policies to promote the effective and responsible teaching of AI. This should happen by bolstering efforts to teach computer science to every K-12 student. In line with the principles that guide the Code.org Advocacy Coalition's ten policies for computer science, the following five recommendations reflect principles of Equity and Diversity, Leadership, Clarity, Capacity, and Sustainability.

Equity and Diversity: Make computer science a core subject for every student.

Computer science is the foundation upon which many modern technological disciplines are founded, such as artificial intelligence, but also cybersecurity, data science, and quantum computing. Empowering diverse students to engage in these emerging technologies must be a core expectation of every student's educational experience. Learning fundamental computer science concepts gives students a deeper insight into how AI systems work, which benefits those building technologies that utilize AI and those who need to make decisions about AI in their personal lives. **Foundational computer science and AI literacy will result in more diverse, critical creators and consumers of AI**, students with diverse perspectives that can better mitigate AI risks, such as biased training data, and engage in discussions of AI's societal impacts.

Artificial intelligence (AI) literacy refers to the knowledge, skills, and attitudes associated with how artificial intelligence works, including its principles, concepts, and applications, as well as how to use artificial intelligence, such as its implications, limitations, and ethical considerations.

Leadership: Convene a task force to lead an AI strategy.

To responsibly oversee AI integration in schools, states and districts should devote resources to create a dedicated task force consisting of diverse education community members, including teachers, students, parents, computer science and technology directors, and industry partners. The AI task force should recommend policies and supports to steer **appropriate AI adoption aligned to the education system's goals.** This task force would create an initial plan that is continuously revised based on monitoring implementation and lessons learned.

The AI4K12 initiative, jointly sponsored by AAAI and CSTA, develops guidelines for AI education for K-12, an online directory to facilitate AI instruction, and community of practitioners. These guidelines can serve as a framework to assist standards writers and curricula developers on AI concepts, essential knowledge, and skills by grade band. Learn more at AI4K12.org

Clarity: Ensure AI concepts and considerations are included in academic standards, especially computer science.

A recent survey by Code.org found that out of 37 state education departments, 26 did not have academic standards related to AI topics. The remaining 11 states had varying levels of relevant standards, mostly incorporated within existing computer science standards. To equip students with the tools to build the future of AI and be educated and informed consumers, it's crucial that they become proficient in using AI ethically, responsibly, and effectively, as well as understand its underlying mechanisms. States should define AI literacy by including AI concepts in related academic standards, especially computer science standards.

CSTA is currently planning a revision to its K-12 CS Standards to better integrate AI and other emerging technologies, with a planned release in summer 2026.

Capacity: Provide fundamental training for every teacher on how to use AI and how AI works.

Comprehensive professional learning is essential for building the capacity of teachers to maximize the educational potential of AI, while at the same time safeguarding teachers and students from unintended consequences stemming from AI. A survey of U.S. educators[18] from June 2023 showed that the vast majority of teachers, principals, and district leaders had still never used AI tools (like ChatGPT) and never received any professional development. Funding should be provided for inservice professional development to promote teachers' AI literacy. Preservice education programs should integrate AI literacy into education technology and relevant teaching methods courses. In order to equip teachers and administrators to guide responsible AI integration, professional learning should cover:

- How AI systems work and are developed
- Positive and negative societal impacts of AI including potential biases
- Principles for appropriate and ethical AI use
- How to adapt assignments vulnerable to AI misuse without oversight
- Risks of relying on AI tools for high-stakes decisions, and the potential for dissemination of misinformation.

Sustainability: Equip schools with guidance on the safe and responsible use of AI.

Clear and practical state and local AI guidelines can empower schools to fully harness AI's potential for personalized learning, teacher assistance, and educational equity while ensuring student privacy and responsible usage. Early guidance should address issues such as prioritizing equitable access to AI tools, reaffirming adherence to existing privacy and security policies, and advancing academic integrity. With robust guidance, education systems can enhance consistency in AI adoption practices across classrooms and build public trust.

A Continuing Conversation

These recommendations serve as a starting point for a national conversation on how to incorporate AI into our education systems in a safe, effective, and responsible manner. TeachAI has released policy resources to guide the intentional, informed, and sustainable incorporation of AI in an education system, including a policy playbook to guide states and a guidance toolkit to help education systems develop district and school-level guidance. For more details, visit TeachAI.org.

NATIONAL TRENDS AND PROGRESS

This chapter includes an overview of national trends in computer science education.

As policymakers adopt the ten policy recommendations from the Code.org Advocacy Coalition, many stakeholders are advocating for progress beyond our ten policies, such as prioritization at the federal level, greater focus at the elementary and middle school level, and workforce development.

Federal Policy

Artificial intelligence (AI) has dominated lawmakers' attention this year. The Biden Administration is working with leading AI companies to secure commitments to move toward transparent development of AI technology, ensuring that emerging technologies are safe and secure. Additionally, the administration is establishing an international framework around the development of AI, developing an executive order, and pursuing bipartisan legislation. Senate Majority Leader Chuck Schumer has made AI a cornerstone of policy moving forward, holding a series of AI insight forums this fall to better understand the complexities of AI and introducing a SAFE Innovation Framework to help guide the potential of AI.

As policymakers embark on a period of learning around AI, there is a huge opportunity for the U.S. to lead on innovation. It is imperative that educators, advocates, industry leaders, and policymakers better understand how these systems work in order to harness their potential for good. **All of our students must have access to high-quality computer science courses throughout their education to give them the foundational knowledge to lead in AI and computing as a whole.**

Data is crucial to understanding which students have access to foundational computer science, and the Department of Education is undertaking efforts to oversee course offerings. Every two years, the Department conducts the Civil Rights Data Collection (CRDC) to monitor key education and civil rights data in public schools. In the 2021–2022 survey, new questions were included about high school computer science course offerings and student enrollment. These questions were optional for the 2021–2022 survey but are required for the 2023–2024 survey. In April 2023, the Office of Civil Rights received approval to require all local education agencies that receive federal finance from the Department to respond to the CRDC.

More Data

Several states have created public dashboards to house their K–12 computer science data, allowing both the state and outside entities to give additional support to schools that are facing barriers in offering computer science. We encourage states to continue to invest in data collection systems and use data to drive policy decisions and strategic plans.

Through the ECEP Alliance, 18 states have engaged in the Common Metrics Project. The project engages state teams in a collaborative process to create common definitions that helps teams to gather, analyze, report, visualize, and utilize data in a concerted effort to increase evidence-based advocacy and policy development. Democratizing data by making it more accessible to more advocates, educators, and policymakers, is a key objective of this work. Several states have built or revised state data dashboards as a result of their engagement in the Common Metrics Project. ECEP is in the process of developing a dashboard that reports data across participating states.

Examples of state data dashboards can be found on the ECEP Alliance website at: https://ecepalliance.org/cs-data/state-data-dashboards/

> The comprehensive data provides us with valuable insights into the growth of computer science in Alabama. This data not only gives us this information for us to celebrate but also highlights areas that require concentrated expansion efforts. Utilizing this data, we are able to create action plans that help increase student participation based on specific needs and resources.
>
> - **Amanda Dykes, Computer Science Specialist, Alabama State Department of Education**

*AL, AR, CT, HI, IA, IN, MS, ND, NH, NV, OK, TN, VA, WV, WY **GA, HI, IN, MD, MS, RI, TN

Elementary School Computer Science

Research has shown the importance of early exposure to counter stereotypes about who can succeed in computer science. These stereotypes can negatively impact students as young as six years old[19]. With that in mind, there has been increasing attention given to elementary computer science across the country, with 19 states requiring all elementary schools to offer computer science*.

Computer science at the elementary level is more representative because, generally, when computer science is offered, it is taught to all students. However, there has been a gap in robust quantitative data. To address this limitation, stakeholders nationwide petitioned the National Center for Education Statistics to add a new course code (SCED): *Computer Science (Prior-to-Secondary)*. While all states do not use SCED codes, this establishes the national precedent to collect computer science course data at the elementary and middle school level. This year, Code.org received elementary data from seven states.

What does computer science look like at the elementary level?

As we continue to advocate for more elementary computer science, we must recognize that policymakers may not be familiar with what computer science instruction looks like for our youngest learners. Many curriculum tools for elementary schools utilize block-based coding and other visual aids to teach algorithmic thinking, and there are increasingly more resources available to teach computer science in an unplugged setting. Such options address both the concerns about screen time and the lack of broadband access, which still poses a challenge for many areas of this country.

Computer Science (prior-to-secondary)

courses cover basic principles of computer science. In these courses, students learn how to develop and follow basic algorithms, collect and organize data, troubleshoot hardware and software issues, and think critically about online safety and responsibility[20].

Middle School Computer Science

This year, for the first time, we are specifically focusing on middle school computer science. In previous versions of this report, we have discussed K–8 computer science as combined group; however, that fails to recognize the substantial differences between K–5 and 6–8 computer science. Often, computer science at the middle school level is more similar to high school than elementary school, with computer science being taught in a stand-alone, elective format. Given this, collecting course data is easier; this year, Code.org received middle school data from 31 states**.

Middle school is a critical time for students as they develop greater independence to follow their own intellectual curiosities through a broader range of coursework. Developmentally, students are at an age to embrace more complex concepts in algorithmic logic. With computer science often being taught in stand-alone courses at the middle school, students have enough time to pursue programming projects with greater depth, rigor, and creativity. Emotionally, middle school students are testing out new subject areas and discovering more about what they enjoy and what provides them a sense of competence. To ensure that a greater number of students in high school will be drawn to computer science, it is crucial that middle schools offer stepping-stone courses to build their confidence and interest in the subject.

In several states, middle school computer science can count for high school credit, which may account for the significant increase in participation. Some schools and districts also require students to take computer science at the middle school level. In fact, in the following states, more students are taking computer science at the middle school level than at the high school level: Alabama, Hawaii, Indiana, Maryland, Nebraska, North Carolina, Rhode Island, Tennessee, and Wisconsin***. As more students gain foundational knowledge earlier, it allows for students to explore more advanced coursework in high school and to apply the skills they developed to other subjects.

*AL, AR, CT, HI, IA, ID, IN, MS, ND, NE, NH, NJ, NV, OK, TN, VA, WA, WV, WY
**In several states, participation data for middle and high schools are combined, so we cannot compare participation.
***AL, AR, CO, GA, HI, ID, IN, KY, LA, MA, MD, MO, MS, NC, ND, NE, NJ, NM, NV, NY, OR, PA, RI, SC, TN, UT, VA, WA, WI, WV, WY

I didn't do computer science until I was 21, and I had classmates at UCLA that did computer science when they were in the seventh grade, so wherever I can provide that space and provide them with that early introduction to computer science and technology, then I will.
- Cindy Noriega, Mathematics and Computer Science Teacher, Los Angeles

Indiana

In Indiana, significant efforts have been made to enhance computer science education at the middle-school level;

- Development of Middle School Course Codes: Indiana has implemented middle school course codes, facilitating precise data tracking and analysis of computer science participation.
- Tailored Professional Development: These programs cover both stand-alone computer science courses and integrated course options, equipping teachers with the necessary skills to effectively teach computer science.
- Diverse Pathways for Teachers: Indiana has established multiple pathways for educators to become qualified computer science instructors, ensuring a pool of well-trained teachers who can deliver high-quality computer science education.

Advanced Learning

As more students take introductory computer science courses, there is a growing demand for more advanced courses for students to further their learning. Courses such as data structures, cybersecurity, and advanced programming are now offered at schools across the country. Dual enrollment also allows many students to take more advanced courses while earning college credit.

I want my students to know that no matter their ethnicity, socioeconomic level, or gender, they are capable of thriving in a constantly evolving technological world as confident leaders of their own learning.

- Candyce Monroe, Learning Programs Manager, Ed Farm, Birmingham, AL

We are excited to see an increase in the number of high school students completing multiple computer science courses before graduation. These students develop a strong foundation that can be utilized in current and future careers.

- Kelly Griffin, Director of Computer Science Education, Arkansas Department of Education

Career and Technical Education and Work-Based Learning

Computer science courses can be part of traditional academic courseloads and career technical education (CTE) pathways, which is an opportunity to expand enrollment. For some states, dual coding their computer science courses as CTE courses can help to ensure greater access to students and expand the number of teachers certified to teach. Students can also earn computer science-related certifications during their high school experience, which prepares them to enter the workforce after graduation. Additionally, when computer science courses are coded as CTE courses, it may afford schools the ability to increase their academic budget if their districts apply for Perkins V funds. The federal government offers Perkins grants to districts that actively support CTE programs in their schools, and the funds can be used for purchasing course software, curricular materials, or other needed course hardware or equipment. As well, a small portion of Perkins funds provided are required to go toward teacher professional development or coursework that supports their teaching. Perkins funds may also fund the hiring of in new teaching or administrative CTE roles for up to three years. Up to 10% of Perkins funds allocated to a district are allowed to go toward their middle schools, provided that appropriate CTE programs are being made available. Districts should consult state guidelines before applying for and exercising Perkins V funding.

Rhode Island

The Computer Science for Rhode Island (CS4RI) High School Grant, funded by a $2.5M U.S. Department of Education grant in 2019, and supplemented with an additional $1M in 2022, supports 20 Rhode Island high schools. It establishes and enhances computer science pathways, prioritizes historically underrepresented student groups, and fosters work-based learning. Notably, four high schools have transformed their three-course computer science pathway into a CTE program, which enables them to secure additional funding for the program. Since the start of the grant, 1,080 students have entered CS pathways, with 81% from historically underrepresented student groups. The grant has also significantly contributed to an increase in AP CSP participation and dual enrollment through the University of Rhode Island.

ADDRESSING GAPS: SMALL SCHOOLS

This chapter discusses the correlation between school size and the availability of foundational computer science.

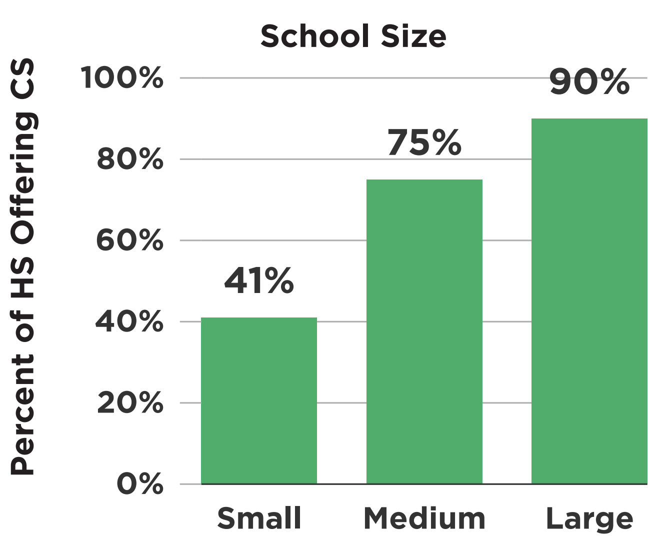
Over the course of seven years, this report has sought to illuminate factors that make schools less likely to offer foundational computer science and the subsequent impact on students. Significant evidence shows that school size is among the greatest predictors of access to foundational computer science.

Large schools are 2.2 times more likely to offer foundational computer science than small schools.

Notably, there is no nationally recognized definition for categorizing schools as small or large, which likely contributes to why school size is not often considered in education policies. For the purposes of this report, we define school size in relation to the ability of all schools to fulfill a graduation requirement:

- Small schools: enrollment under 500 students; these schools would just likely require a teacher teaching a few sections of computer science
- Medium schools: enrollment of 500–1,200 students; these schools would likely require a full-time teacher teaching computer science
- Large schools: enrollment of more than 1,200 students; these schools would likely require more than one full-time teacher

School size strongly correlates with whether schools offer foundational computer science. Large schools are 2.2 times more likely to offer foundational computer science than small schools. **82% of high schools with more than 500 students enrolled offer foundational computer science.** The lack of access to foundational computer science courses is almost exclusively a small school issue. Therefore, policymakers should focus their efforts on helping to eliminate barriers for these schools to offer computer science.



While this data alone should be a call to action for all policymakers, it is imperative to contextualize the significance of this issue. In our Access Report data collection, 13,564 (54%) of high schools are small, with nearly 3 million students attending them. Small schools are not limited to rural regions; nationally, 38% of small schools are located in urban and suburban areas. Additionally, for nine states*, the majority of their small schools are not in rural areas.

These factors compound the complexity of offering support to small schools, given that a one-size-fits-all approach is implausible even within a single state. However, a common thread among smaller schools is the presence of fewer staff members than in larger high schools. While staff across all schools often wear multiple hats, this is particularly pronounced in small schools. As such, policymakers must ensure that the resources allocated to these schools are adaptable and well-suited to their specific circumstances.

The lack of access to foundational computer science courses is almost exclusively a small school issue.

Increasingly, curriculum providers are producing materials for integrated computer science experiences, which may be particularly helpful for smaller schools. Due to teaching shortages, lack of space in course offerings, and other factors, a school may not yet be able to offer a stand-alone computer science class. However, computer science concepts and projects can support learning and bolster content in other courses. While it is challenging to gather data on integrated CS experiences, we should not let this prevent us from finding creative alternatives for smaller schools.

Recommendations for Policymakers

- Engage with teachers and administrators at smaller schools to gain an authentic understanding of their needs.
- Analyze state-specific data to comprehend the landscape of smaller schools.
- Prioritize school size as a category when allocating grants from state funding.
- Ensure that professional development initiatives are adaptable and accommodating.

82% of medium and large schools offer computer science.

*AZ, CA, CT, DE, FL, MA, MD, NJ, NY

ACCESS AND PARTICIPATION

This chapter provides nationwide data on student access to and participation in foundational computer science courses.

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

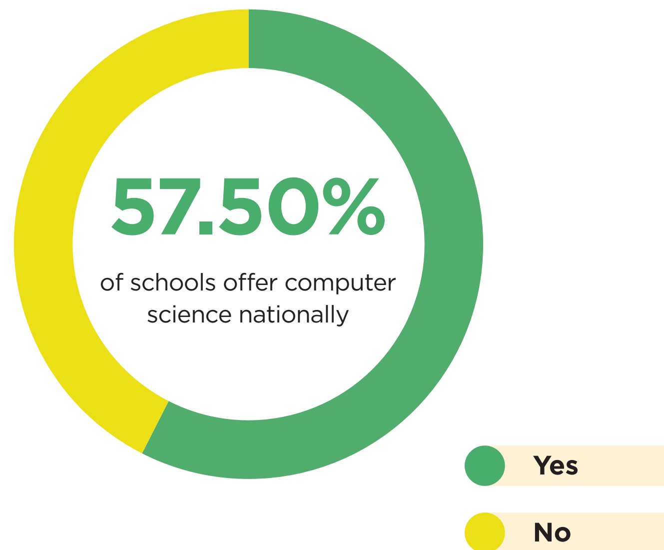
Equitable computer science education encompasses many interrelated components, including capacity, access, participation, and experiences (CAPE framework)[21]. Measuring all of these components is beyond the current availability of data from the computer science education community. This report focuses on the available data related to capacity, access, and participation.

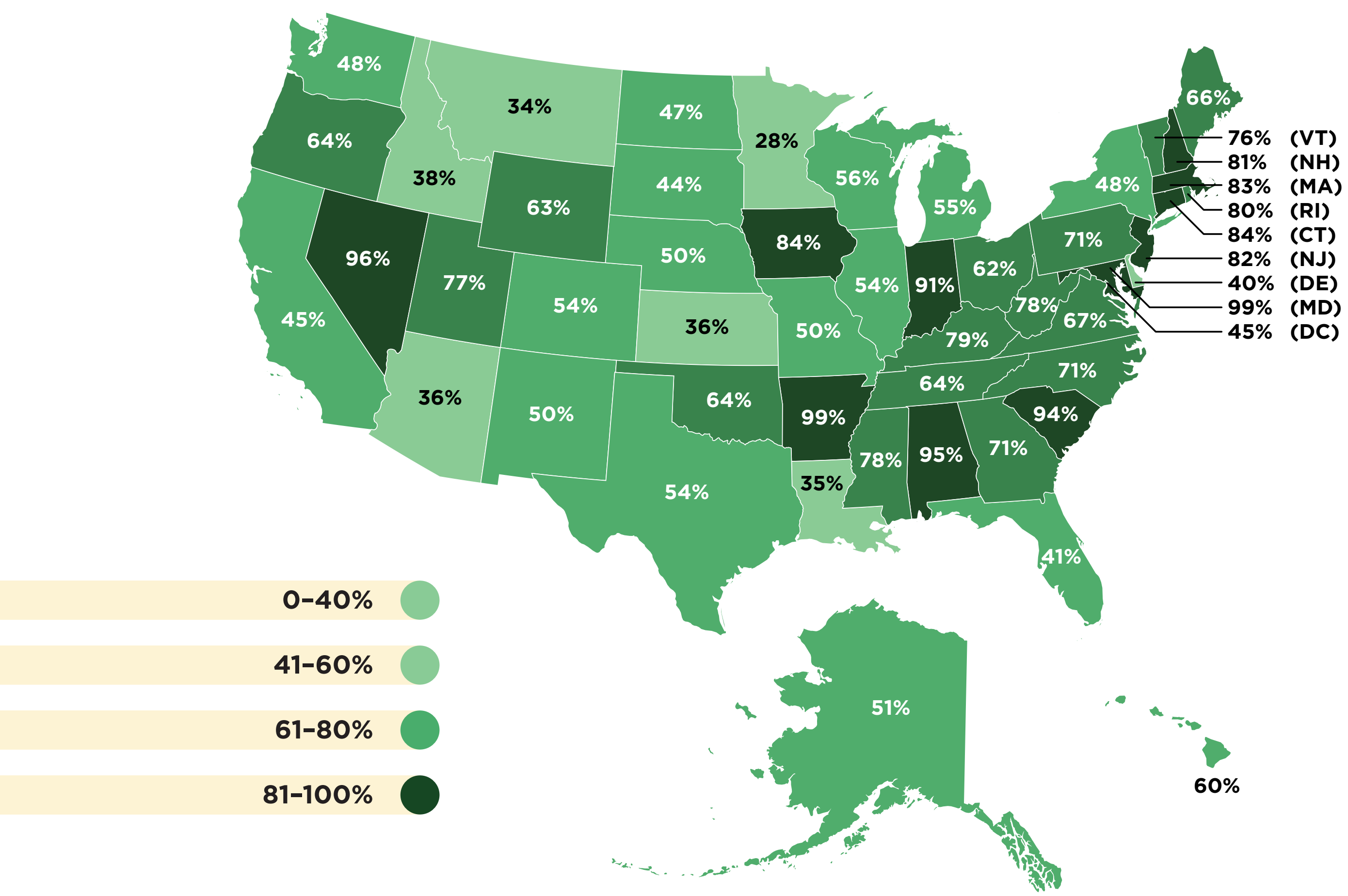
We define "equitable access" as all students having the opportunity to enroll in computer science courses in their school, regardless of their identity (e.g., gender, race or ethnicity, socioeconomic status, disability, geographic location). By "equitable participation," we mean that enrollment in computer 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.

Computer Science Access Report

The Computer Science Access Report identifies where foundational computer science is offered each year on a school-by-school basis. **Based on data from 24,987 public high schools in the U.S., 57.5% of public high schools offer at least one foundational computer science course.** We also have preliminary middle and elementary school data, which can be found on page 43.

The percent of high schools offering foundational computer science varies widely across states from 28% to 99%. To see state-specific details, go to page 51.





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 and at least 10 hours of programming/coding for grades K–8). 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 computing elements.

> When exposure and access are in place, students' confidence to pursue opportunities beyond their computer science K–12 education becomes a reality, because students have become computer science advocates.
>
> **– Maria Camarena, Computer Science teacher, Los Angeles Unified School District, California**

Examples of Foundational Courses

While not all states use the federally aligned school courses for the exchange of data (SCED codes), we have included the high school SCED codes that are foundational to give an example of the type of computer science courses counted in the Access Report. To see the complete list of courses that are considered foundational for each state, please visit our website: advocacy.code.org/stateofcs

Course Code	Title	Course Code	Title
10011	Computer Science Principles	10156	Computer Programming—Other Language
10012	Exploring Computer Science	10157	AP Computer Science A
10013	PLTW Computer Science Essentials	10158	AP Computer Science AB
10014	PLTW Computer Science A	10159	IB Computer Science
10015	PLTW Computer Science Principles	10160	Particular Topics in Computer Programming
10019	AP Computer Science Principles	10197	Computer Programming—Independent Study
10021	Computer Science Discoveries	10198	Computer Programming—Workplace Experience
10054	Data Systems/Processing	10199	Computer Programming—Other
10151	Business Programming	10205	Computer Gaming and Design
10152	Computer Programming	10206	Mobile Applications
10153	Visual Basic (VB) Programming	21009	Robotics
10154	C++ Programming	02156	Computer Mathematics with Algebra
10155	Java Programming	71009	Robotics

Definition of a High School

For each state, we begin with the NCES list of public and charter high schools and then work closely with the state to narrow the list of schools that should be counted for the Access Report. Every year, this process becomes more collaborative, and thus, our Access Report becomes a more accurate representation of high school computer science. Below are some criteria for determining which schools do and do not count:

Do Count:

- Offers a high school diploma
- Contains at least two high school grades (9-12)
- Offers the majority of students' coursework

Do NOT Count:

- Credit recovery schools
- Junior high schools with grades 6-9 or 7-9
- Career and technical education centers where students spend part of their day
- Schools that do not offer traditional courses

I feel that if states take the bold step of recognizing elementary teachers for their expertise, it paves the way for broader scale CS implementation.

- Dr. Tim Swick, Teacher, Sandlapper Elementary, Columbia, SC

Definition of Student Groups

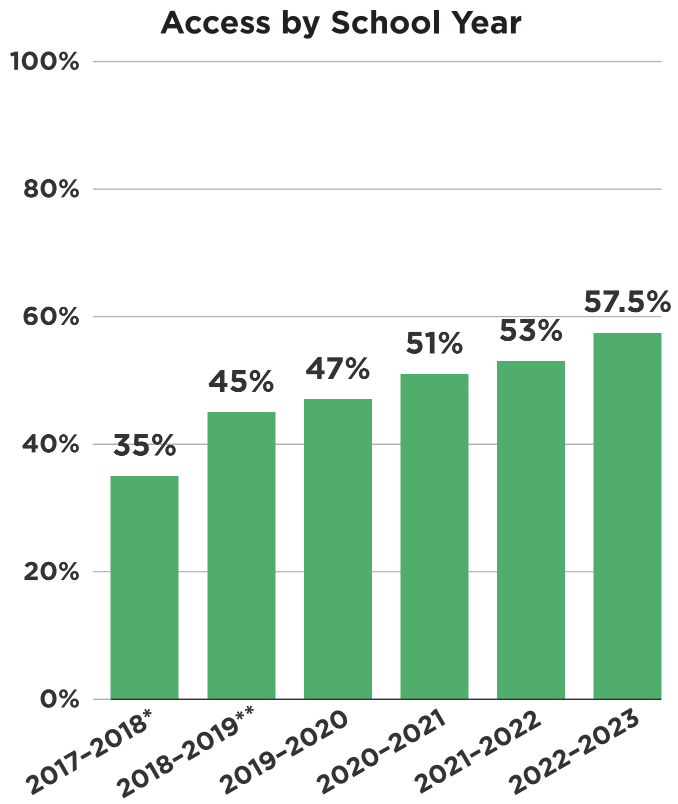
Through strong collaboration we are able to report on extensive student data from many specific student groups in relation to computer science education. Whenever possible, we try to identify the specific student group we are referencing rather than combining groups. However, when this is not feasible we use the term "historically underrepresented student groups," which for this report refers to young women and girls, Black students, Hispanic students, Native American students, Pacific Islander students, students with disabilities, multilingual students, economically disadvantaged students, students from rural areas, students from urban areas and students who attend smaller schools. While there are certainly more student groups that have historically been underrepresented in computer science, we do not have data on additional groups. Every state has a unique student population and context; we encourage stakeholders to reflect on which student groups have been historically underrepresented in their state and should be prioritized in future computer science initiatives.

Most of my students and their families feel that computer science is for city students and also for those who already have a high educational family background or have enough family to pay for college.

- Pradip Misra, Bagdad Unified School District, Arizona

Access to Foundational Computer Science Courses in High School

Across the country, 57.5% of public high schools offer at least one foundational computer science course; in 2022, the percentage was 53%. This is the largest growth we have seen in the last five years due to an increasing number of schools offering computer science and greater collaboration and input from state education departments to ensure high-quality data. While states' progress in ensuring access to courses is tremendous and should not be overlooked, millions of students still have no option to take foundational computer science because their school does not offer even one course. Students without access are more likely to be from historically underrepresented groups.



*Based on 24 states
**Based on 39 states

I truly feel that computer science is an effective way for all students to develop coding skills and problem-solving that are going to be useful in their lives.

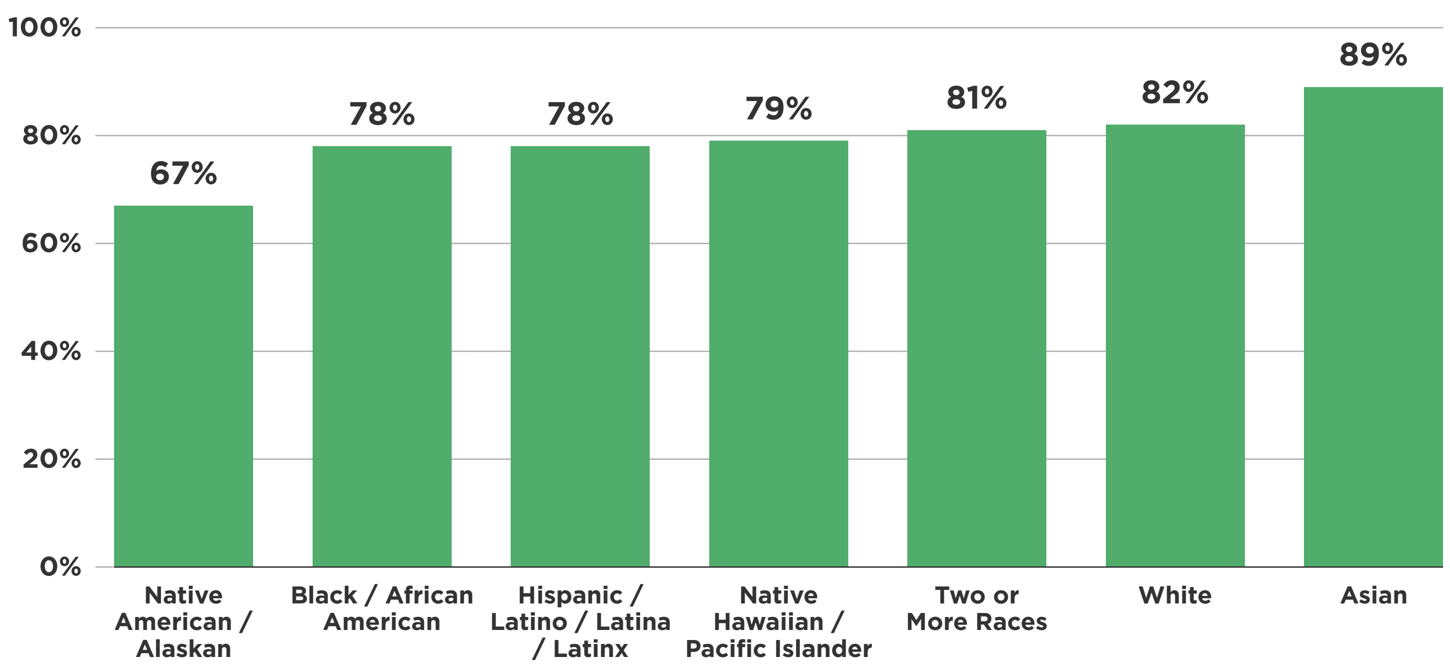
- Tara Vodopich, 3rd Grade Teacher, Bellingham School District, Washington

Access to Foundational Computer Science by Race and Ethnicity

Generally, students from racial and ethnic groups historically excluded from computer science are less likely to attend a school that offers it, especially Black/African American students, Hispanic/Latino/Latina/Latinx students, and Native American/Alaskan students. **While 89% of Asian students and 82% of white students have access to foundational computer science courses, only 78% of Black, 78% of Hispanic, and 67% of Native American students have access.** This gap does appear to be slowly closing, with each student group having greater access this year than last. To continue this positive trajectory, policy, advocacy, professional development, and research need to address the systems that create barriers to historically marginalized students. Utilizing state data to identify which subpopulations of students are absent from computer science courses is central to designing strategies to reach all students.

Many states have already closed this access gap. In Alabama, Arkansas, Georgia, Indiana, Kentucky, Maryland, Nevada, New Hampshire, New Jersey, South Carolina, and Utah, students of all racial and ethnic groups are similarly likely to attend a school that offers foundational computer science*. However, it is important to note that ensuring access is just one component of striving toward educational equity.

Access to Computer Science by Race and Ethnicity



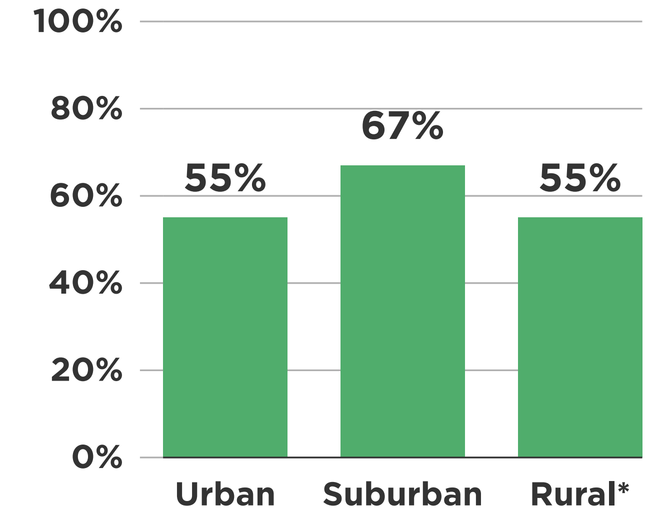
Access to Foundational Computer Science by Geography

Suburban schools continue to be more likely than urban and rural schools to offer foundational computer science courses. **67% of suburban schools offer foundational computer science, but only 55% of rural schools and 55% of urban schools offer courses.** While more schools in each geographic region are teaching this year compared to last year, the gap remains consistent, with suburban schools about 1.2 times more likely to offer foundational computer science than urban or rural schools. Nationally, urban and rural schools offer computer science at the same rate, but this is not true for all states. In 31 states, urban schools are more likely than rural schools to offer foundational computer science. For specific details on your state and the impact of geography, see page 51.

Access to Foundational Computer Science by School Size

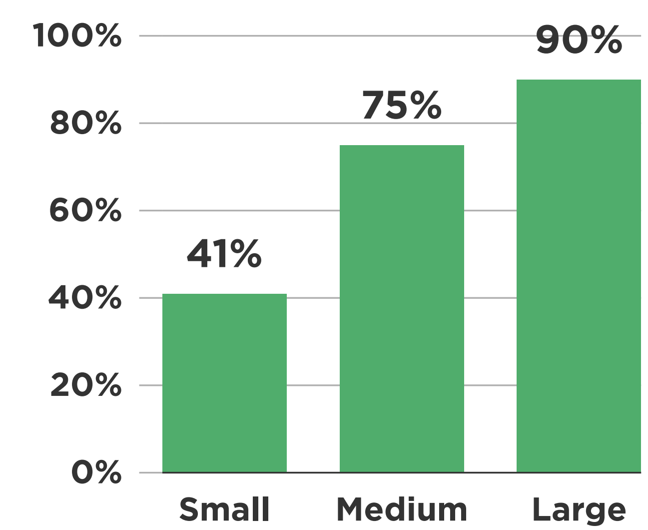
Large schools (more than 1,200 students) are 2.2 times more likely to offer foundational computer science than small schools (less than 500 students). **90% of large schools offer foundational computer science, as compared to 75% of medium schools and only 41% of small schools.** See page 28 for more details about the impact of school size.

Access by Geography



**In this report, town and rural school designations from NCES Education Demographic and Geographic are combined as rural schools*

Access by School Size



*In these states, at least 90% of students of all racial and ethnic groups attend a school that offers foundational computer science.

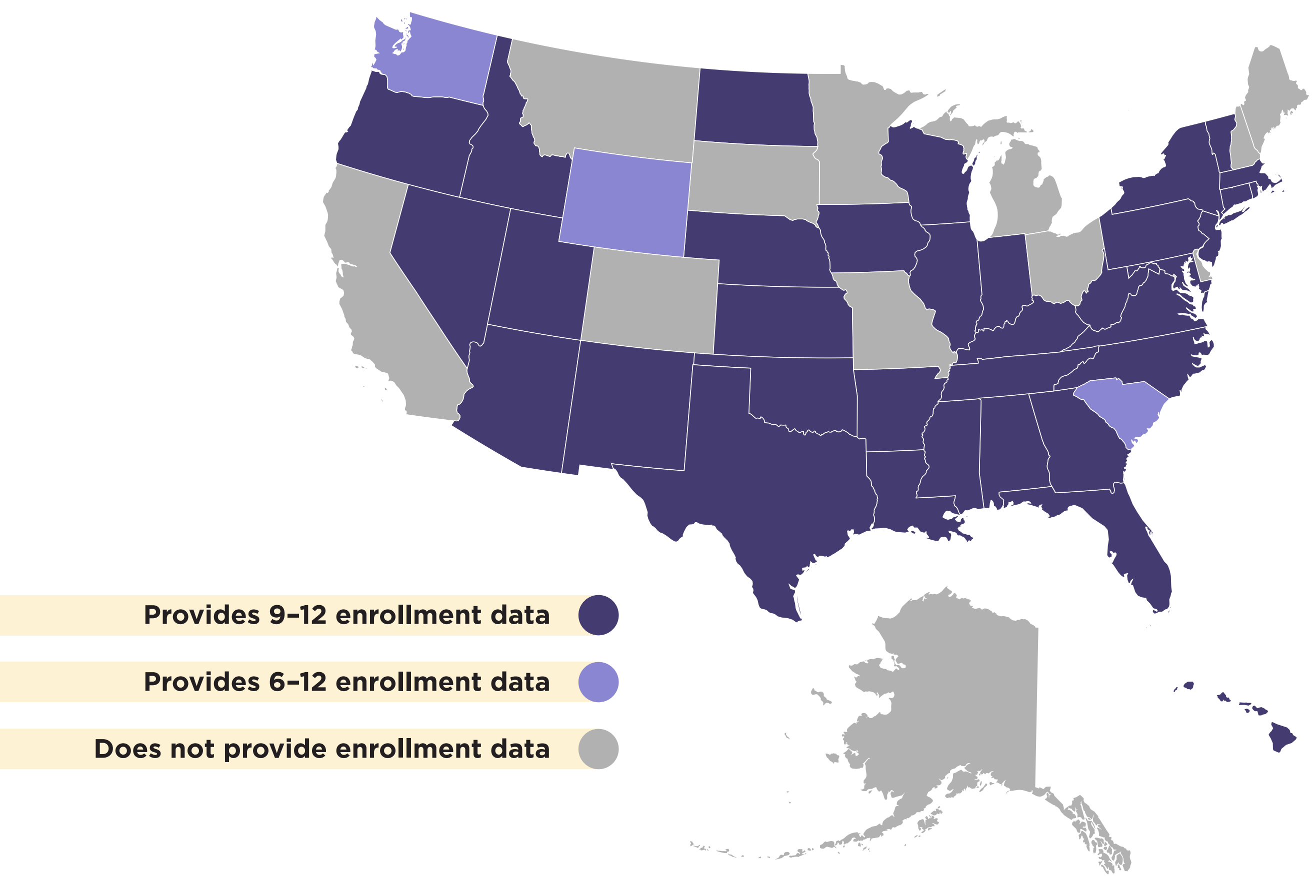
Computer Science Participation Report

The Computer Science Participation Report identifies enrollment trends in foundational computer science. This data is crucial because a student having access to computer science courses is not the same as a student actually enrolling in the course. Several years of data have shown that **access is necessary but not sufficient to ensure representative enrollment**. While we get access data from all states, this is not the case for participation data; we encourage all states to prioritize collecting student enrollment data.

Participation in Foundational Computer Science Courses in High School

Across 35 states* with high school enrollment data, 5.8% of students were enrolled in foundational computer science this past school year (2022-2023). While we continue to see this number increasing yearly, participation remains extremely low. We do not yet have the ability to determine the percentage of students who take computer science during their entire high school career; however, if all states implemented a graduation requirement, we would expect about 25% of high school students to take computer science courses each year. If computer science remains an elective course, the majority of students will not have the opportunity to learn this crucial subject. Without a graduation requirement, participation in computer science does not reach all students equally. Additionally, student experience must be taken into account when introducing requirements. Even when all students are taking computer science, positive affirming experiences are not guaranteed for every student. While it can be hard to collect data on student experiences, we all must commit to ensuring that computer science classrooms are inclusive and welcoming for students of all identities.

Across 35 states with high school enrollment data, 5.8% of students are enrolled in foundational computer science.



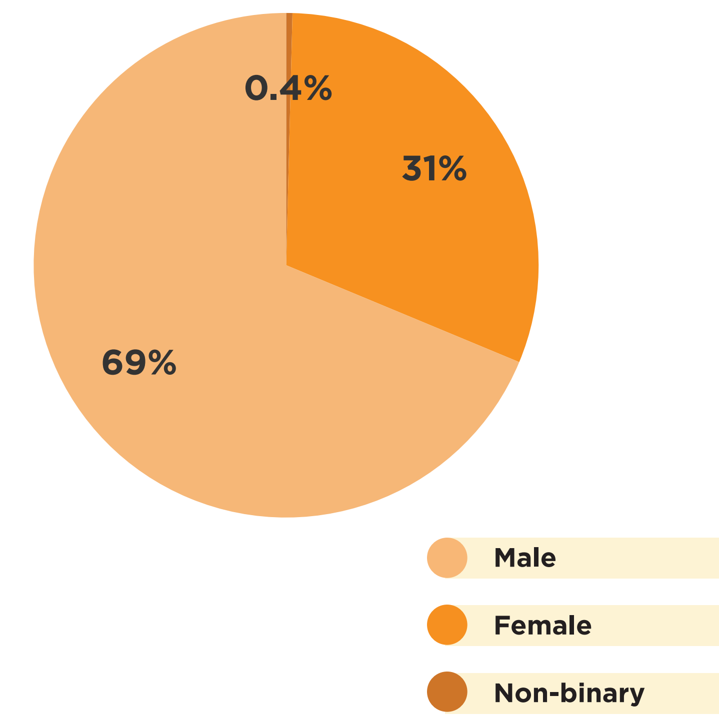
*The following states do not provide statewide enrollment: AK, CA, CO, DE, DC, ME, MI, MN, MO, MT, NH, OH, SD. The following states provided combined middle school and high school data and therefore not included in the national roll-up but their data can be viewed on the state pages: SC, WA, WY

> For the last six years, I had the honor of being the first-ever African American female computer science teacher at an all-girls African American PreK-8 school. It matters to my students that I both share a similar identity and that I allow them to express their own identities as unique individuals.
>
> **- Carla Neely, CS Teacher, Cleveland Metropolitan School District, Ohio**

Participation in Foundational Computer Science by Gender

Over the last three years, **the percentage of young women enrolled in foundational computer science nationally has remained around 31%.** Young men are twice as likely to take foundational computer science as young women. It is also important to note that we do not have national intersectional data such as race and gender. We do have some state-specific data to suggest that further disparities exist for young women of color[22].

The data from states with established graduation requirements shows these statistics can change. In South Carolina, 47% of students taking computer science are female. In Arkansas, 43% of 9th-grade students taking computer science are female; this is the first class the state's computer science graduation requirement would affect. The data suggests that passing the graduation requirement and enacting policies that ensure equal access will help minimize disparities in computer science access.



Resources to Help Improve Students' Experiences

- National Center for Women & Information Technology resources[23]
- Miscrosoft's Guide on Inclusive Computing[24]
- AccessCSforAll resources[25]
- CSTA's Equity Fellows[26]
- The ECEP Alliance Scaling Inclusive Pedagogy (ScIP) Course[27]

Participation in Foundational Computer Science by Race and Ethnicity

Over the last three years of data, participation by race and ethnicity has been fairly consistent:

- Black/African American, Native Hawaiian, multiracial students, and white students are proportionally represented*;
- Asian students are overrepresented compared to their population; and
- Hispanic/Latino/Latina/Latinx and Native American/Alaskan students are underrepresented compared to their population.

Unless explicit attention is paid to the participation gaps for Native American/Alaskan students, the relatively low access rate for these students will likely worsen. Increasing access to computer science courses in tribal schools and developing culturally relevant curriculum are two actions that could address these gaps.

Hispanic/Latino/Latina/Latinx students have the same access rate as Black students and Native Hawaiian students and yet are much more underrepresented. There needs to be more research to understand the reasons for this persistent gap and more resources devoted to ensuring these students can enroll and be successful in foundational computer science courses.

** This year white students are slightly overrepresented*

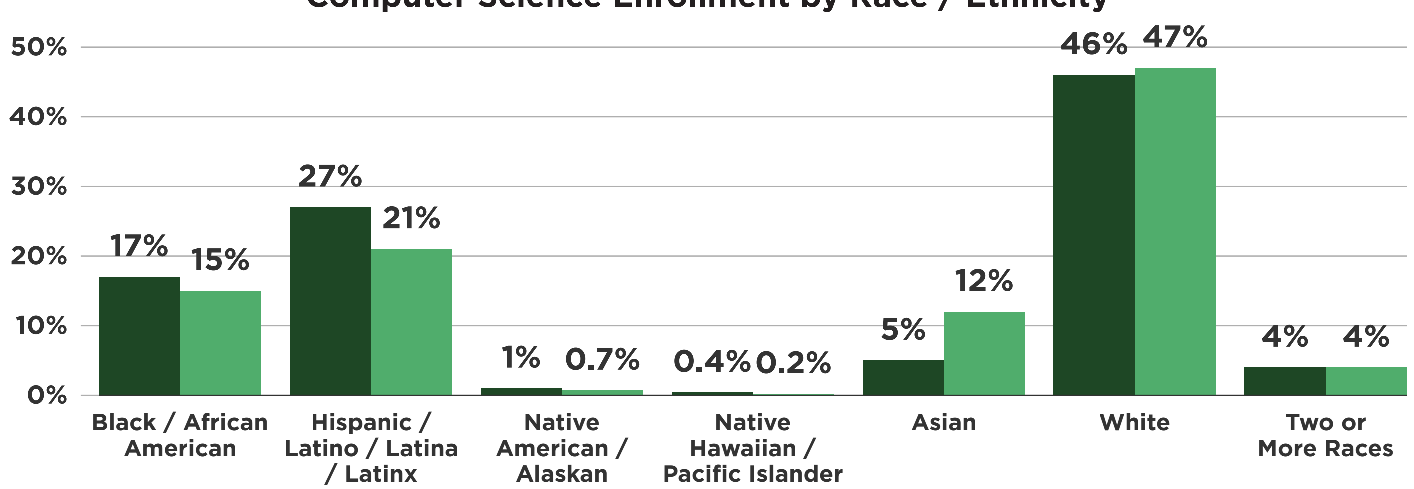
"It's not enough for a school to simply offer these students computer science classes—teachers like Noriega (computer science teacher in Los Angeles) are working to tear down the invisible mental and cultural barriers that keep Latino students from considering the field altogether."

- EdSurge[28]

I make every effort to have my class be more than inside my room: posting photos in the hall, inviting students to publish games online and enter contests, and celebrating my students on social media.

- Julie York, Career Preparation & Technology Department Chair, South Portland School District, Maine

Computer Science Enrollment by Race / Ethnicity



National Demographics**

Participation in Foundational Courses

***percent of each race/ethnicity calculated across 35 states for schools with high school grand bands included in the access report*

Access and Participation in Foundational Computer Science on Native American Reservations

Preliminary data suggests that foundational computer science is offered in 16% of the 174 schools on Native American reservations (including those operated by the Bureau of Indian Education and those operated by local tribal school boards). This data has been primarily gathered through teacher surveys; we acknowledge that it is an imperfect data collection system and are working with local partners to collect more robust data. This preliminary data does align with the data from our broader access report, which suggests that **Native American students are the least likely demographic to attend a school that offers computer science**. To address this gap, it is of utmost importance to prioritize initiatives aimed at increasing the accessibility of computer science education within educational institutions attended by Native American students, including tribal schools. Furthermore, ensuring that Native American students receive the necessary encouragement and support to thrive in this field is paramount. Equally imperative is the cultivation of relationships across Native American communities, educational institutions, and organizations to advocate for computer science as a viable and promising career path.

Students who are Native American need to have teachers that are sensitive to the tradition and history of the people. I include native language, examples, and history while I am teaching. At the same time, I recognize that no one person is the same as another and each student needs to have the tools and experiences they need to be able to grow.

- Richard Winn, Library/Media Specialist at Wyoming Indian High School, Wyoming

Fond du Lac Initiative

The Fond du Lac Ojibwe School in Minnesota, with support from NSF and the National Center for Computer Science Education, continues to develop a K–12 pathway in computer science. Recent progress includes refining a scope and sequence for CS learning, leading professional development for staff, and establishing a room at the school dedicated to CS education.

"More than 170 educators and administrators met July 9-11 at Fort Lewis College to work with Native American students in the Four Corners states. The group discussed the best practices around computer science education for Native American educators and Native American students grades K-12. The goal of the conference was to build a community of Indigenous computer science teachers and those teaching Indigenous students while connecting computer science to culture and language. Organizers initially planned for 50 people to attend the conference, but surpassed registration of 175 participants."

- Native News Online[29]

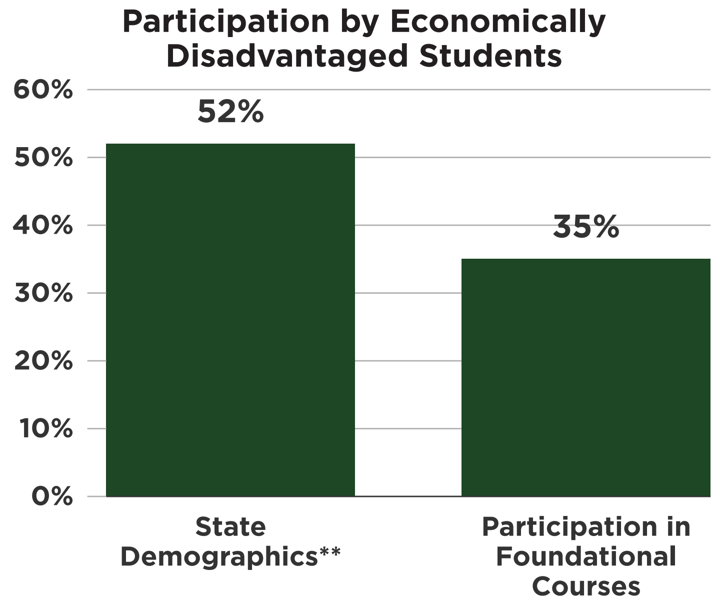
> I believe the positive results in closing opportunity gaps for economically disadvantaged students in Washington can be attributed largely to three key components: legislation that actively recognizes the importance of equitably providing support and opportunities to all students, the values and equity-driven mission that OSPI uphold as the state public education agency, and the hard work of our external partners and educators across the state of Washington.
>
> **- Terron Ishihara, Computer Science Program Supervisors, Washington Office of Superintendent of Public Instruction**

Participation in Foundational Computer Science for Economically Disadvantaged Students

We continue to see a large participation gap for economically disadvantaged students nationwide. **Across states with data, 52% of students are considered economically disadvantaged, and only 34% of students enrolled in foundational computer science classes are economically disadvantaged.** There are likely many reasons for this, though we know that schools with a more significant percentage of students who qualify for free and reduced lunch are less likely to offer computer science. Therefore, some of this gap can be attributed to a lack of computer science courses, but it is likely more than an access issue. It is also important to note that the definition of economically disadvantaged may differ for individual states; please see our methodology section on page 109 to gain a better understanding of how we measure this indicator.

Stereotypes around who belongs in a computer science class continue to be pervasive. While such barriers can affect all students, economically disadvantaged students are less likely to attend a 4-year college[30]. They may not be given the opportunity to take a course that is viewed as advanced. In order to recruit and retain economically disadvantaged students, educators can develop recruitment strategies that meet students where they are, consider ways to engage students who do not have prerequisites and build an inclusive classroom culture. Nine states* have achieved this by offering computer science at the majority of their schools. However, two states have achieved parity despite more than half of their schools not teaching computer science: Louisiana, and Washington. We encourage all states to prioritize equitable enrollment in computer science classes, which, first and foremost, requires robust data collection.

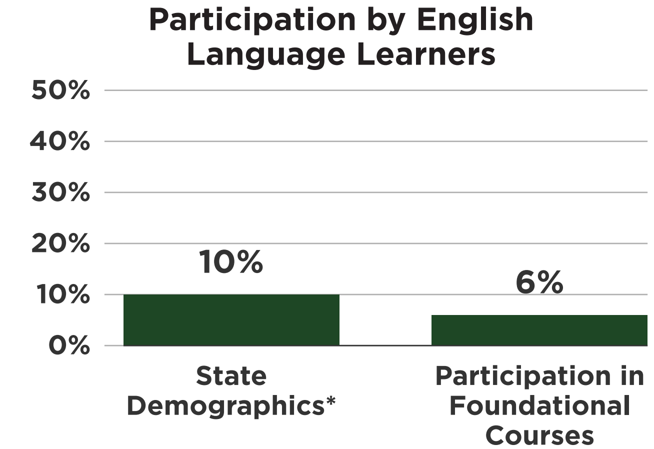
*AL, AR, KY, MD, MA, MS, OR, RI, VT



**calculated across 33 states

Participation in Foundational Computer Science by English Language Learners

Over the last three years of data, participation by English language learners has remained fairly consistent. **Across states with data, 10% of students are English language learners, only 6% of students enrolled in foundational computer science classes are English language learners.** There certainly can be challenges to providing computer science instruction to these learners; if a student receives a large amount of dedicated English instruction, sometimes there may be limited room to take electives. However, South Carolina has shown through their graduation requirement that it is certainly possible for English language learners to be proportionally represented in computer science.



*calculated across 32 states

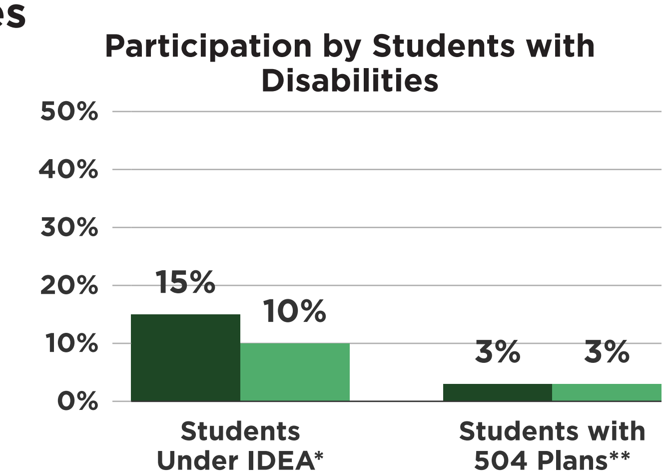
As part of its Computer Science for English Learners (CSforEL) project, CSTA and UCSD have published guidance and resources for school leaders, counselors, and teachers:[31]

- Promoting English Learner Students' Access to High School Computer Science Courses
- CSforEL: Why Access is Critical and What We Can Do to Improve

Participation in Foundational Computer Science for Students with Disabilities

Students with disabilities face significant and wide-ranging barriers in learning computer science. For example, blind students frequently encounter inaccessible programming tools, and Deaf students may encounter uncaptioned videos and might benefit from videos in ASL, visual content and hands-on activities. Students with disabilities are supported in two main ways: 504 plans provide accommodations to meet the same educational goals as their peers, whereas individualized education plans (IEPs) may provide both accommodations and modifications to meet students' needs.

Students with 504 plans continue to be well-represented in foundational computer science, whereas students served under IDEA remain underrepresented. There are many organizations dedicated to making sure computer science classes are accessible for all learners; however, there is still much work to do to ensure all students get this opportunity.



*calculated across 33 states
**calculated across 23 states

State Demographics
Participation in Foundational Courses

> There is a growing awareness of the imperative to ensure that students with disabilities can fully participate in computer science education. As CS education becomes more prevalent, the barriers for students with disabilities become more obvious and affect increasing numbers of students.
>
> **- Elissa Hozore, Computer Science Specialist, Maryland Department of Education**

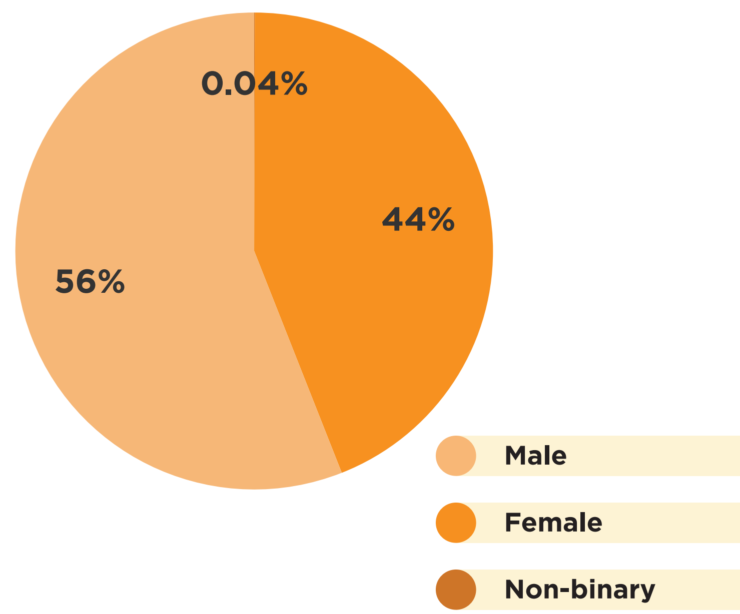
Definition of a Middle School

Schools that have 7th or 8th grades are considered middle schools. Additionally, there are some stand-alone 9th-grade schools, we also consider those middle schools. Schools that have the highest grade of 6th grade are considered elementary schools.

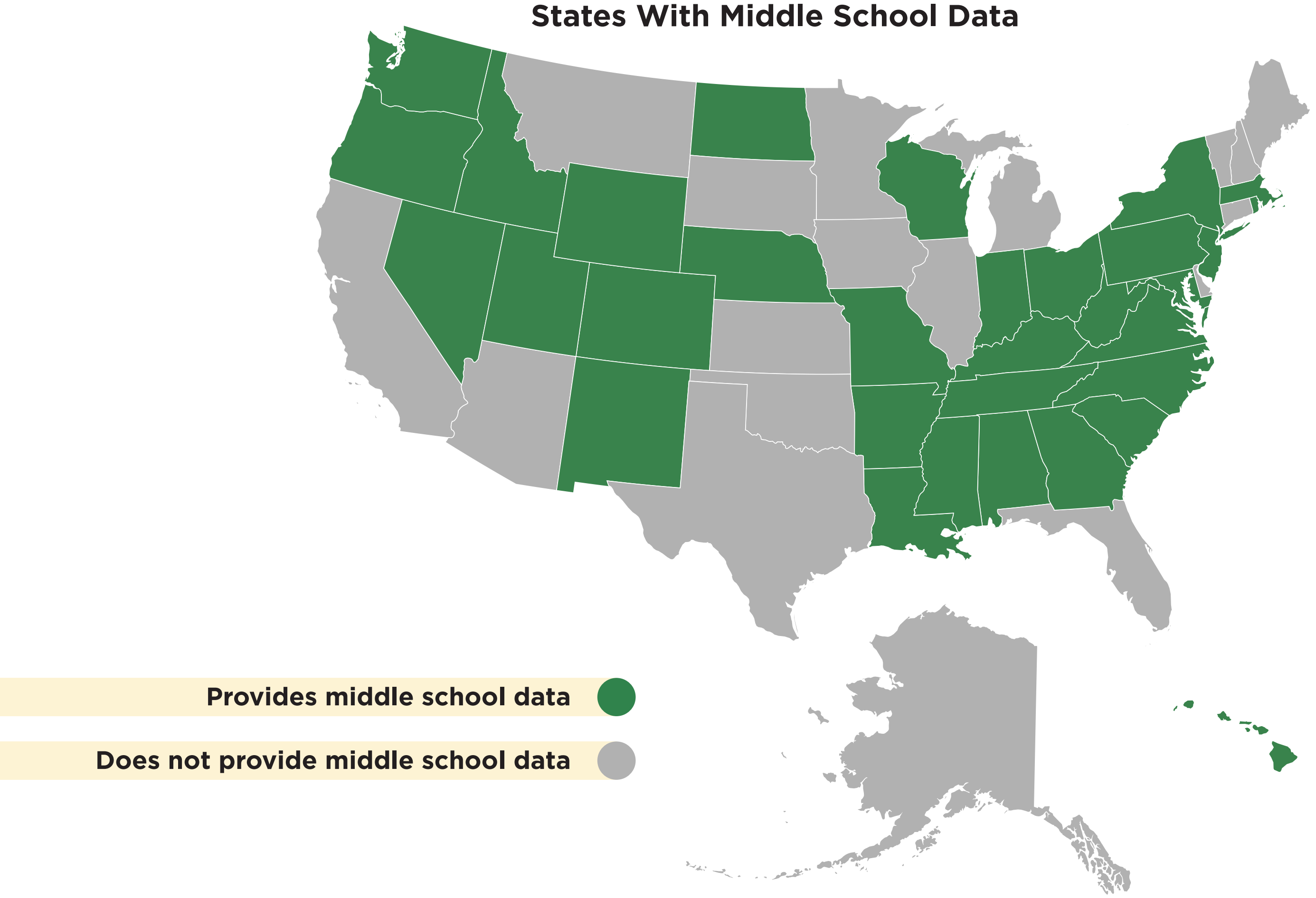
Participation in Foundational Computer Science in Middle School

Computer science is becoming increasingly common in middle schools, and more states are reporting data. This year, data received from 31 states indicates that **at least 45%* of public middle schools teach foundational computer science.** It should be noted that even as more middle schools report data, we do not have 100% of schools reporting, as is the case with the high school data. We encourage all states to require all middle schools to report course offering data so we can continue to improve the accuracy of our reporting. This year, 19 of these 31 states were also able to provide middle school-specific enrollment. Across these 19 states, 6.4% of middle school students are enrolled in foundational computer science.

Participation in Middle School Computer Science by Gender



States With Middle School Data



*73% of middle schools reported course offerings and among those schools, 45% reported teaching foundational computer science

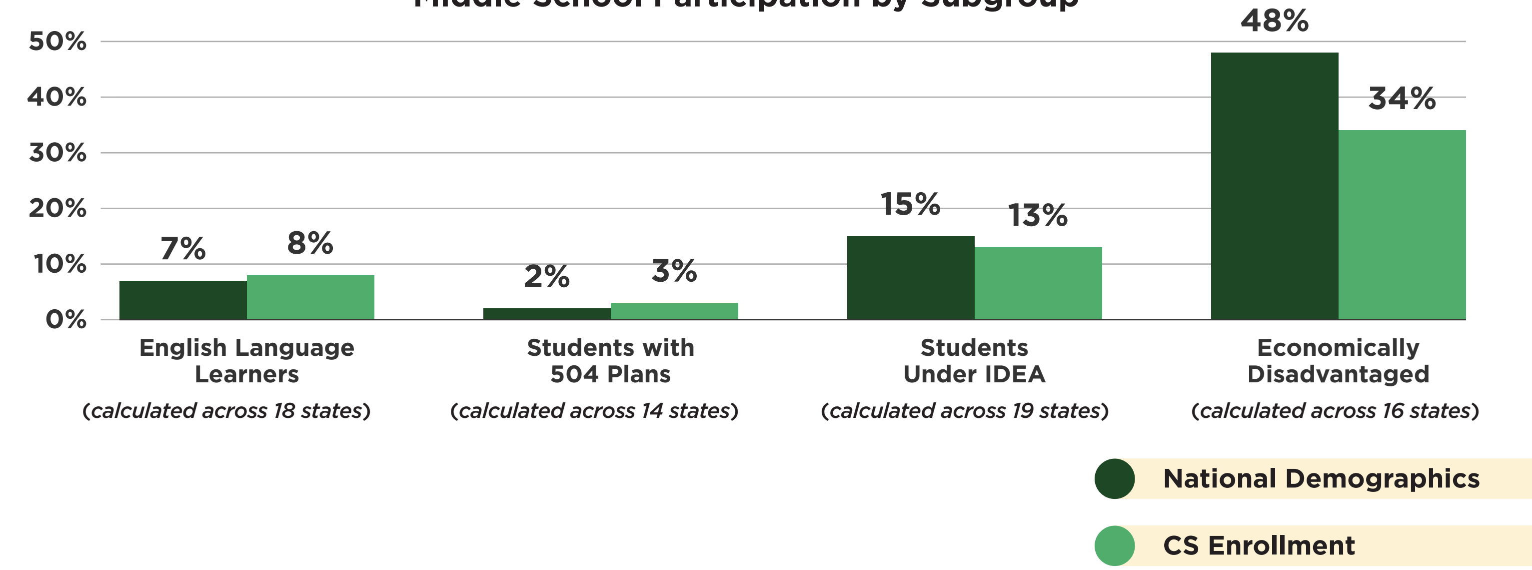
Across all demographics, middle school computer science is more representative than high school computer science. This is perhaps most notable with gender: **at the middle school level, 44% of enrolled students are young women, compared with only 31% at the high school level.** There is a need for more research to understand these enrollment dynamics and how they may, in turn, affect high school enrollment.

It is important to note that while the participation gap for Native American and Hispanic students is lesser at the middle school level, it does still exist. This highlights the need for continued focus on underrepresented student populations at all grade levels.

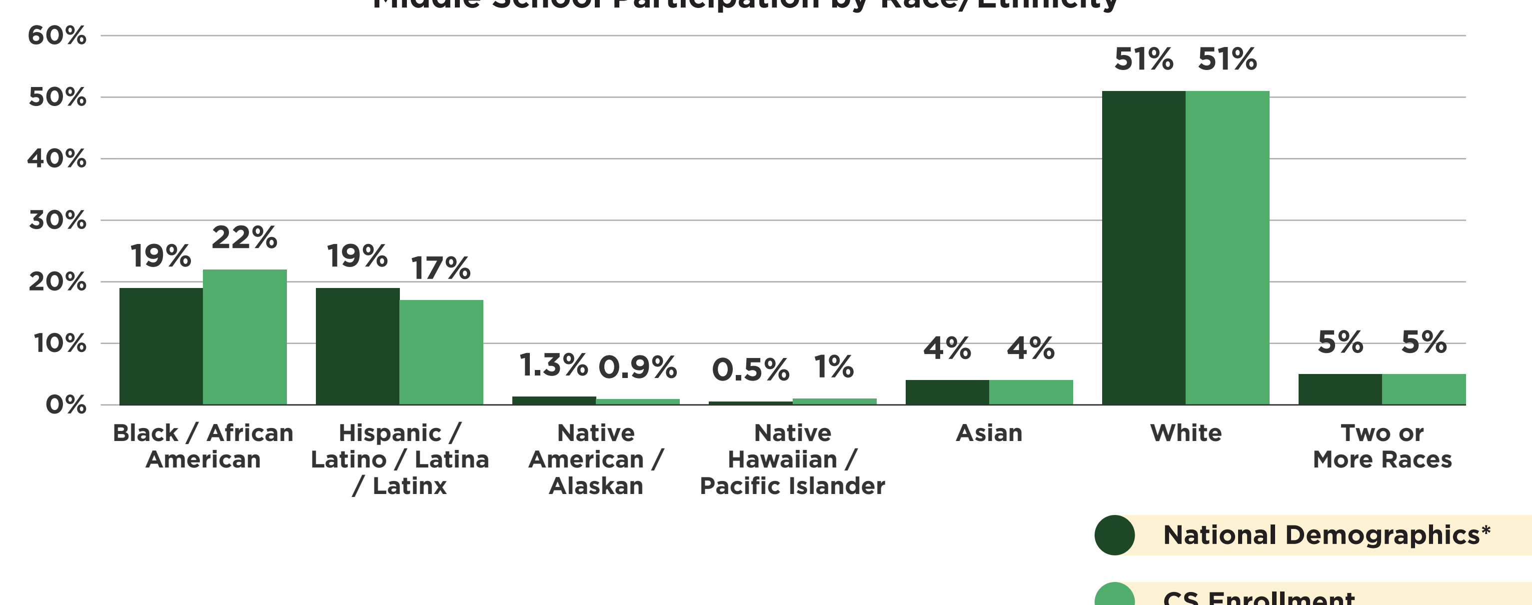
Other compairsons with high school participation:

- For English Language Learners, there is no participation gap, unlike high school enrollment;
- For students with 504 plans, there is no participation gap, which is the same with high school enrollment;
- There is a smaller participation gap for students served under IDEA; and
- There is still a significant gap for economically disadvantaged students

Middle School Participation by Subgroup



Middle School Participation by Race/Ethnicity



* percent of each race/ethnicity calculated across 19 states

Definition of an Elementary School

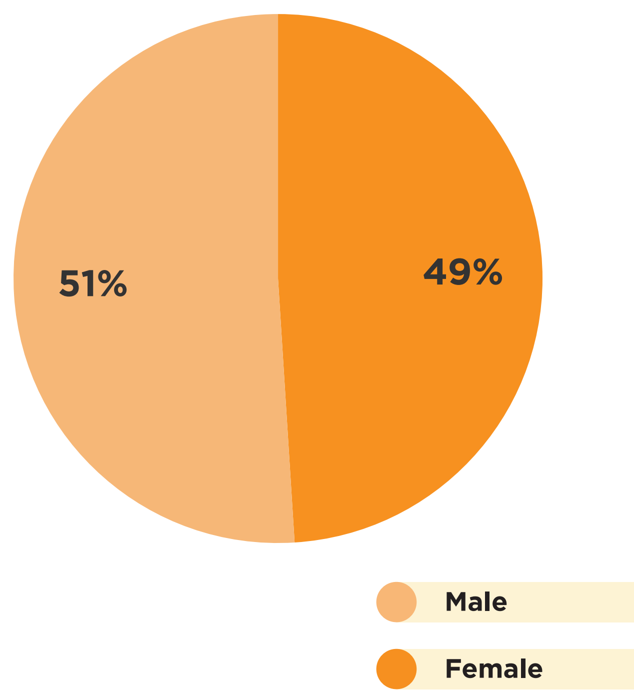
Schools with grades 1st, 2nd, 3rd, 4th, or 5th are considered to be elementary schools. Additionally, a school that has the highest grade of 6th grade is considered an elementary school.

Participation in Foundational Computer Science in Elementary School

Unfortunately, unlike middle school data collection, which has increased, only seven states collect data at the elementary level: Georgia, Hawaii, Indiana, Maryland, Mississippi, Rhode Island, and Tennessee. Several states are ramping up data collection efforts: Massachusetts, Nebraska, New Jersey, Oklahoma, Virginia, West Virginia, and Wisconsin. For many states, data collection can be particularly difficult, given that course codes may not be used at the elementary level. We still encourage states to look for alternative solutions for data collection; without more data, it is harder to measure progress and advocate for more resources dedicated to the elementary level. Across these seven states, **at least 36%* of schools teach foundational computer science,** with 11.3% of elementary students taking foundational computer science.

Generally, across all demographics, **elementary computer science is the most representative.** This is likely because when computer science is offered, it is taught to entire grades rather than as an elective that students have to choose. Native American students are one exception, as they are more underrepresented at elementary levels compared to middle and high school students. Interestingly, English Language Learners appear to be well overrepresented at the elementary school level. Given that this data is only from 45% of schools, it may be that schools reporting data have a larger portion of the state's ELL student population and a smaller portion of the state's Native American student population.

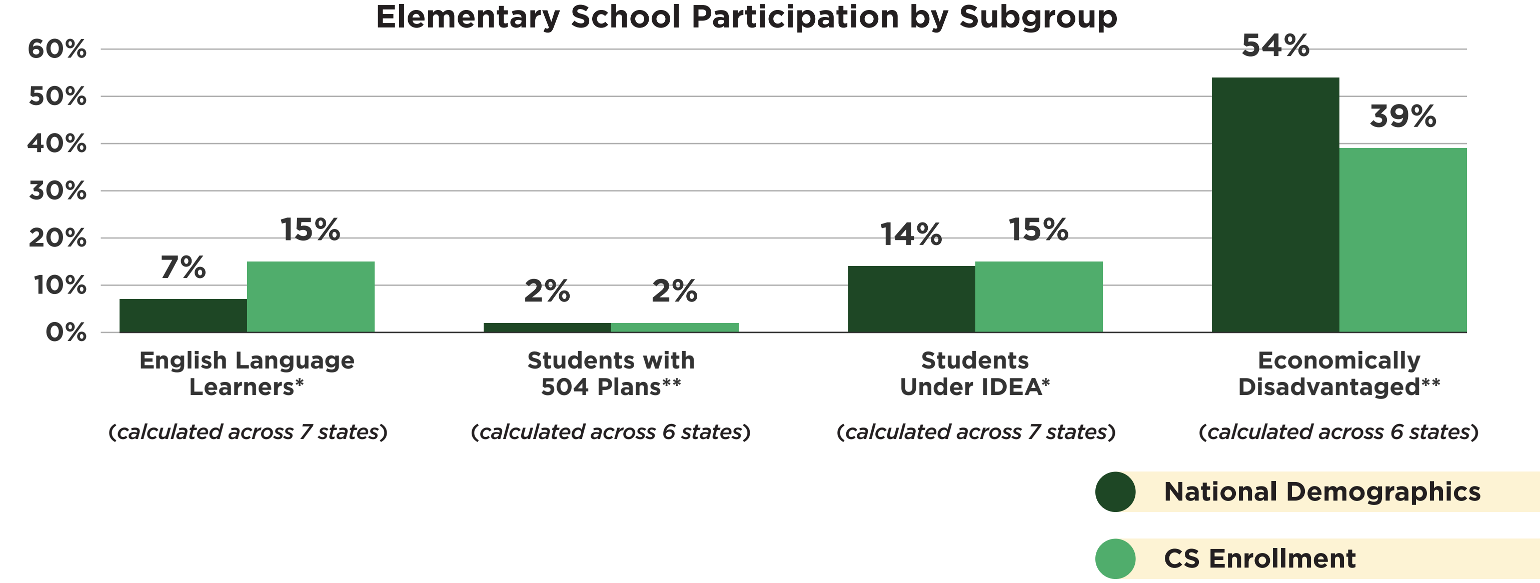
Participation in Elementary Computer Science by Gender



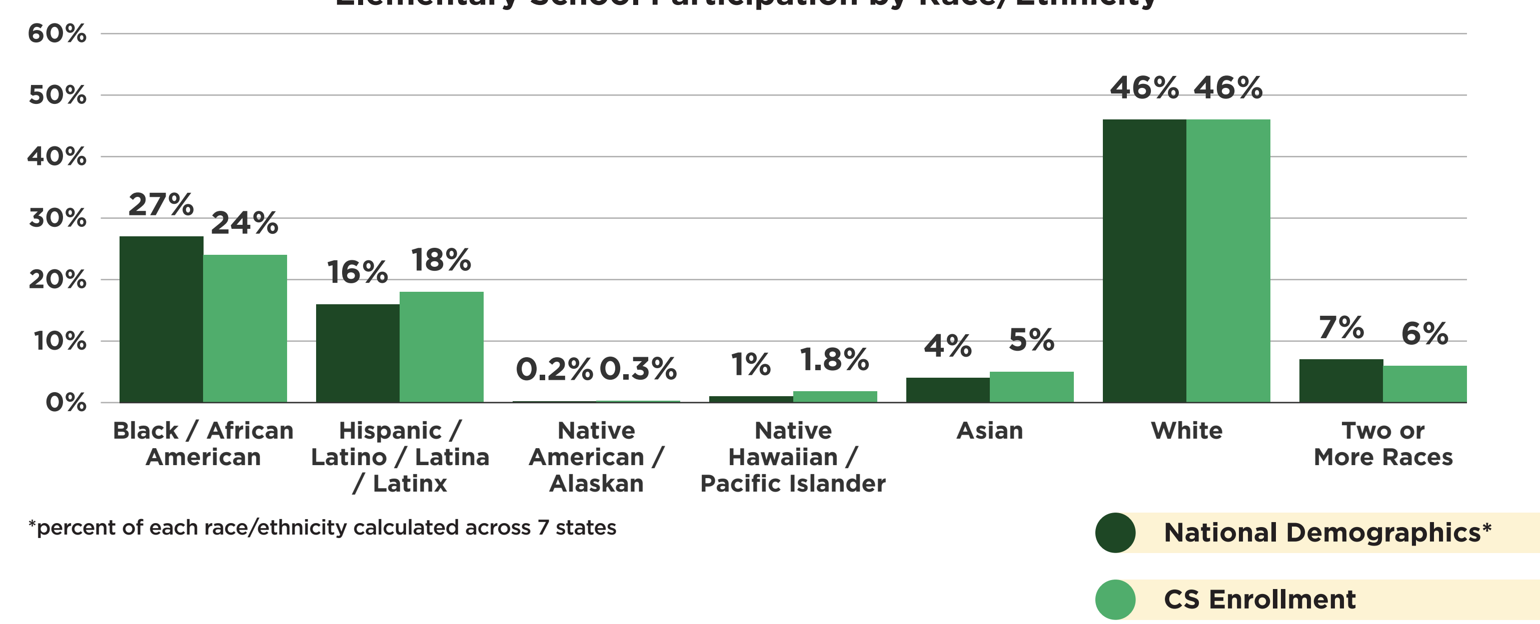
> In order to cultivate students' interest in computer science it needs to start in elementary school. It's important for students to develop a passion for computer science to maintain intrinsic motivation to continue to learn and grow in this field.
>
> **- Tonya Coats, Elementary Teacher, Jurupa Unified School District, California**

**45% of elementary schools reported course offerings, and among those schools, 36% reported teaching foundational computer science*

Elementary School Participation by Subgroup



Elementary School Participation by Race/Ethnicity



*percent of each race/ethnicity calculated across 7 states

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 (CSA) and AP Computer Science Principles (CSP).

AP Computer Science A focuses on problem-solving and object-oriented programming using the Java programming language. College Board examined AP CSA Exam participation by AP CSP and non-AP CSP students with similar prior achievement. Students who took AP CSP are nearly twice as likely to enroll in AP CSA compared to similar students who did not take AP CSP. The gaps for gender and race/ethnicity in AP CSA are greatly reduced for students who also took AP CSP. Notably, Black AP CSP students are three times more likely to later enroll in AP CSA.

Code.org worked 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. This course, curriculum, and corresponding professional development were available to all teachers for the first time in the 2022–2023 school year.

AP Computer Science Principles, launched in the 2016–2017 school year, covers the big ideas of computer science and computational thinking, including algorithms and programming. This course was designed with support from the NSF to explicitly engage students from populations traditionally underrepresented in computer science. Recent studies show that 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.[32]

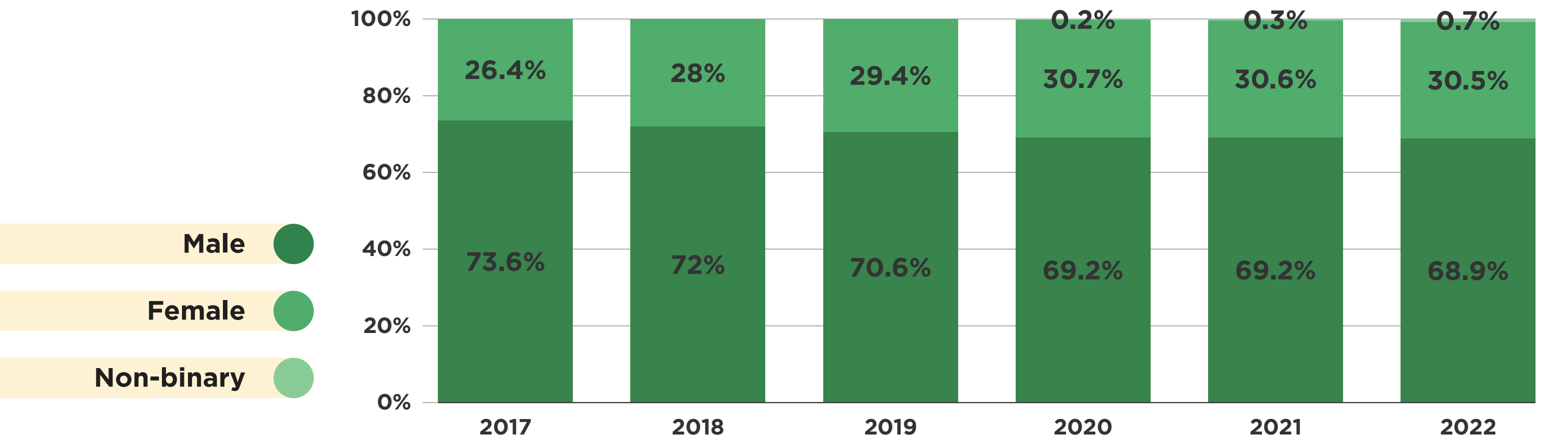
Across both AP computer science courses, **the number of female students taking an AP exam has increased every year since 2017. However, the percentage of female students has plateaued over the last three years.** AP computer science, similar to all foundational computer science classes, shows the challenges of breaking through this 30% mark without a graduation requirement. The College Board recognized 1,105 schools (4% of high schools nationwide) with the AP Computer Science Female Diversity Award for reaching gender parity or higher in exam participation in one of or both computer science courses in the 2021–22 school year. 832 schools received the award in AP Computer Science Principles. 209 schools received the award in AP Computer Science A. 64 schools received the award in both AP computer science courses.

Participation for Native American, Hispanic/Latinx, Black, and Native Hawaiian students has increased yearly since 2017. However, there continues to be a substantial participation gap for all student groups except white, Asian, and multiracial students, differing significantly from enrollment trends for all foundational computer science. School and district leaders must ensure all students are encouraged and supported to take advanced computer science courses such as AP. It is important to note that enrollment is more representative in AP CSP than in AP CSA.

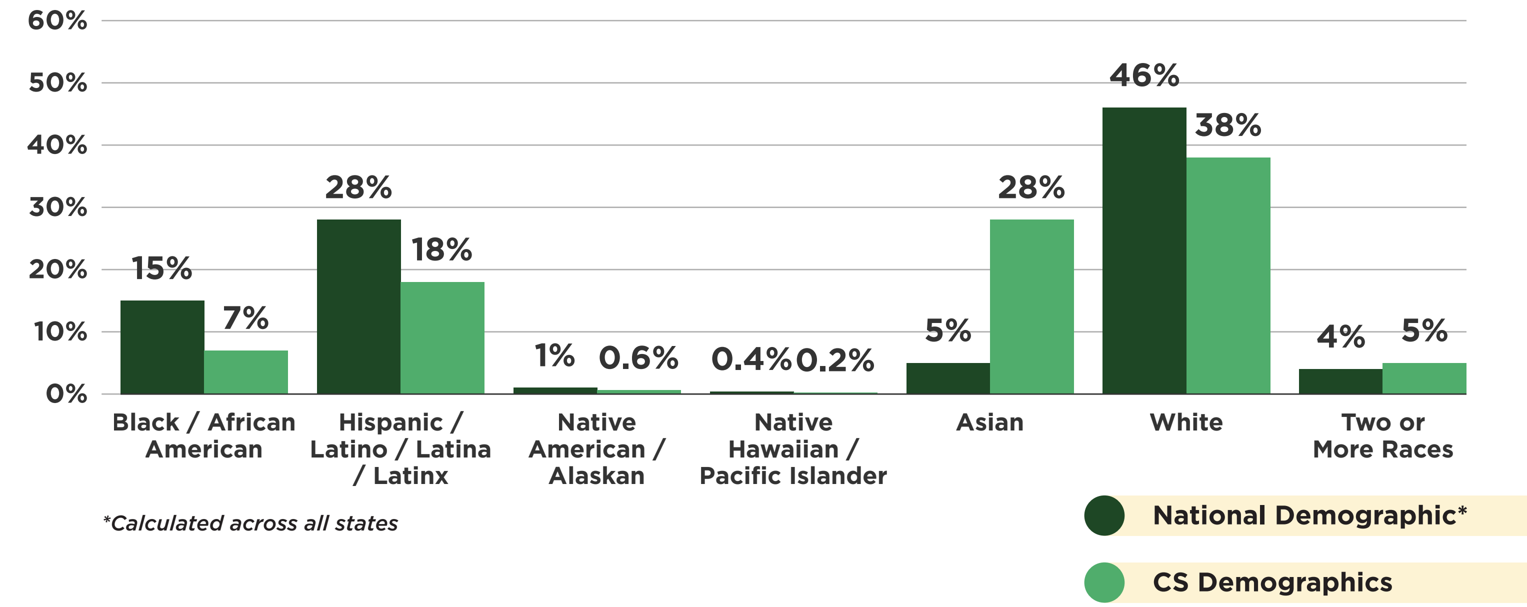
Suggested Policy Strategies

- AP Exam Fee Funding: cover the cost of AP Exam fees for students, especially low-income students.
- Professional Learning Funding: ensure that educators do not face any barriers to teaching AP CS coursework.
- Open Access Policy: remove any hurdles, such as unnecessary prerequisites that inhibit students from enrolling in AP coursework.

AP Computer Science Exam Participation by Gender Over Time

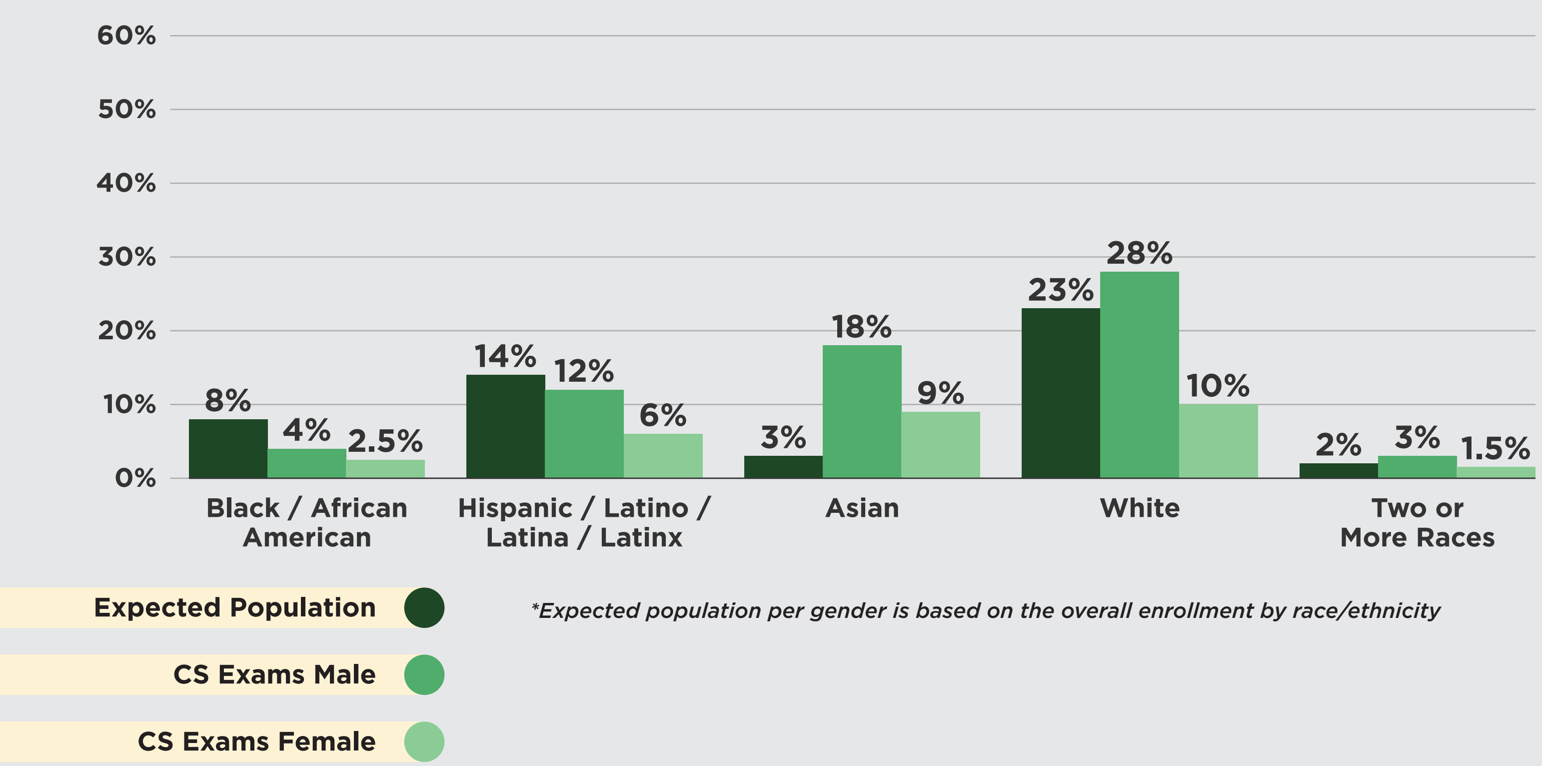


AP Computer Science Exam Participation by Race / Ethnicity



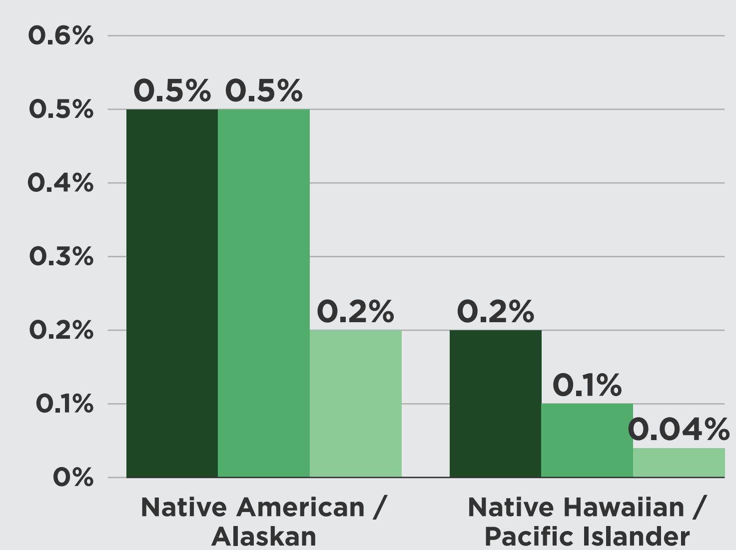
Calculated across all states

AP Computer Science Exam Participation by Gender and Race/Ethnicity



**Expected population per gender is based on the overall enrollment by race/ethnicity*

AP Computer Science Exam Participation by Gender and Race/Ethnicity (continued)



Participation data for the AP computer science exams is disaggregated by gender and race/ethnicity, allowing for a glimpse at intersectional data. Some states have started to collect more intersectional data for all courses, and we encourage all states to continue to invest in robust data collection in order to inform strategies that will engage all students in computer science. Intersectional data should also not be limited to race and gender but should seek to include other data such as poverty indicators, disability status, and English language status. As illuminated by this data, **female students of every race and ethnicity are less represented in AP Computer Science than their male counterparts.**

STATE SUMMARIES

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

- The state's status on each of the ten policies;
- Recommendations for further policy development;
- Data on high schools that offer foundational computer science; and
- Data on student participation in high school computer science.

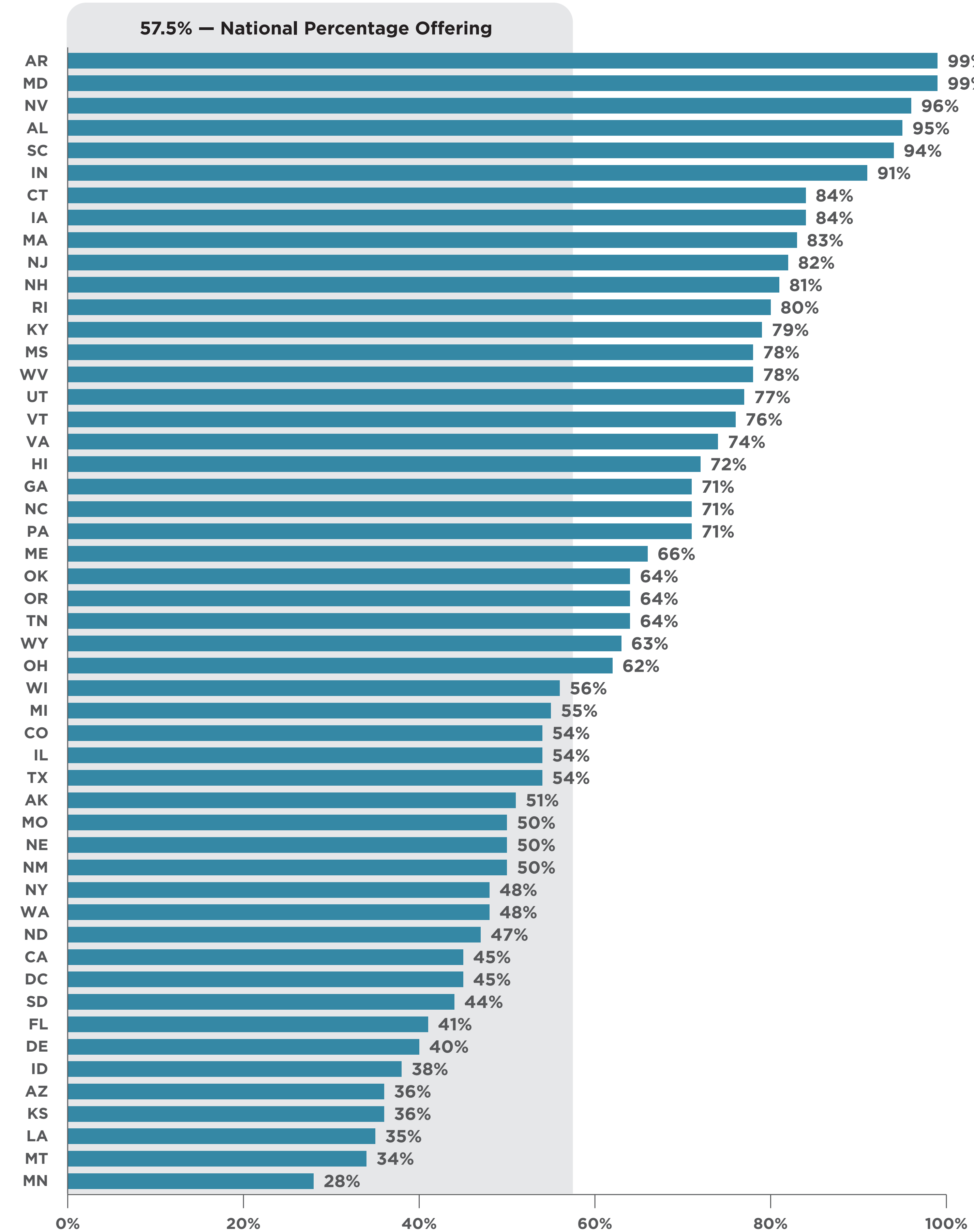
Thank You

A special thank you to all of our partners in helping collecting our state level data: BootUp, Cambridge International Assessment, College Board, SkillsStruck, state education agencies, and TEALS.

Further Information:

- Up-to-date policy information can be viewed at bit.ly/10CSpolicies
- For more access and participation data see the state handouts at advocacy.code.org/stateofcs
- See 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
- Data sources are described in more detail in Appendix 2 and data tables can be viewed in Appendix 3

Percentage of High Schools Offering Computer Science by State



GUIDE TO STATE SUMMARIES

Policy Sliders

These sliders indicate whether the state has each policy in place. Red means no policy, yellow means in progress and green means a policy has been passed. For "Can Count" policy yellow means district decision. See Appendix 1 for the rubric to determine each state's status.

Policy Recommendations

This section describes next policy steps the states should take.

Percentage of public high schools offering foundational computer science

Access by School Year

Shows the percentage of public (including public charter) high schools in the state offering foundational computer science for any of past 6 years in which a full data set was available.

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 School Size

Refers to the percentage of high schools in each category for the most recent school year available.

Small (<500 students)
Medium (501-1200 students)
Large (>1200 students)

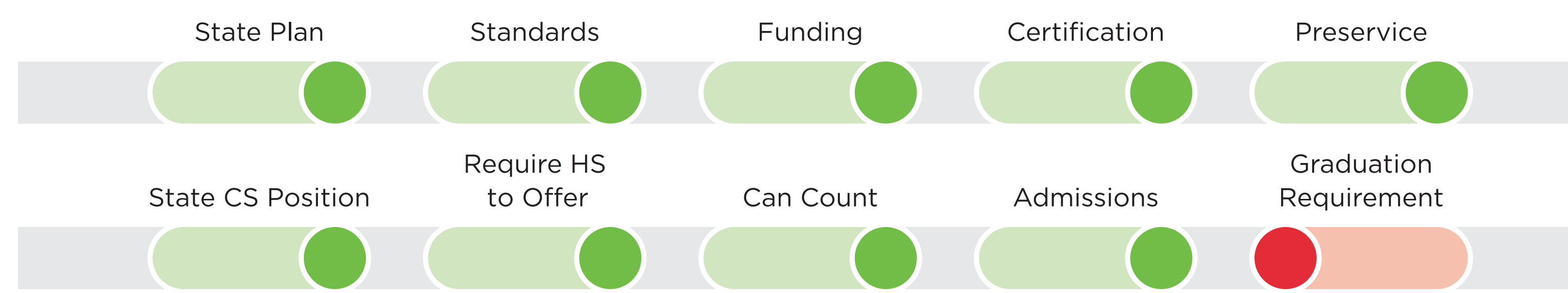
Participation in Foundational Computer Science:

For states that provide participation data, these boxes highlight the percent of students enrolled, the percent of female students enrolled and the largest participation gap in the state based on race/ethnicity.

Participation in AP Computer Science:

For states that do not provide participation data, AP CS data is used. These boxes highlight the percent of female students who took the AP CS exams and the largest participation gap based on race/ethnicity.

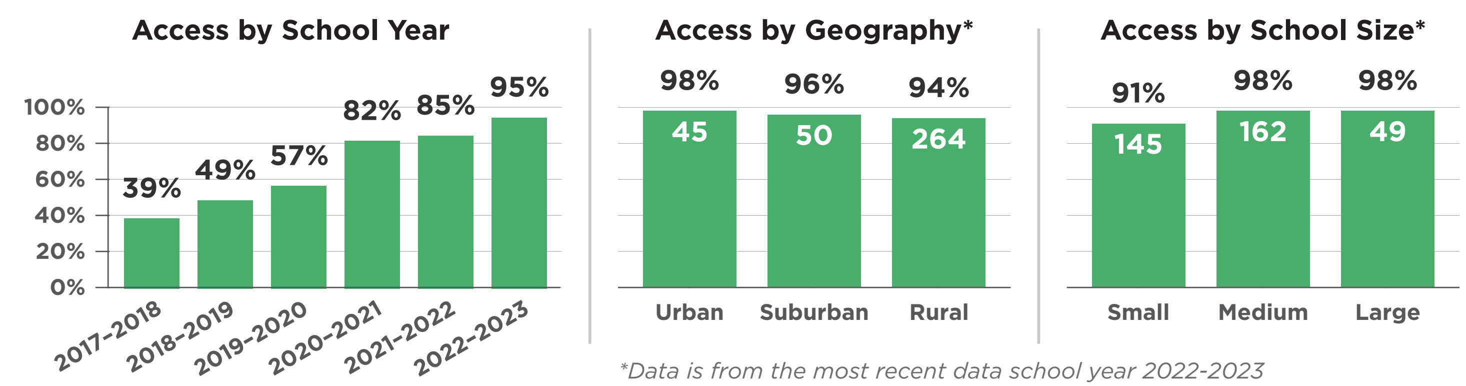
ALABAMA



How Can Alabama Increase Opportunities for Students?

- Alabama should adopt a graduation requirement for all high school students in computer science.
- Alabama should expand its data collection to include K–5 schools.

Percentage of Public High Schools Offering Foundational Computer Science



**Data is from the most recent data school year 2022-2023*

5.7% of high school** students took foundational computer science in 2022-2023

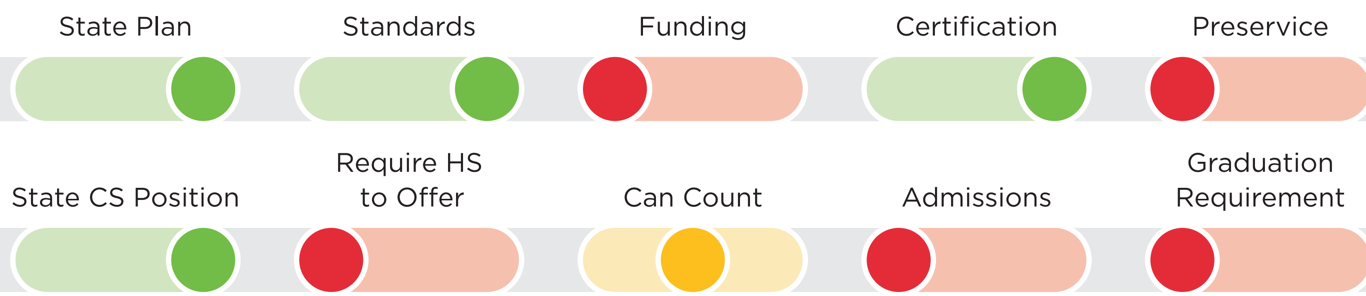
39% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

*** Alabama's participation data includes a small number of middle school students who took a high school level course*

View even more data at: **advocacy.code.org/state-handouts/Alabama.pdf**

ALASKA

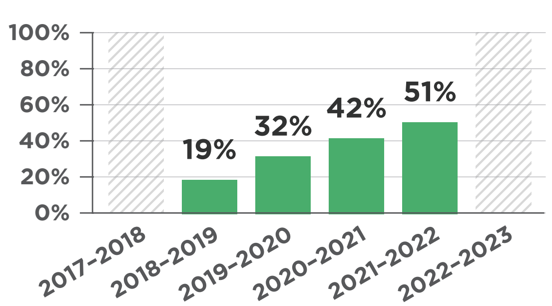


How Can Alaska Increase Opportunities for Students?

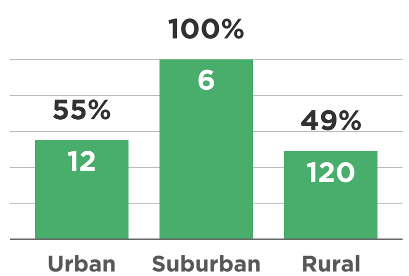
- Alaska should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- Alaska should require all schools to submit computer science course offerings and enrollment to the Department of Education & Early Development, and this data should be made publicly available.

Percentage of Public High Schools Offering Foundational Computer Science

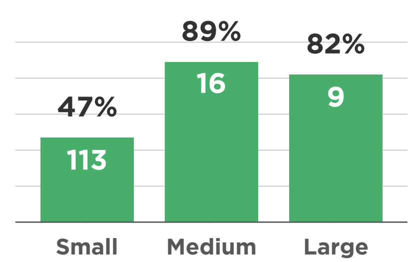
Access by School Year



Access by Geography*



Access by School Size*



Data is from the most recent data school year 2021-2022

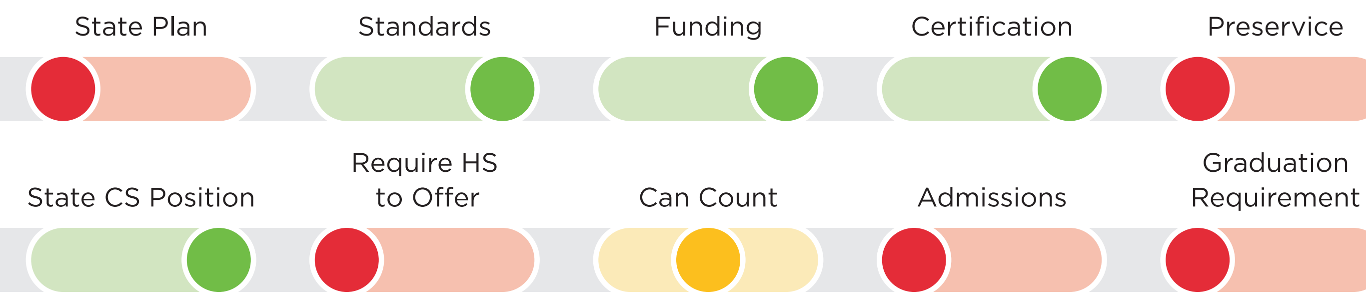
Course enrollment data for all foundational computer science courses is not available from Alaska. Nationally, we know that participation in all foundational computer science courses is broader than AP participation.

26% of students who took AP computer science exams were female

Although Native Americans students make up 30% of the population, **only 4** Native American student took AP CS exams

View even more data at: **advocacy.code.org/state-handouts/Alaska.pdf**

ARIZONA

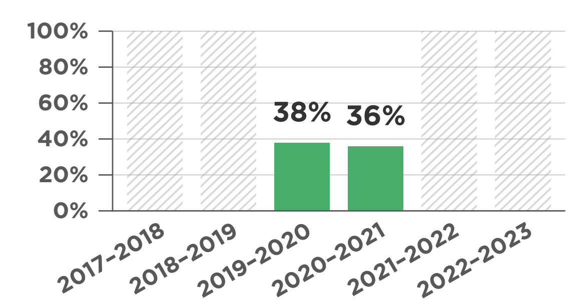


How Can Arizona Increase Opportunities for Students?

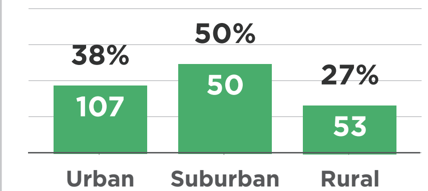
- Arizona should publish a state plan for computer science education statewide.
- Arizona should require all high schools to offer at least one computer science course.
- Arizona should prioritize publishing computer science course offerings and enrollment.

Percentage of Public High Schools Offering Foundational Computer Science

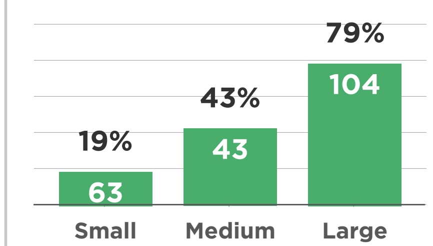
Access by School Year



Access by Geography*



Access by School Size*



Data is from the most recent data school year 2020-2021

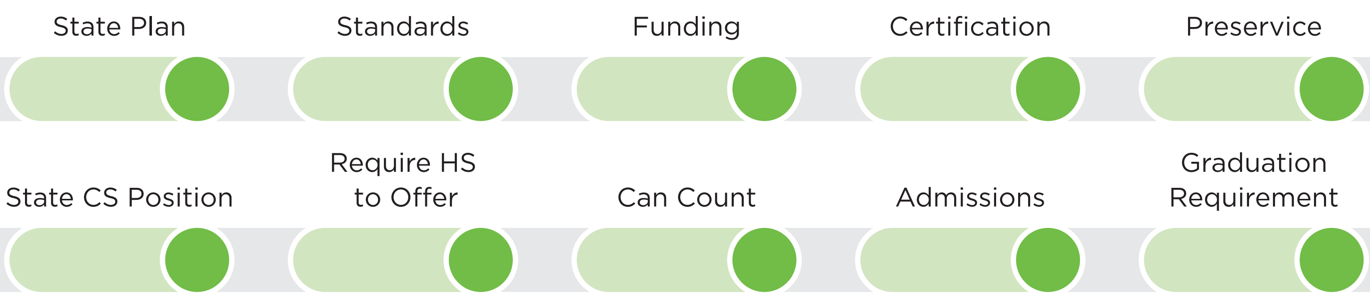
2.0% of high school students took foundational computer science in 2020-2021

21% of students who took foundational computer science were female

Native American students are **1.5 times** less likely to take foundational CS than their white and Asian peers.

View even more data at: **advocacy.code.org/state-handouts/Arizona.pdf**

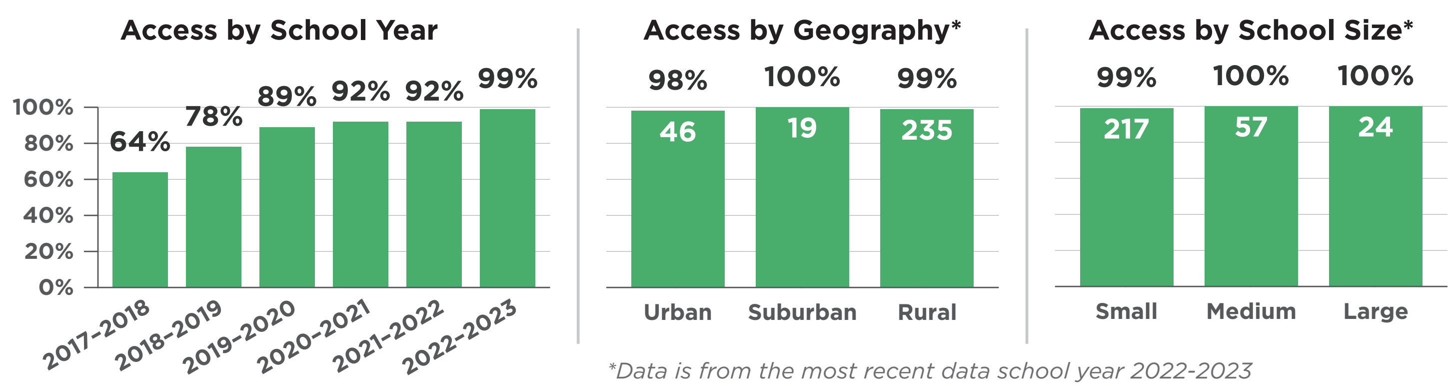
ARKANSAS



How Can Arkansas Increase Opportunities for Students?

- Arkansas should ensure there are robust CTE standards for integrated CTE-computer science courses.
- Arkansas should regularly update its state plan to ensure this document continues to be an effective guide for computer science education.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

13.5% of high school students took foundational computer science in 2022-2023

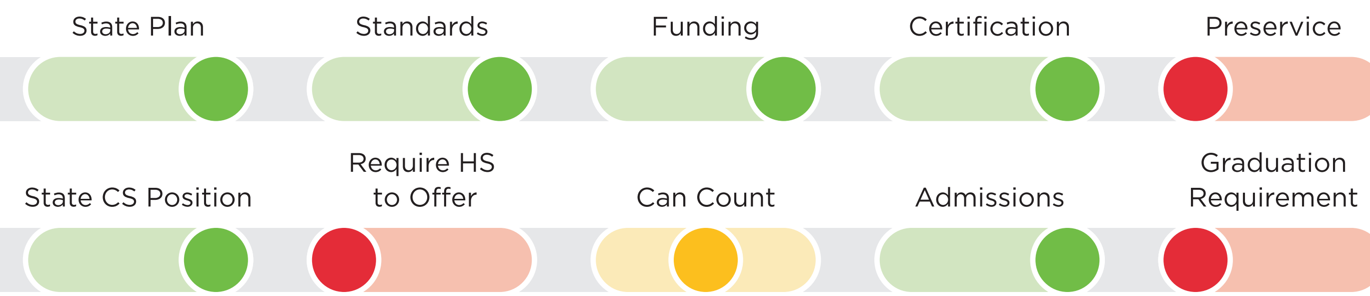
38% of students** who took foundational computer science were female

Students** of all racial and ethnic groups are **similarly likely** to take foundational computer science

**This data includes middle school students as well

View even more data at: **advocacy.code.org/state-handouts/Arkansas.pdf**

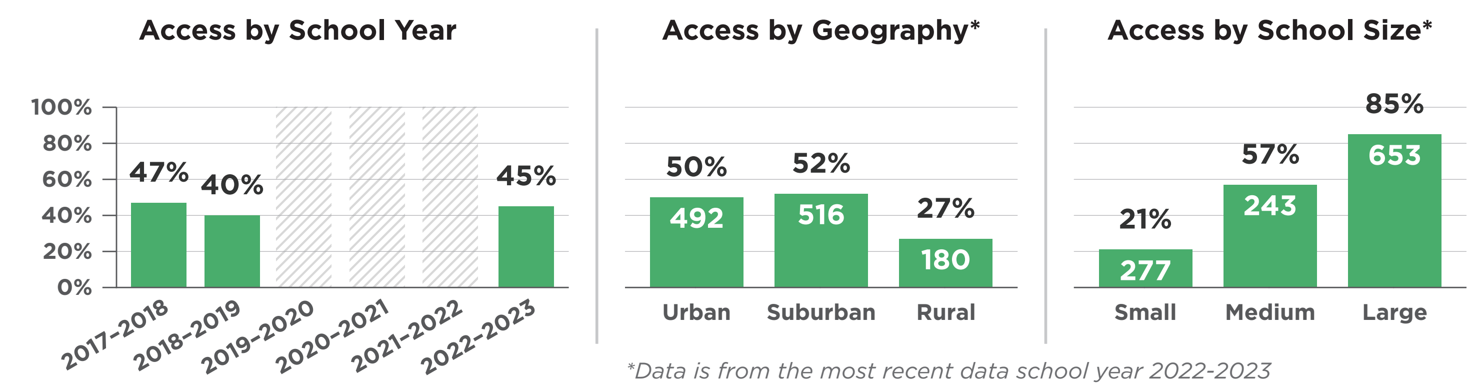
CALIFORNIA



How Can California Increase Opportunities for Students?

- California should require all high schools to offer at least one computer science course, and require schools to submit computer science course offerings and enrollment to the Department of Education. This data should be made publicly available.
- California should require all preservice teachers to receive instruction in computer science education. This will ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

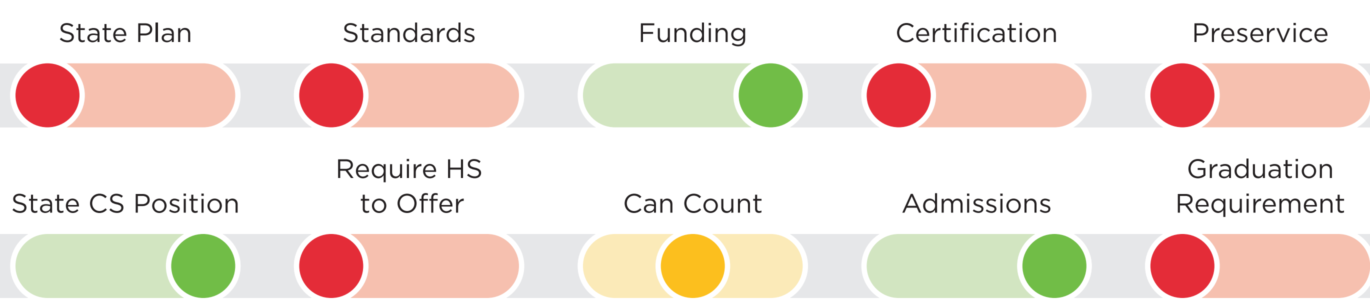
Course enrollment data for all foundational computer science courses is not available from California. Nationally, we know that participation in all foundational computer science is broader than AP participation.

31% of students who took AP computer science exams were female

Black and Hispanic students are **4 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/California.pdf**

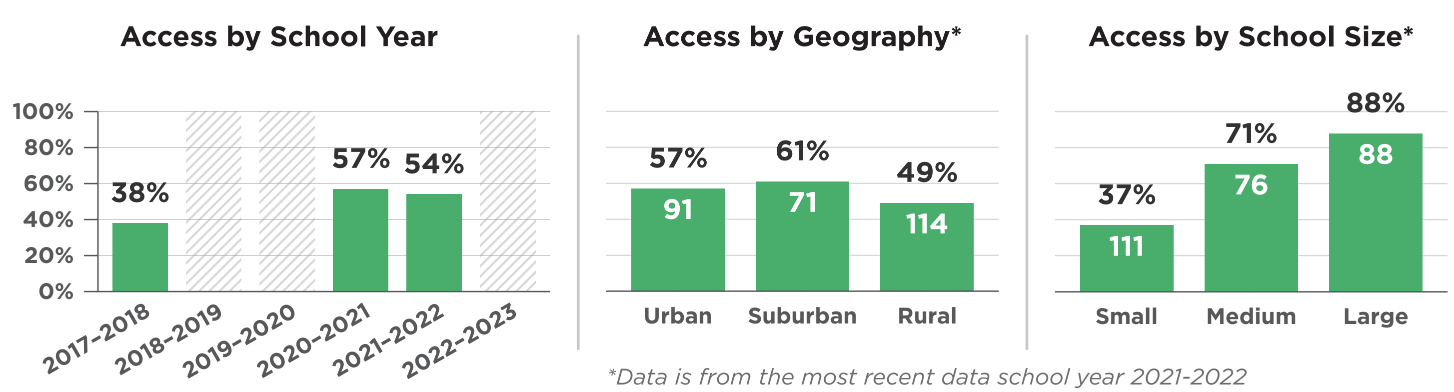
COLORADO



How Can Colorado Increase Opportunities for Students?

- Colorado should create a state plan to establish strategies and goals for computer science education statewide.
- Colorado should establish a computer science teacher certification, endorsement, or license.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

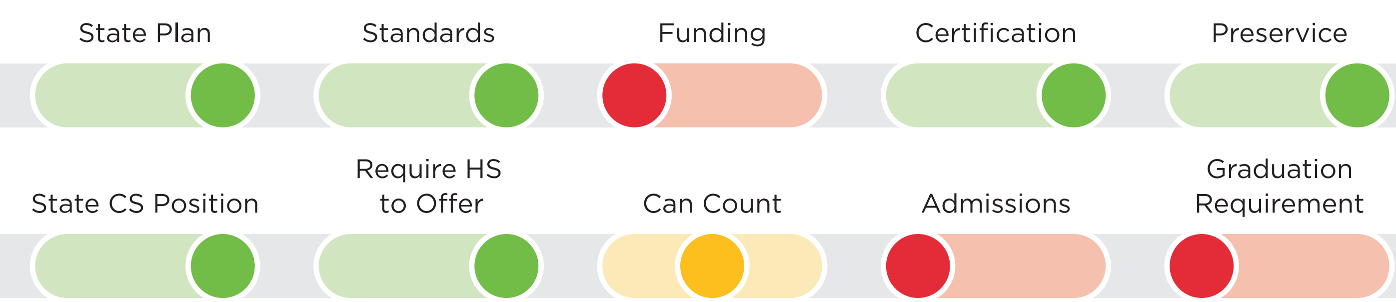
Course enrollment data for all foundational computer science courses is not available from Colorado. Nationally, we know that participation in all foundational computer science is broader than AP participation

25% of students who took AP computer science exams were female

Hispanic students are **2 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Colorado.pdf**

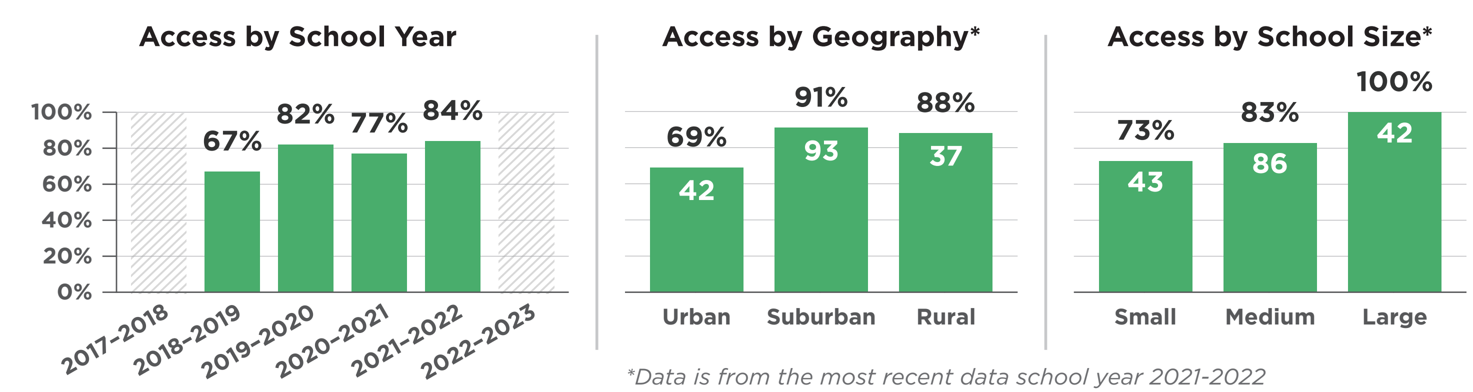
CONNECTICUT



How Can Connecticut Increase Opportunities for Students?

- Connecticut should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school. A fund was created by SB 957 (2019), but no funding has yet been allocated.
- Connecticut should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

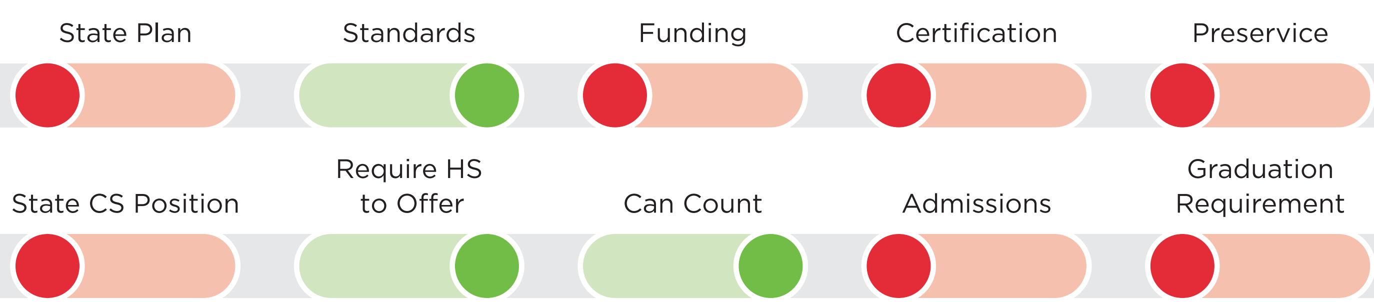
7.4% of high school students took foundational computer science in 2021-2022

29% of students who took foundational computer science were female

Hispanic students are **1.3 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Connecticut.pdf**

DELAWARE

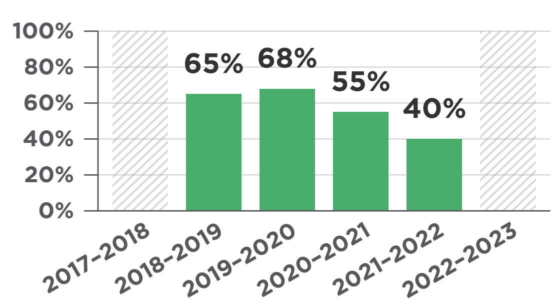


How Can Delaware Increase Opportunities for Students?

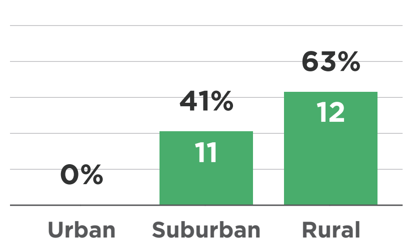
- Delaware should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- Delaware should create a state plan to establish strategies and goals for computer science education statewide.

Percentage of Public High Schools Offering Foundational Computer Science

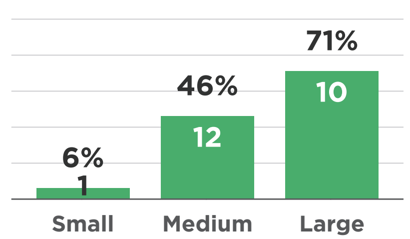
Access by School Year



Access by Geography*



Access by School Size*



*Data is from the most recent data school year 2021-2022

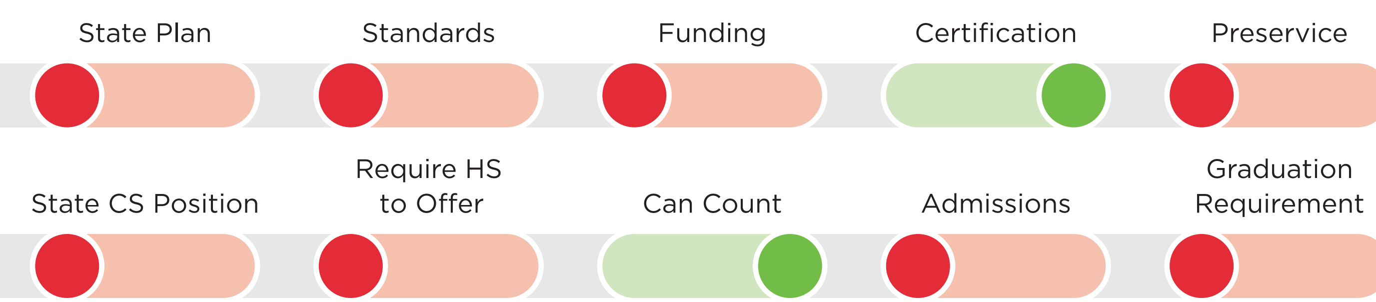
Course enrollment data for all foundational computer science courses is not available from Delaware. Nationally, we know that participation in all foundational computer science is broader than AP participation

23% of students who took AP computer science exams were female

Black and Hispanic students are **2 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Delaware.pdf**

DISTRICT OF COLUMBIA

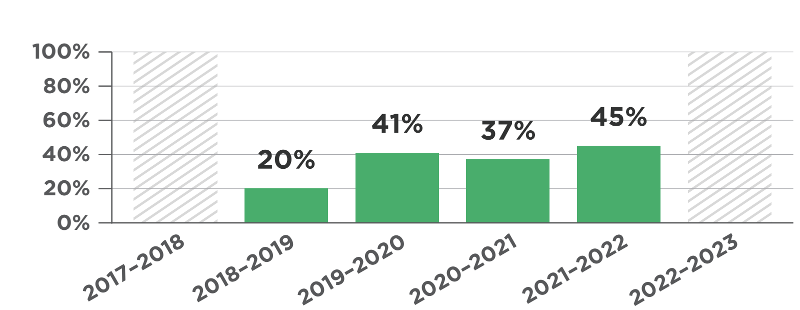


How Can DC Increase Opportunities for Students?

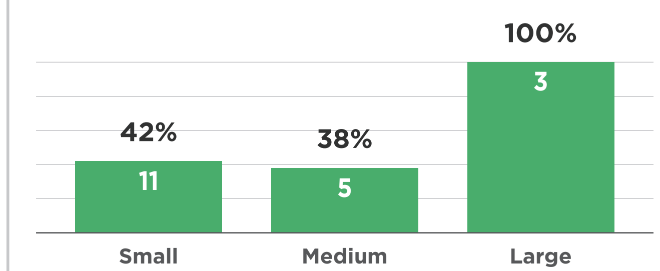
- DC should require all high schools to offer at least one computer science course. This is crucial given that only 45% of high schools offer foundational computer science.
- DC should create a state plan to establish strategies and goals for computer science education statewide.

Percentage of Public High Schools Offering Foundational Computer Science

Access by School Year



Access by School Size*



*Data is from the most recent data school year 2021-2022

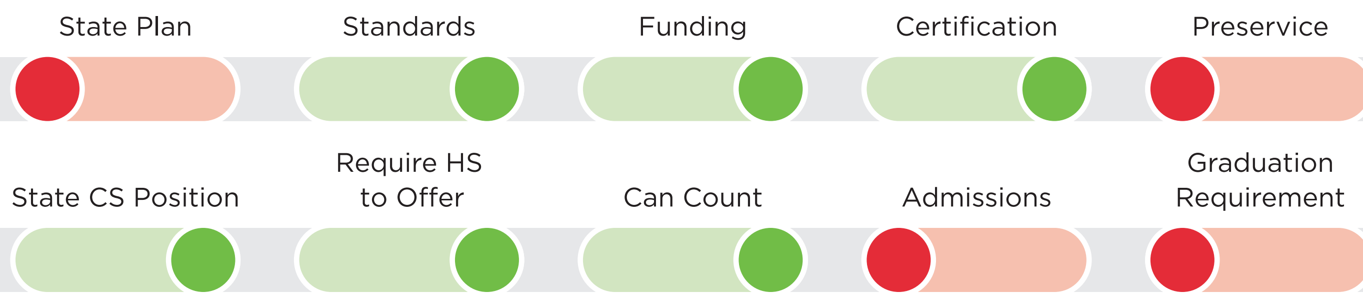
Course enrollment data for all foundational computer science courses is not available from DC. Nationally, we know that participation in all foundational computer science is broader than AP participation

37% of students who took AP computer science exams were female

Black students are **3 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/District-of-Columbia.pdf**

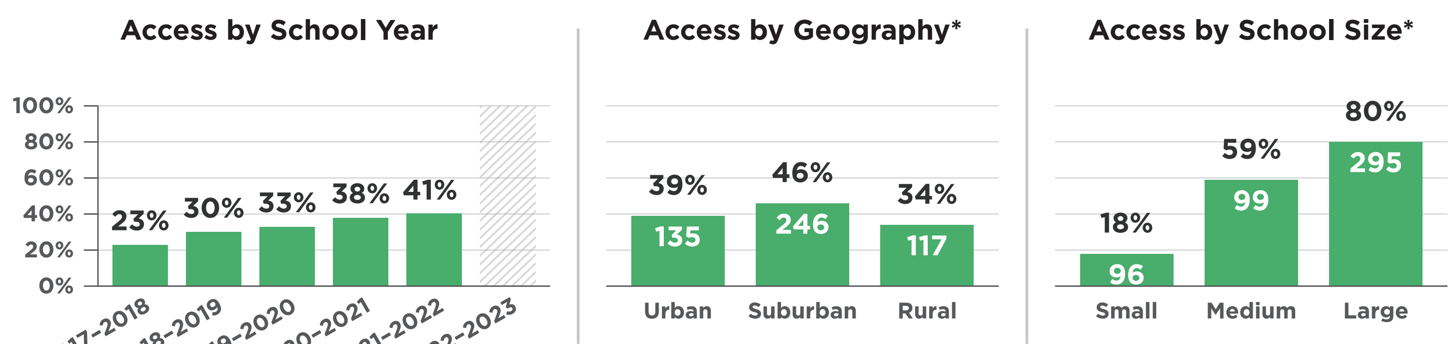
FLORIDA



How Can Florida Increase Opportunities for Students?

- Florida should create a state plan to establish strategies and goals for computer science education statewide.
- Florida should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

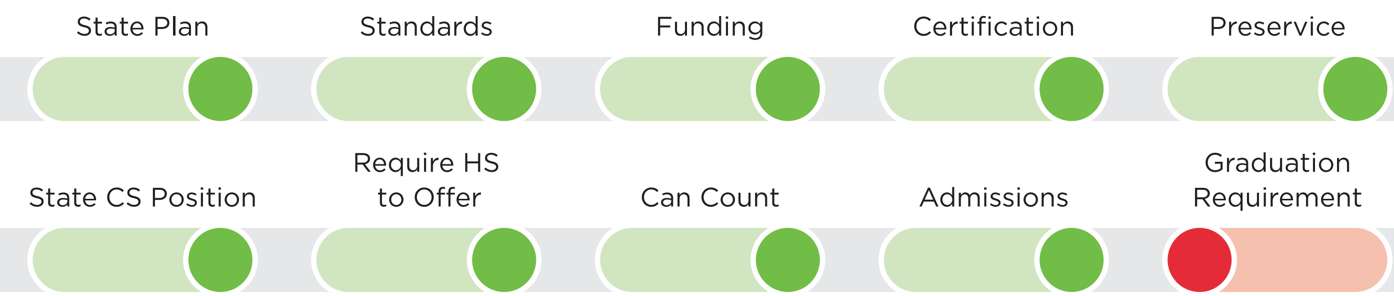
2.6% of high school students took foundational computer science in 2021-2022

29% of students who took foundational computer science were female

Black students are **2 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Florida.pdf**

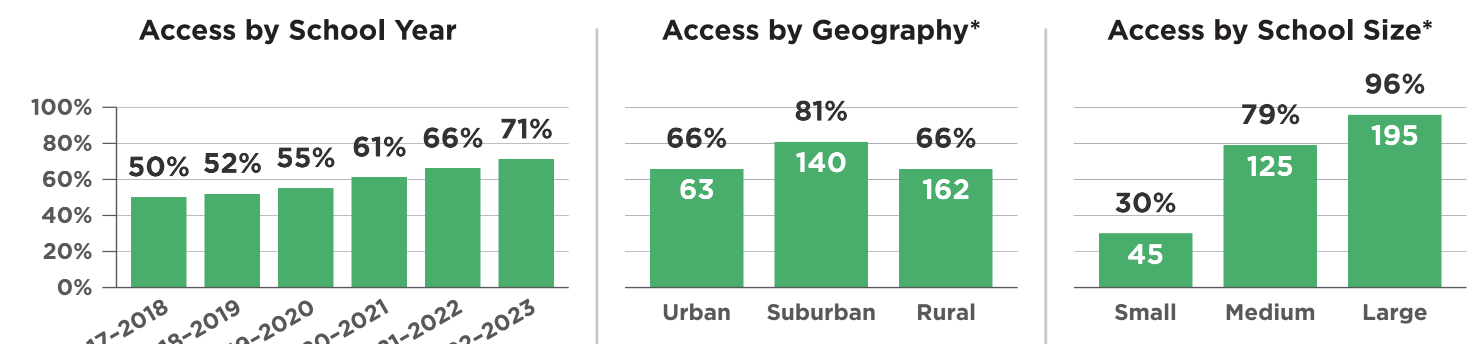
GEORGIA



How Can Georgia Increase Opportunities for Students?

- Georgia should adopt a graduation requirement for all high school students in computer science.
- Georgia should require all elementary schools to offer instruction in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

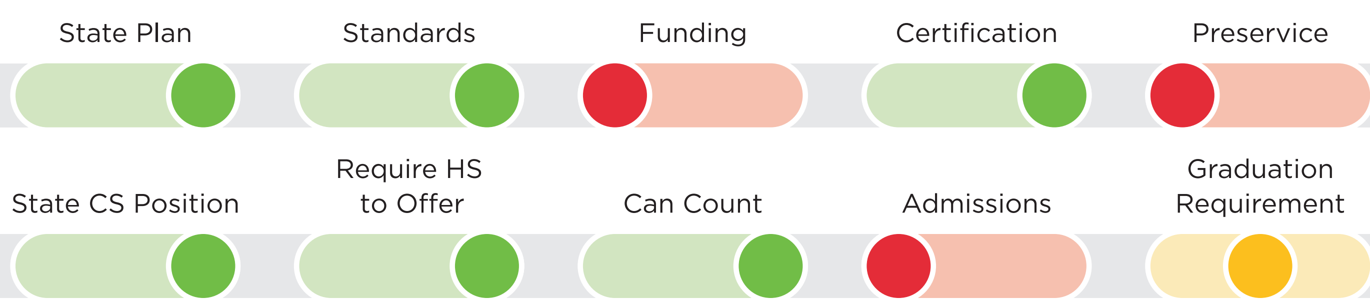
5.8% of high school students took foundational computer science in 2022-2023

30% of students who took foundational computer science were female

Black and Hispanic students are **1.3 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Georgia.pdf**

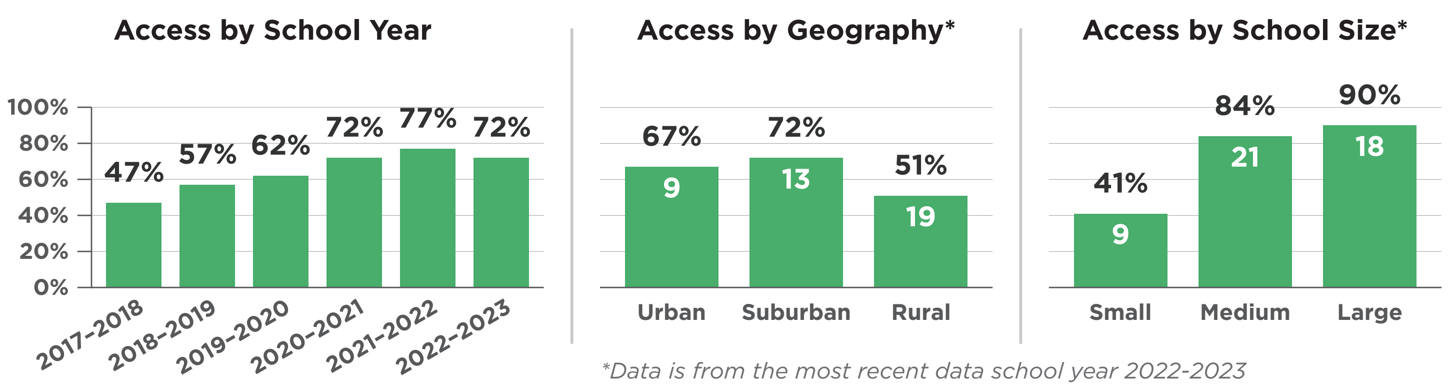
HAWAII



How Can Hawaii Increase Opportunities for Students?

- Hawaii should adopt a graduation requirement for all high school students in computer science.
- Hawaii should require all preservice teachers to receive instruction in computer science education to ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



Data is from the most recent data school year 2022-2023

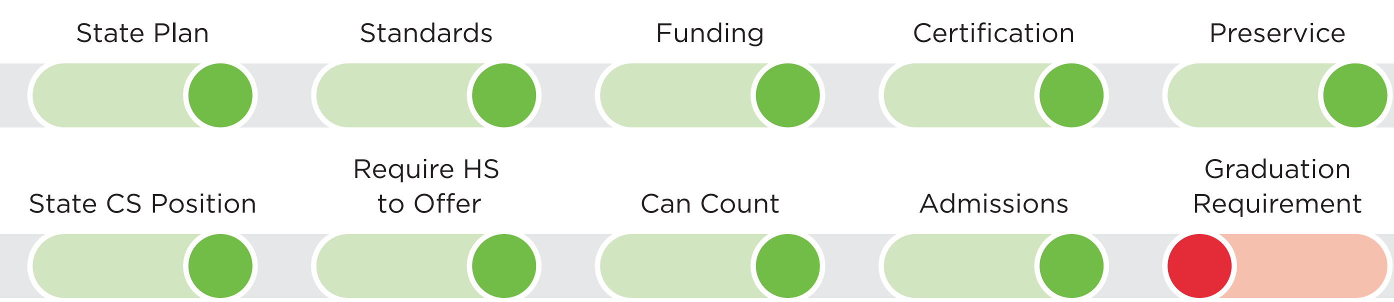
2.6% of high school students took foundational computer science in 2022-2023

26% of students who took foundational computer science were female

Native Hawaiian students are **3 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Hawaii.pdf**

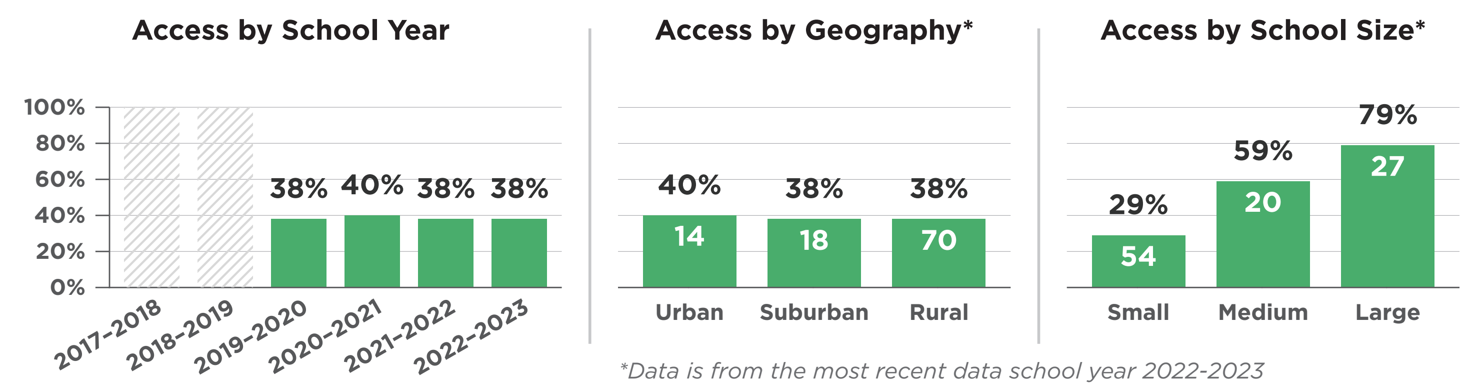
IDAHO



How Can Idaho Increase Opportunities for Students?

- Idaho should continue to implement policies requiring high schools to offer computer science and increase state funding to ensure there are enough teachers prepared to teach computer science in every school.
- Idaho should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



Data is from the most recent data school year 2022-2023

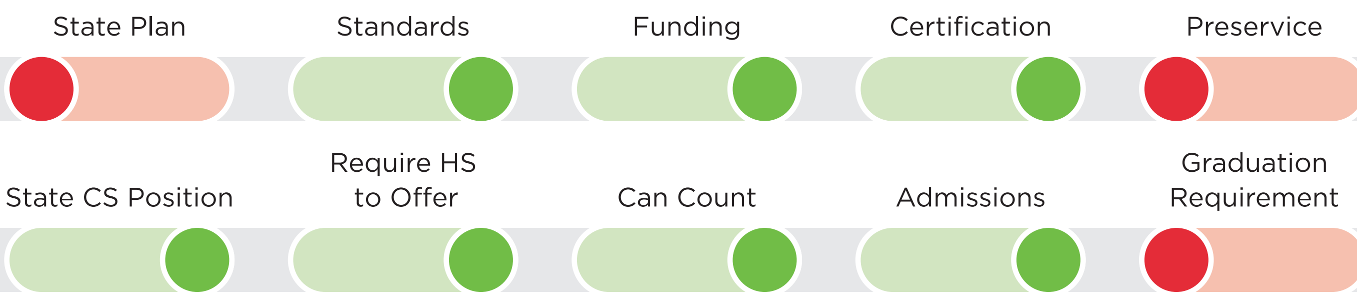
2.2% of high school students took foundational computer science in 2022-2023

29% of students who took foundational computer science were female

Native American students are **1.4 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Idaho.pdf**

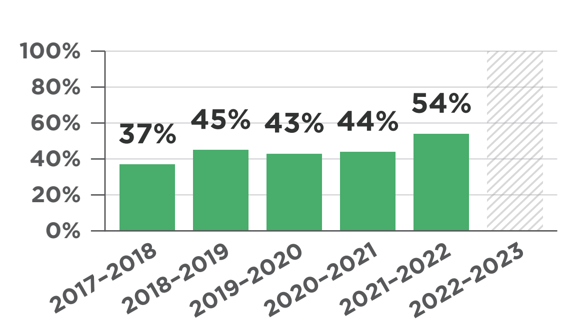
ILLINOIS

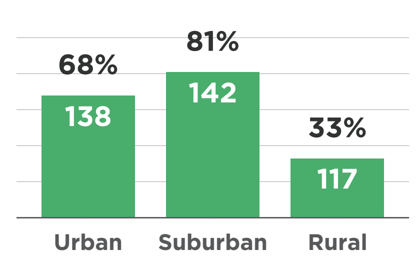


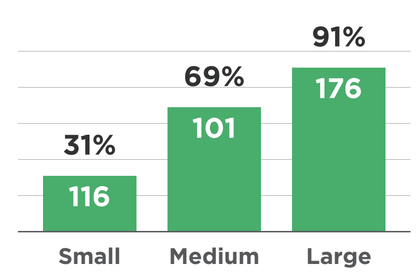
How Can Illinois Increase Opportunities for Students?

- Illinois should create a state plan to establish strategies and goals for computer science education statewide.
- Illinois should require all preservice teachers to receive instruction in computer science education to ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science







Data is from the most recent data school year 2021-2022

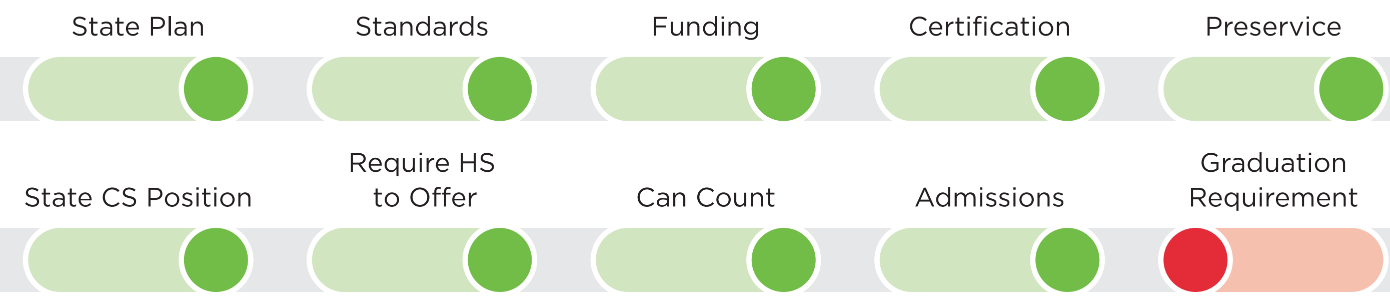
6.2% of high school students took foundational computer science in 2021-2022

36% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Illinois.pdf**

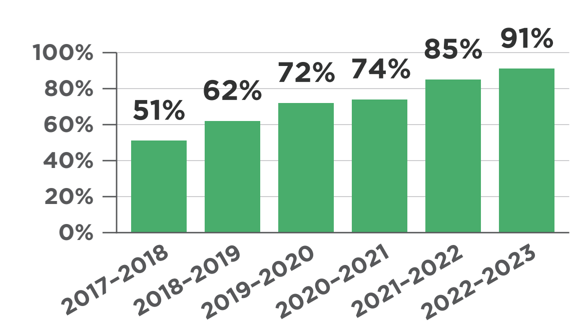
INDIANA

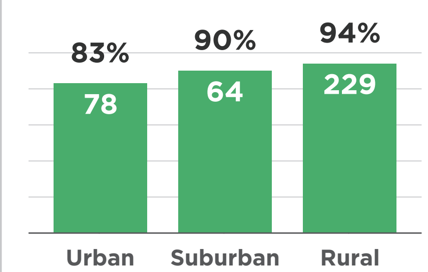


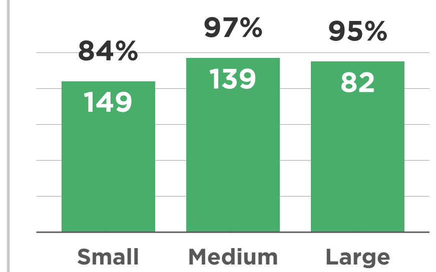
How Can Indiana Increase Opportunities for Students?

- Indiana should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science







Data is from the most recent data school year 2022-2023

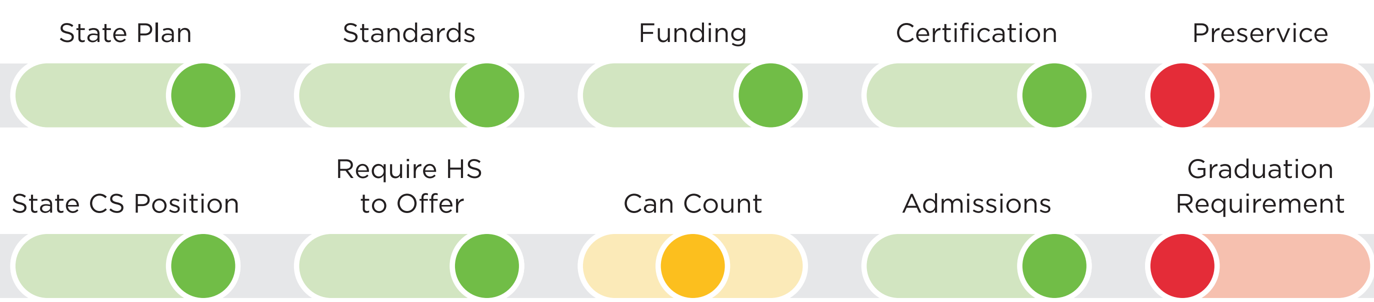
6.0% of high school students took foundational computer science in 2022-2023

24% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Indiana.pdf**

IOWA

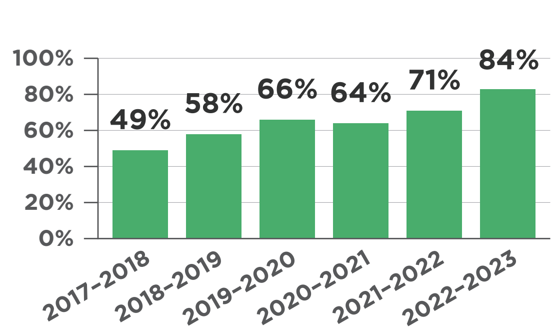


How Can Iowa Increase Opportunities for Students?

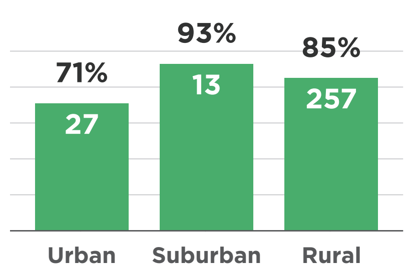
- Iowa should adopt a graduation requirement for all high school students in computer science.
- Iowa should require all preservice teachers to receive instruction in computer science education. This will ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science

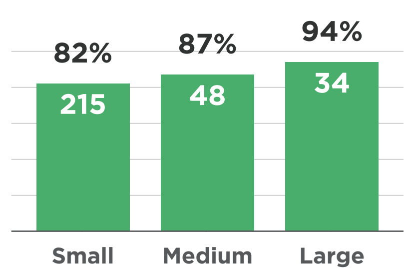
Access by School Year



Access by Geography*



Access by School Size*



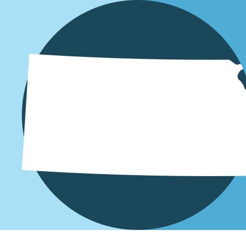
Data is from the most recent data school year 2022-2023

5% of high school students took foundational computer science in 2022-2023

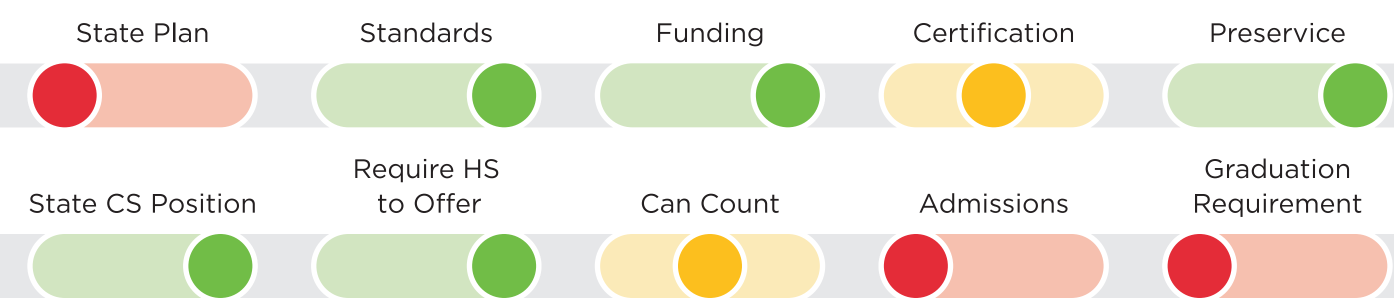
21% of students who took foundational computer science were female

Hispanic students are **1.4 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Iowa.pdf**



KANSAS

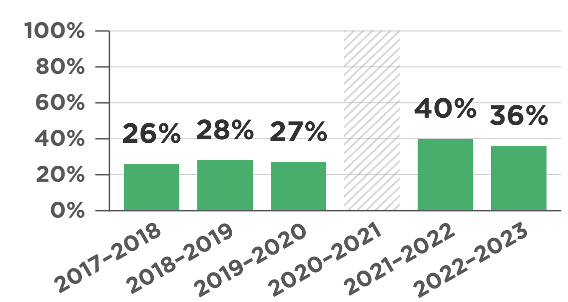


How Can Kansas Increase Opportunities for Students?

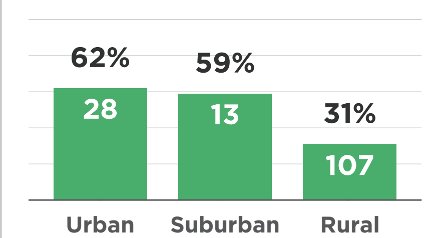
- Kansas should create a state plan to establish strategies and goals for computer science education statewide.
- Kansas should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science

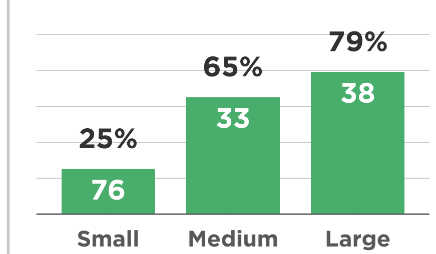
Access by School Year



Access by Geography*



Access by School Size*



Data is from the most recent data school year 2022-2023

2.5% of high school students took foundational computer science in 2022-2023

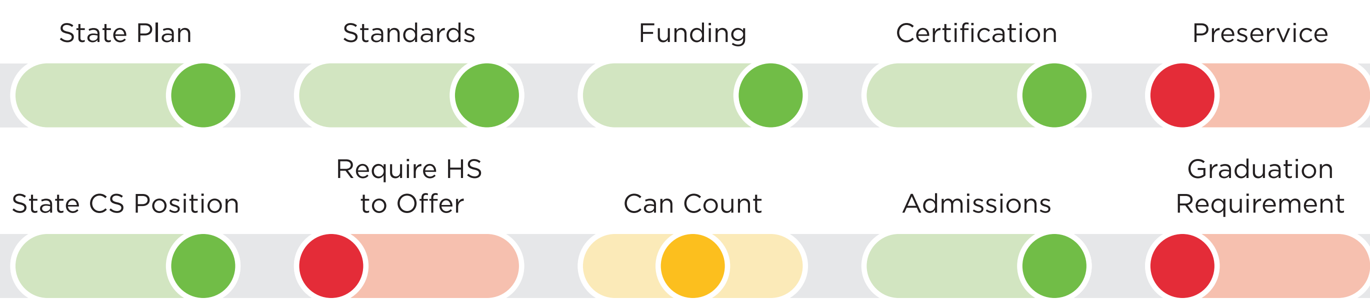
16% of students who took AP computer science exams were female**

*** Kansas does not collect gender data for foundational courses*

Black students are **1.7 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Kansas.pdf**

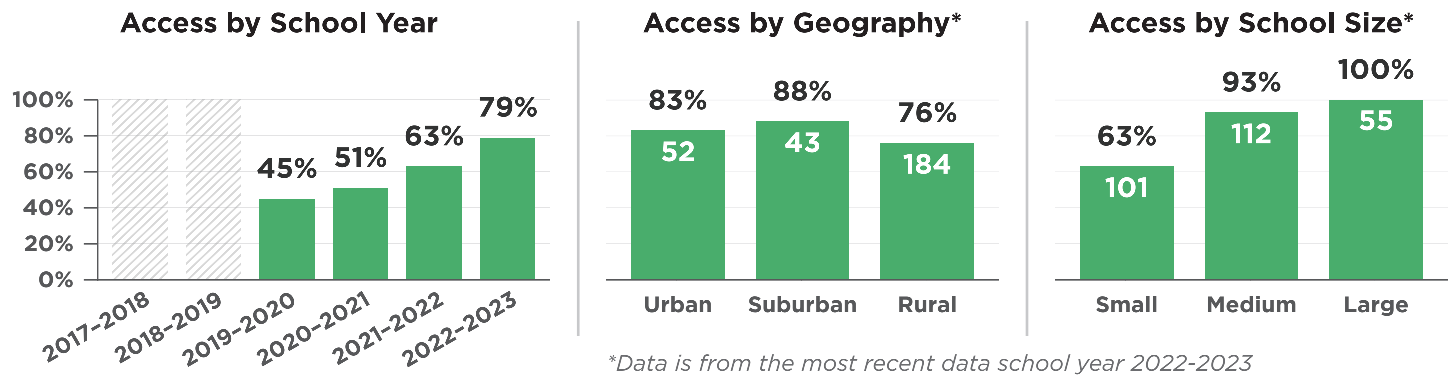
KENTUCKY



How Can Kentucky Increase Opportunities for Students?

- Kentucky should adopt a graduation requirement for all high school students in computer science.
- Kentucky should require all preservice teachers to receive instruction in computer science education.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

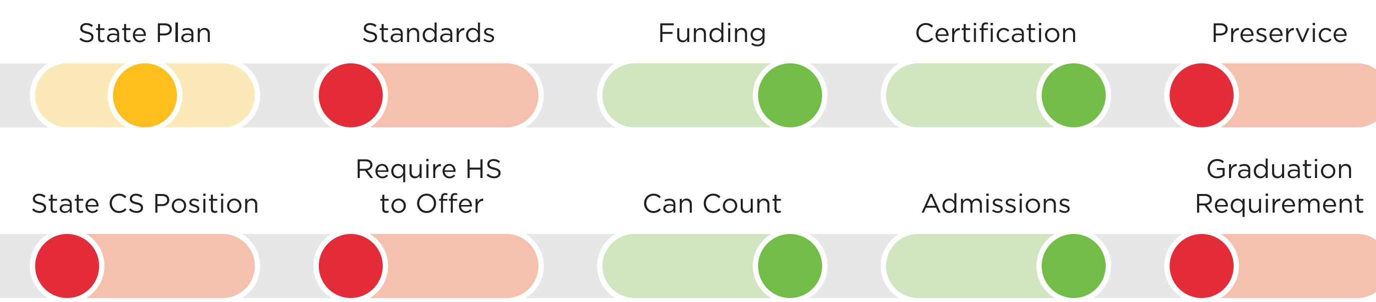
9.6% of high school students took foundational computer science in 2022-2023

29% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Kentucky.pdf**

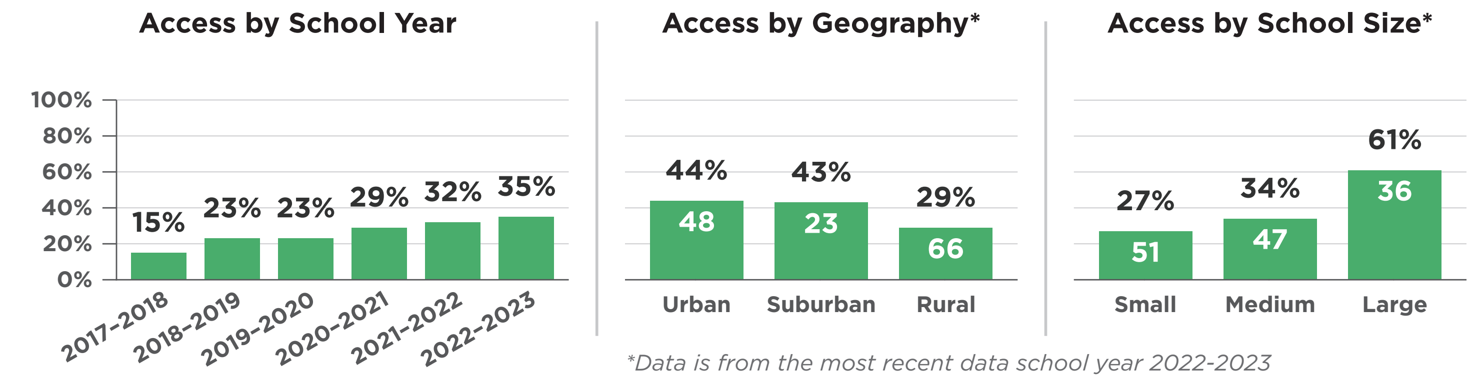
LOUISIANA



How Can Louisiana Increase Opportunities for Students?

- Louisiana should adopt a graduation requirement for all high school students in computer science.
- Louisiana should continue to fund professional development opportunities annually to ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

3.0% of high school students** took foundational computer science in 2022-2023

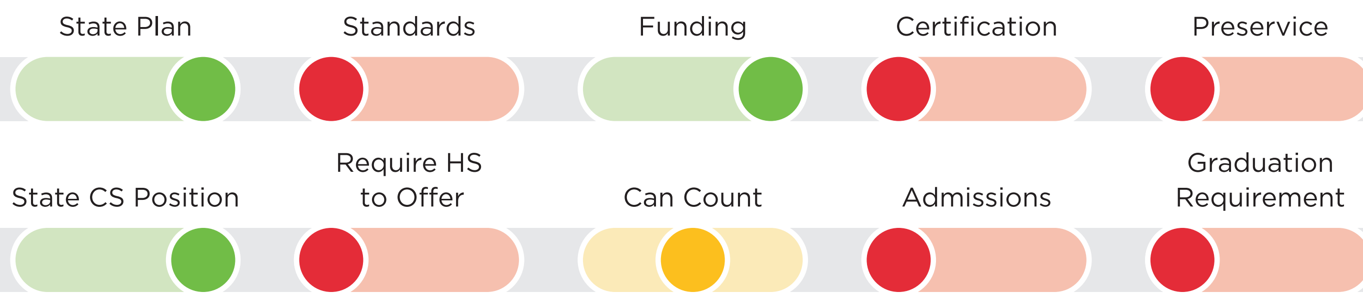
39% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

*** Louisiana's participation data includes a small number of middle school students who took a high school level course*

View even more data at: **advocacy.code.org/state-handouts/Louisiana.pdf**

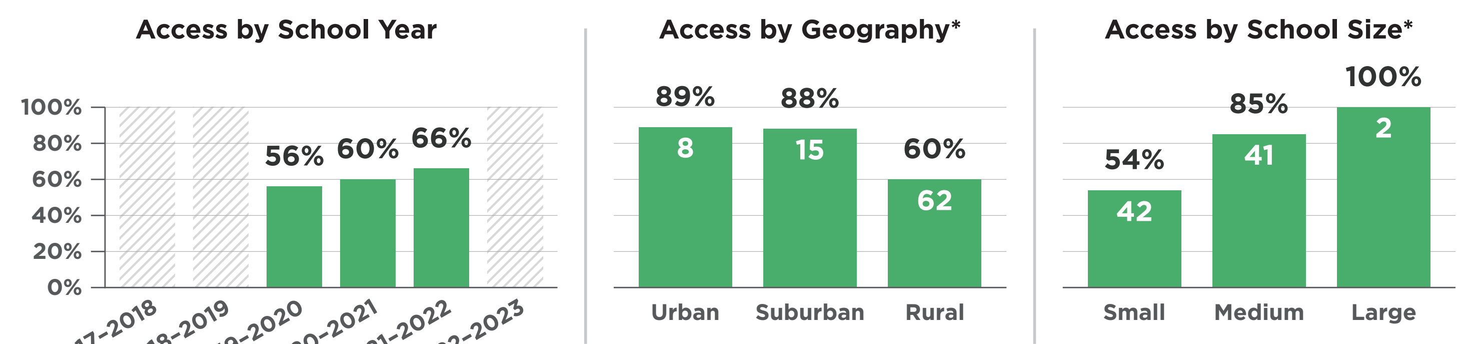
MAINE



How Can Maine Increase Opportunities for Students?

- Maine should create optional computer science standards that local districts can adopt.
- Maine should require all preservice teachers to receive instruction in computer science education to ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

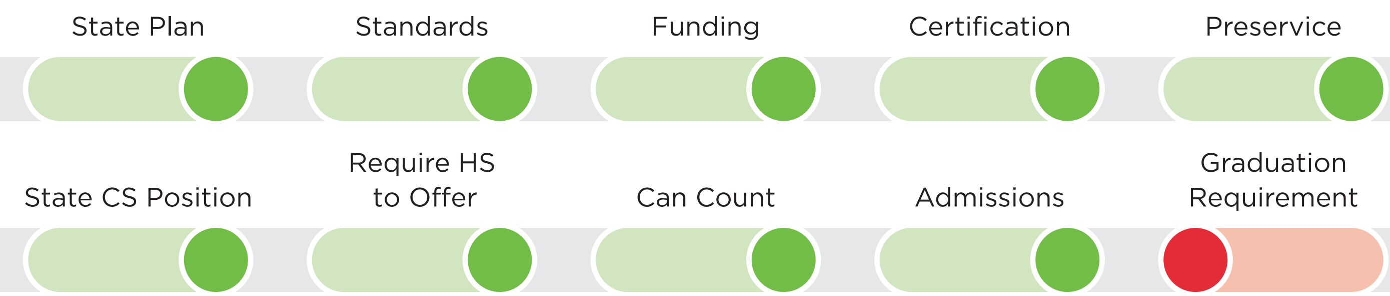
Course enrollment data for all foundational computer science courses is not available from Maine. Nationally, we know that participation in all foundational computer science is broader than AP participation

22% of students who took AP computer science exams were female

Although Black students make up 4% of the population, **only 5** Black students took AP CS exams

View even more data at: **advocacy.code.org/state-handouts/Maine.pdf**

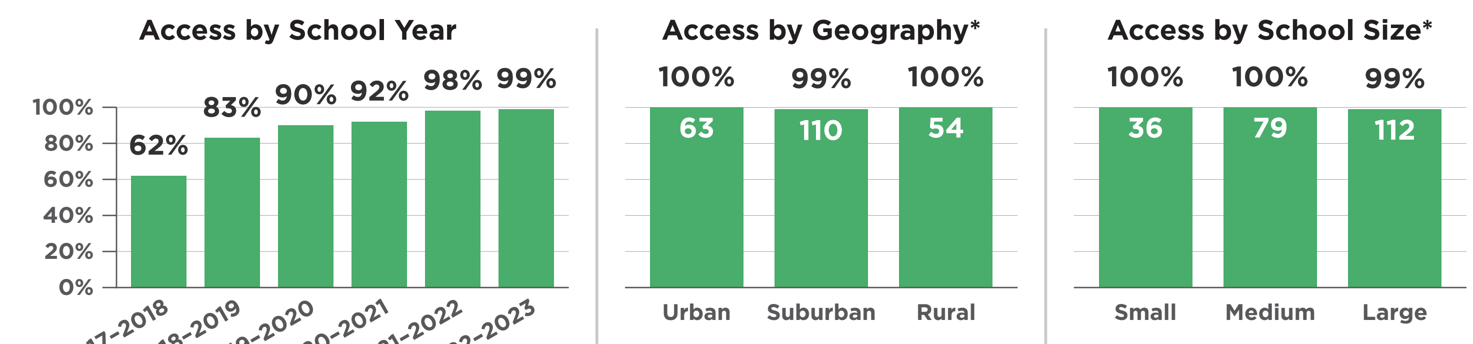
MARYLAND



How Can Maryland Increase Opportunities for Students?

- Maryland should adopt a graduation requirement for all high school students in computer science.
- Maryland should require all elementary and middle schools to offer instruction in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

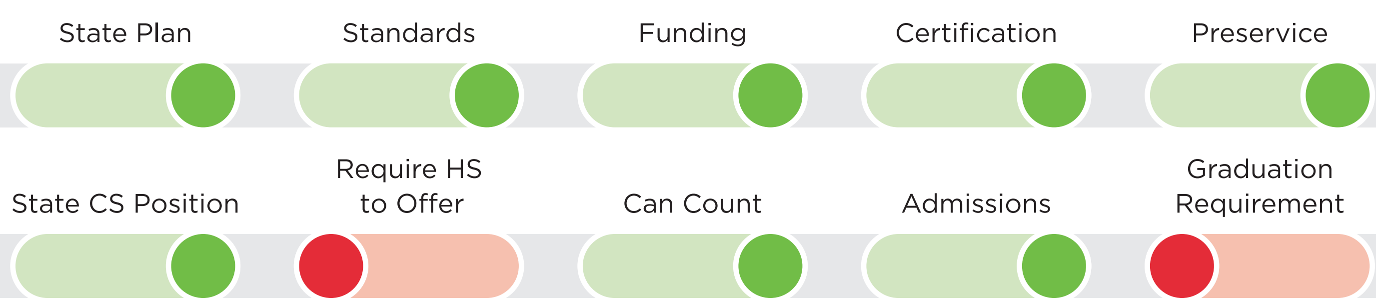
15% of high school students took foundational computer science in 2022-2023

41% of students who took foundational computer science were female

Native American students are **3 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Maryland.pdf**

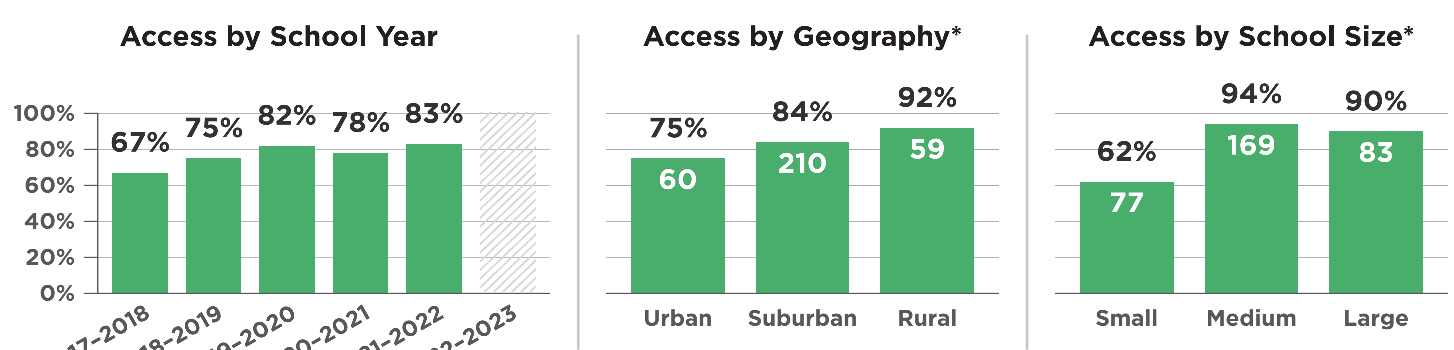
MASSACHUSETTS



How Can Massachusetts Increase Opportunities for Students?

- Massachusetts should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- Massachusetts should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



**Data is from the most recent data school year 2021-2022*

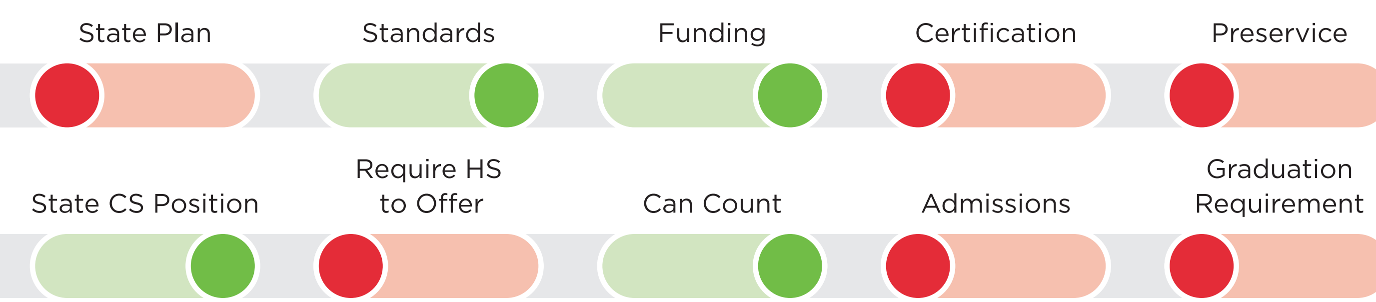
6.6% of high school students took foundational computer science in 2021-2022

29% of students who took foundational computer science were female

Hispanic students are **1.5 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Massachusetts.pdf**

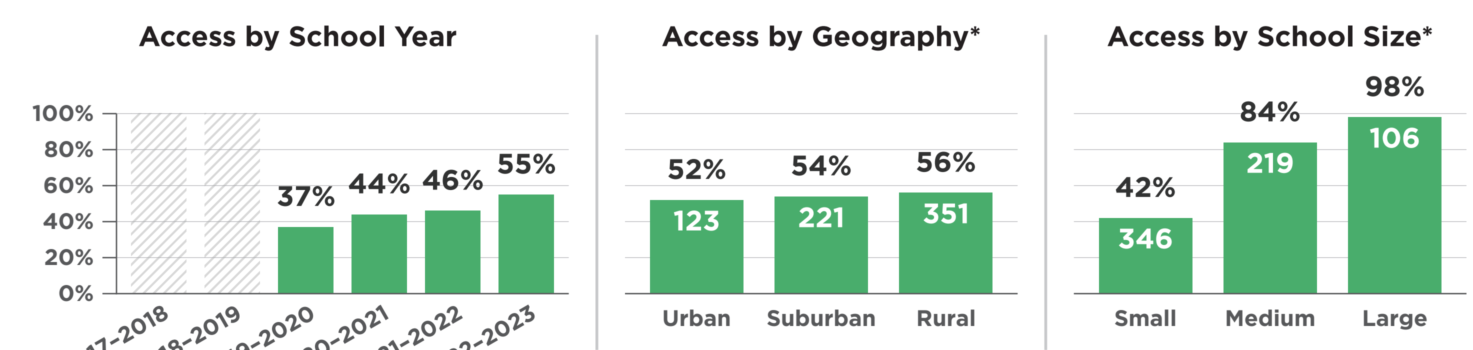
MICHIGAN



How Can Michigan Increase Opportunities for Students?

- Michigan should continue to fund professional development opportunities annually to ensure there are enough teachers prepared to teach computer science in every school.
- Michigan should require all high schools to offer at least one computer science course and require all elementary and middle schools to offer instruction in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



**Data is from the most recent data school year 2022-2023*

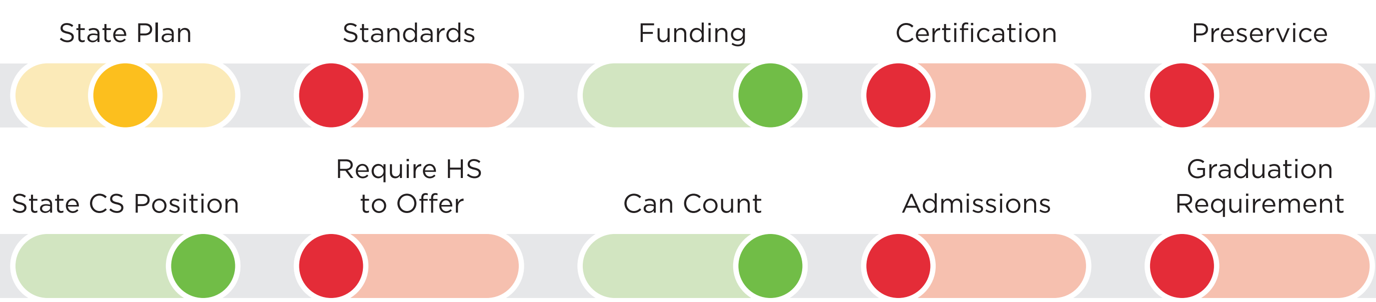
Course enrollment data for all foundational computer science courses is not available from Michigan. Nationally, we know that participation in all foundational computer science is broader than AP participation

29% of students who took AP computer science exams were female

Black students are **4 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Michigan.pdf**

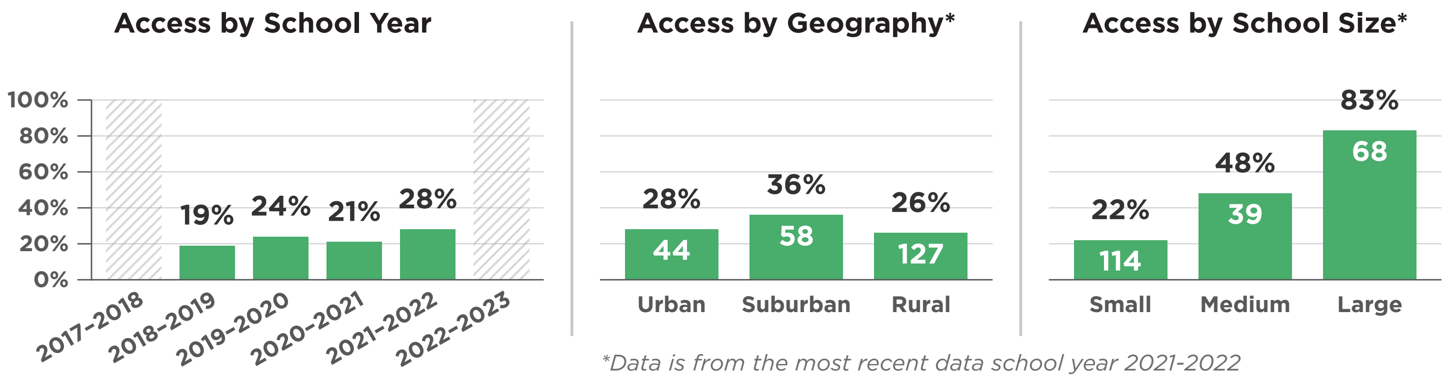
MINNESOTA



How Can Minnesota Increase Opportunities for Students?

- Minnesota should continue to fund professional development opportunities annually to ensure there are enough teachers prepared to teach computer science in every school.
- Minnesota should require all preservice teachers to receive instruction in computer science education.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

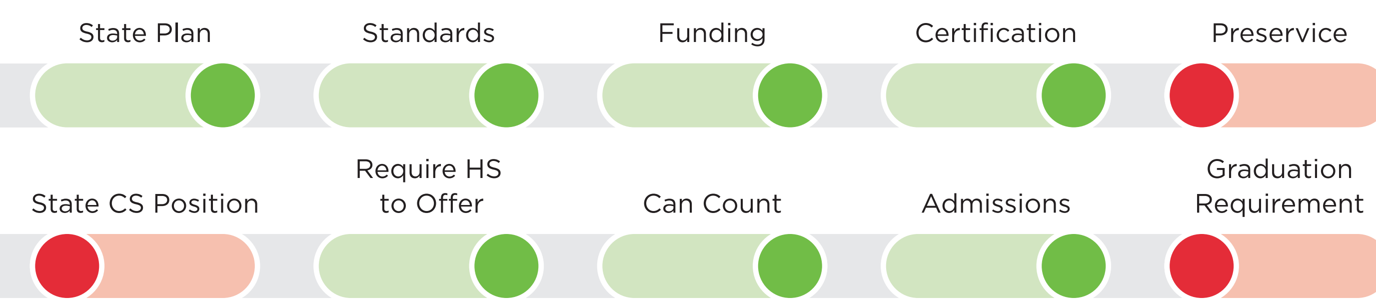
Course enrollment data for all foundational computer science courses is not available from Minnesota. Nationally, we know that participation in all foundational computer science is broader than AP participation

24% of students who took AP computer science exams were female

Black and Hispanic students are **2 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Minnesota.pdf**

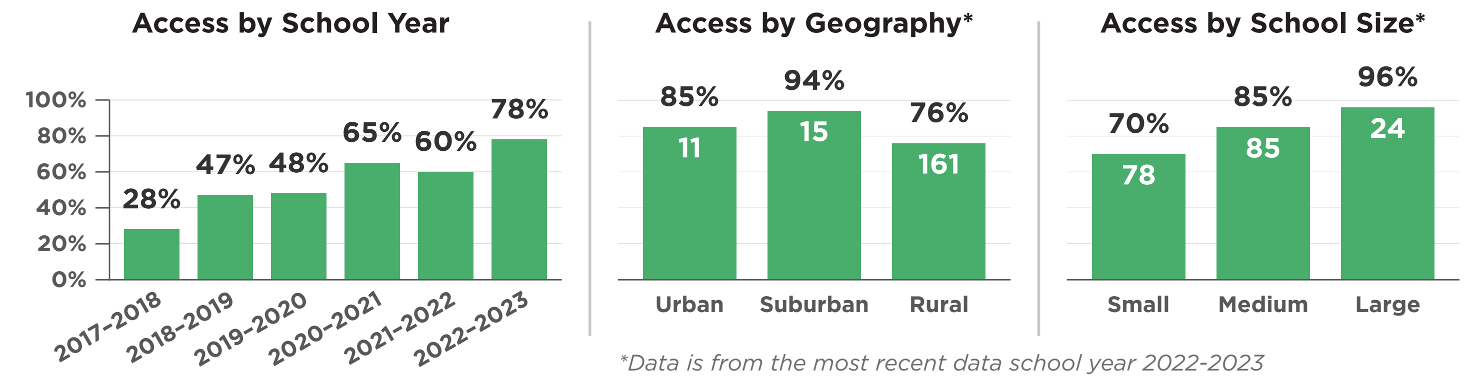
MISSISSIPPI



How Can Mississippi Increase Opportunities for Students?

- Mississippi should establish a dedicated position within the Department of Education focused on computer science education.
- Mississippi should require all preservice teachers to receive instruction in computer science education to ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

9.5% of high school students took foundational computer science in 2022-2023

48% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Mississippi.pdf**

MISSOURI

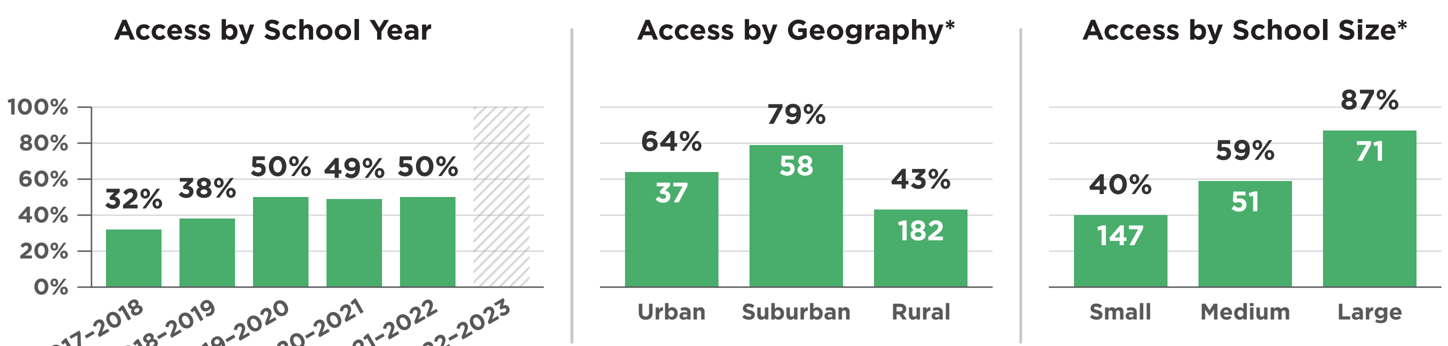
State Plan | Standards | Funding | Certification | Preservice

State CS Position | Require HS to Offer | Can Count | Admissions | Graduation Requirement

How Can Missouri Increase Opportunities for Students?

- Missouri should require all preservice teachers to receive instruction in computer science education to ensure there are enough teachers prepared to teach computer science in every school.
- Missouri should require all schools to submit computer science course offerings and enrollment to the Department of Elementary and Secondary Education, and this data should be made publicly available.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

Course enrollment data for all foundational computer science courses is not available from Missouri. Nationally, we know that participation in all foundational computer science is broader than AP participation

22% of students who took AP computer science exams were female

Black students are **1.6 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Missouri.pdf**

MONTANA

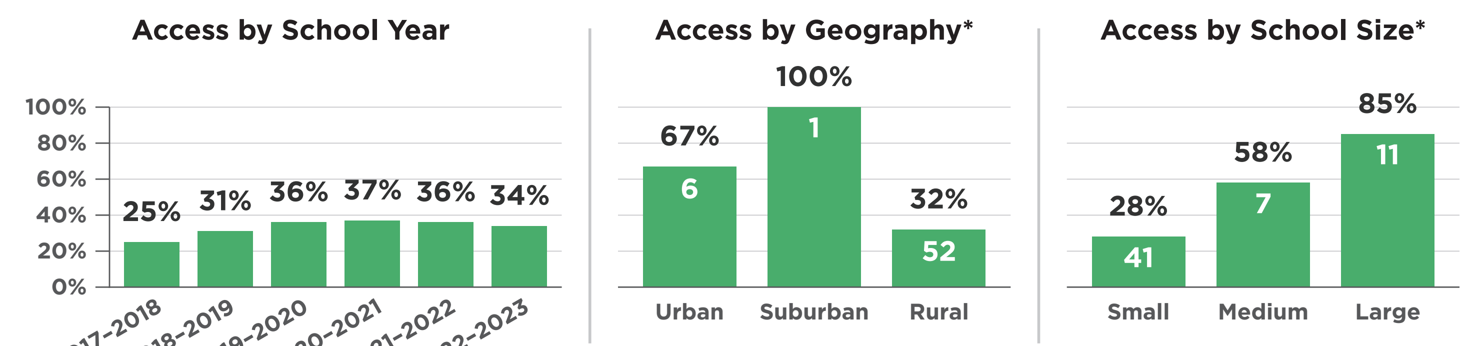
State Plan | Standards | Funding | Certification | Preservice

State CS Position | Require HS to Offer | Can Count | Admissions | Graduation Requirement

How Can Montana Increase Opportunities for Students?

- Montana should create a state plan to establish strategies and goals for computer science education statewide.
- Montana should establish a dedicated position within the Office of Public Instruction focused on computer science education.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

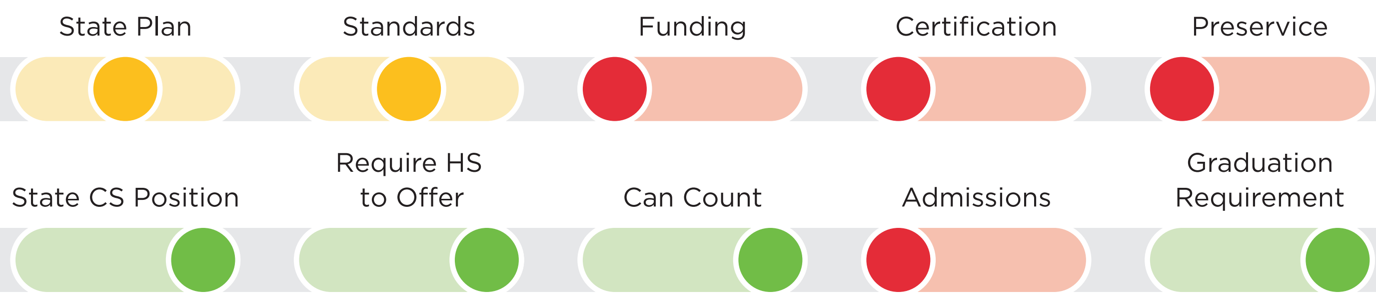
Course enrollment data for all foundational computer science courses is not available from Montana. Nationally, we know that participation in all foundational computer science is broader than AP participation

33% of students who took AP computer science exams were female

Although Native American students make up 11% of the population, **only 2** Native American students took AP CS exams.

View even more data at: **advocacy.code.org/state-handouts/Montana.pdf**

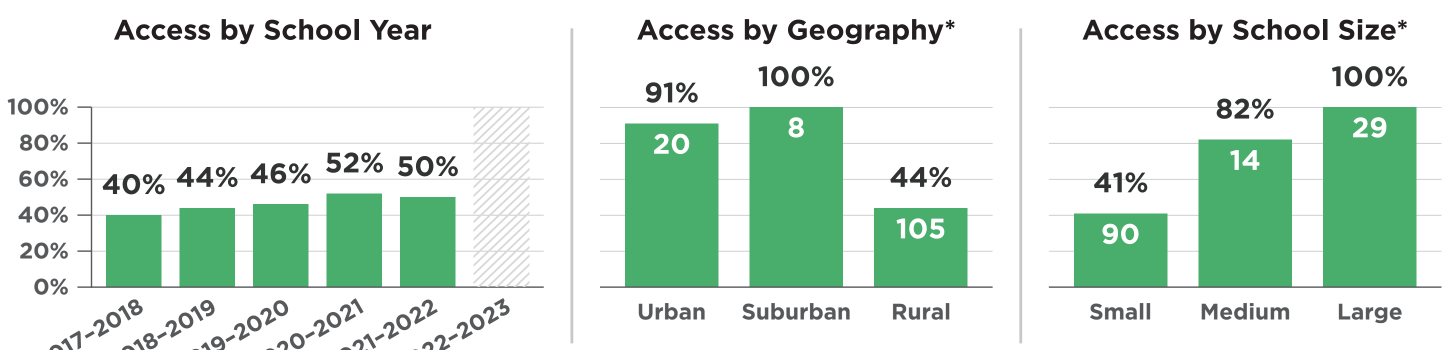
NEBRASKA



How Can Nebraska Increase Opportunities for Students?

- Nebraska should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- Nebraska should require all preservice teachers to receive instruction in computer science education.

Percentage of Public High Schools Offering Foundational Computer Science



Data is from the most recent data school year 2021-2022

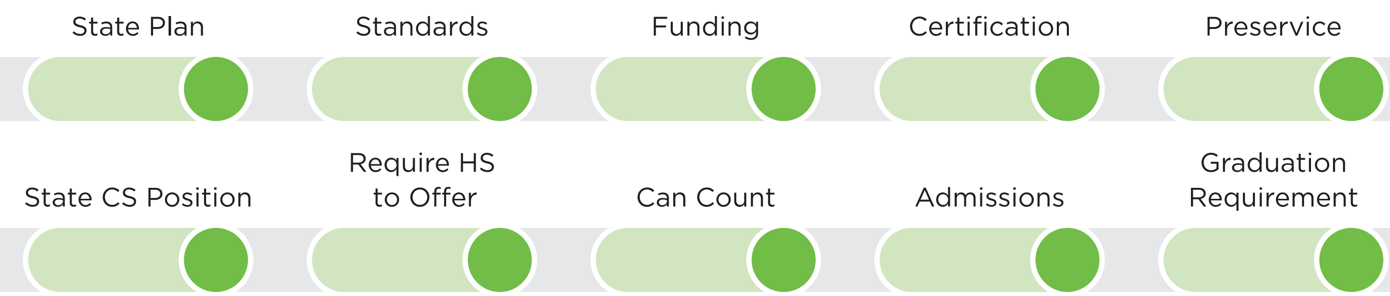
3.6% of high school students took foundational computer science in 2021-2022

17% of students who took foundational computer science were female

Hispanic students are **1.5 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Nebraska.pdf**

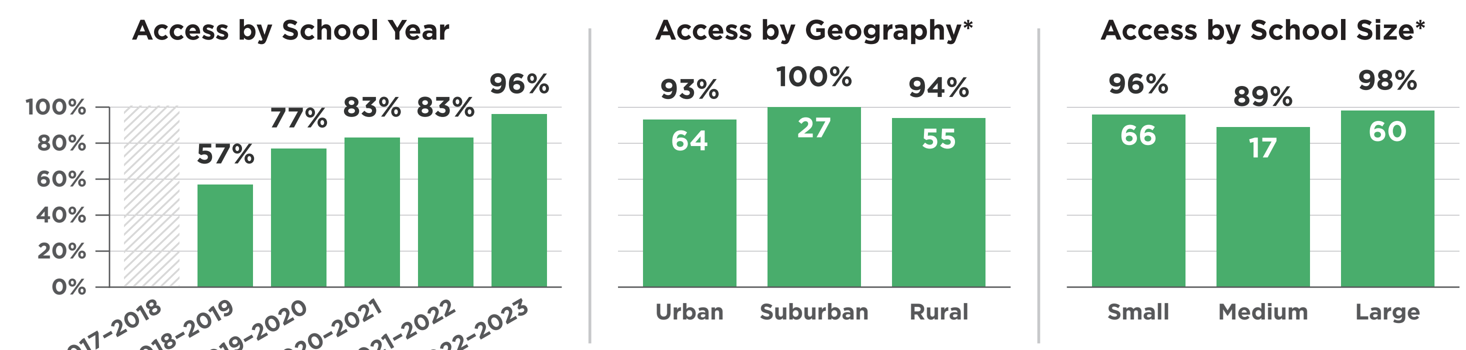
NEVADA



How Can Nevada Increase Opportunities for Students?

- Nevada should expand their data collection to K–5 schools.
- Nevada should require all middle schools to offer computer science courses.

Percentage of Public High Schools Offering Foundational Computer Science



Data is from the most recent data school year 2022-2023

4.6% of high school students** took foundational computer science in 2022-2023

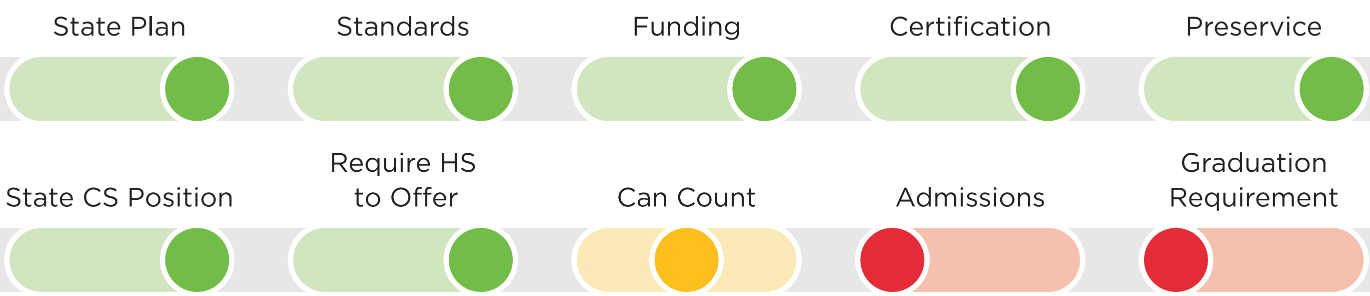
31% of students who took foundational computer science were female

Hispanic students are **1.5 times** less likely to take foundational CS than their white and Asian peers

*** Nevada's participation data includes a small number of middle school students who took a high school level course*

View even more data at: **advocacy.code.org/state-handouts/Nevada.pdf**

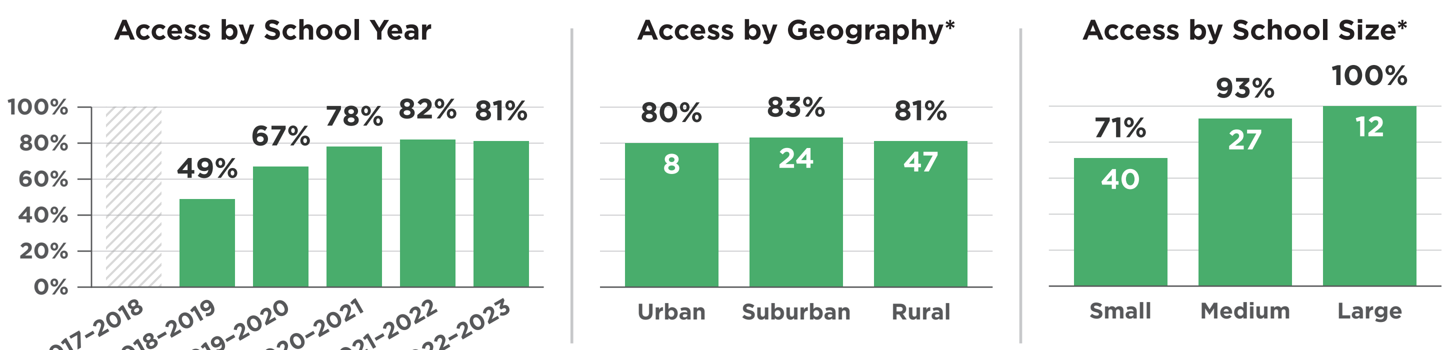
NEW HAMPSHIRE



How Can New Hampshire Increase Opportunities for Students?

- New Hampshire should adopt a graduation requirement for all high school students in computer science.
- New Hampshire should require all schools to submit computer science course offerings and enrollment to the Department of Education, and this data should be made publicly available.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

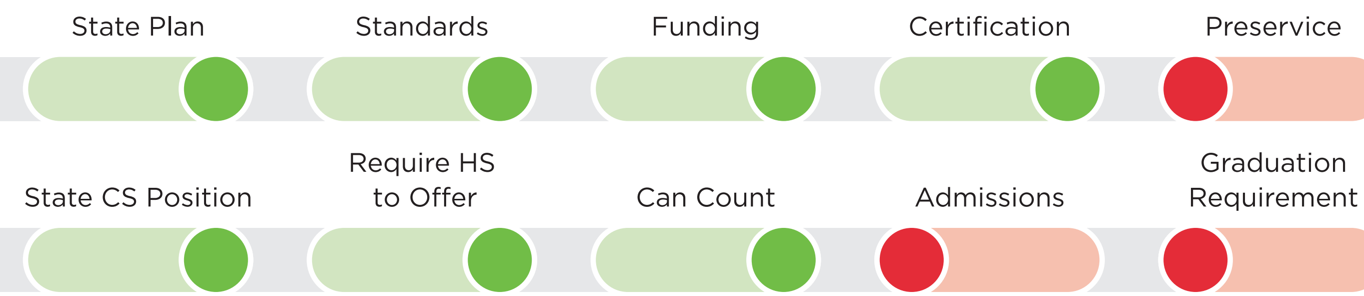
Course enrollment data for all foundational computer science courses is not available from New Hampshire. Nationally, we know that participation in all foundational computer science is broader than AP participation

26% of students who took AP computer science exams were female

Although Black students make up 2% of the population, **only 7** Black students took AP CS exams.

View even more data at: **advocacy.code.org/state-handouts/New-Hampshire.pdf**

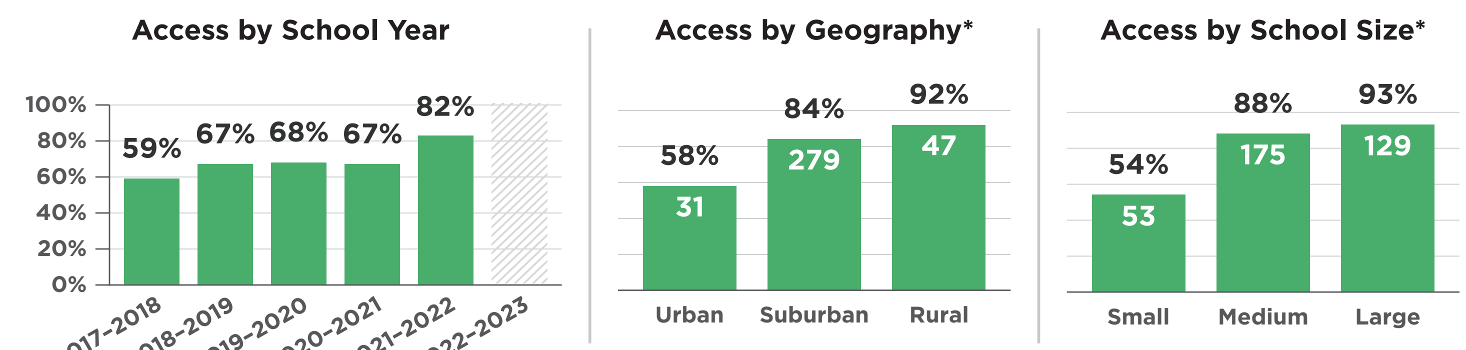
NEW JERSEY



How Can New Jersey Increase Opportunities for Students?

- New Jersey should adopt a graduation requirement for all high school students in computer science.
- New Jersey should require all elementary and middle to offer instruction in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

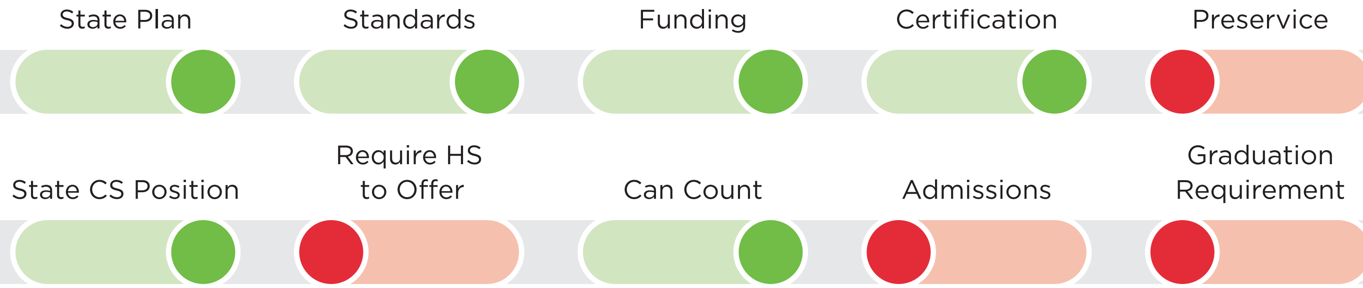
7.0% of high school students took foundational computer science in 2021-2022

29% of students who took foundational computer science were female

Black and Hispanic students are **2 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/New-Jersey.pdf**

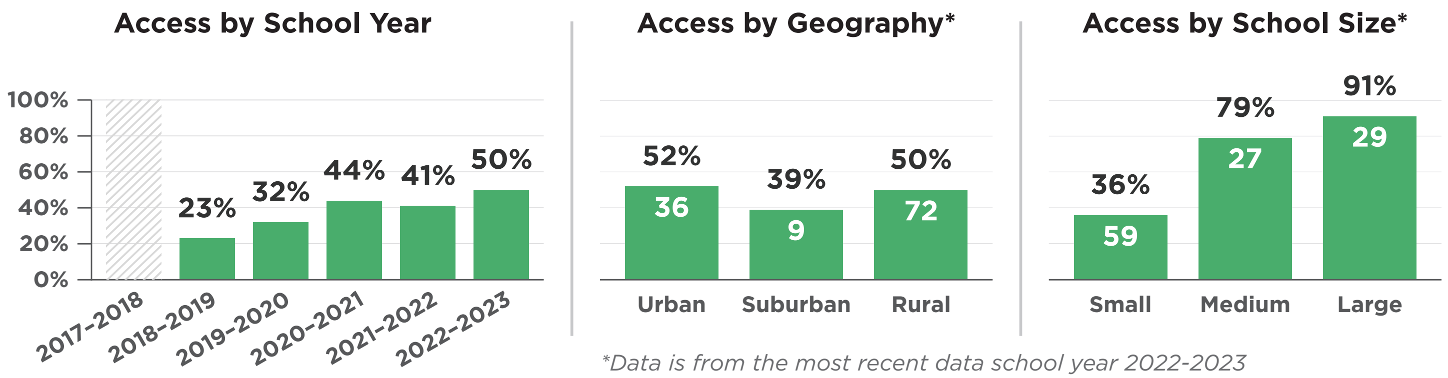
NEW MEXICO



How Can New Mexico Increase Opportunities for Students?

- New Mexico should require all high schools to offer at least one computer science course.
- New Mexico should require all preservice teachers to receive instruction in computer science education.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

3.0% of high school** students took foundational computer science in 2022-2023

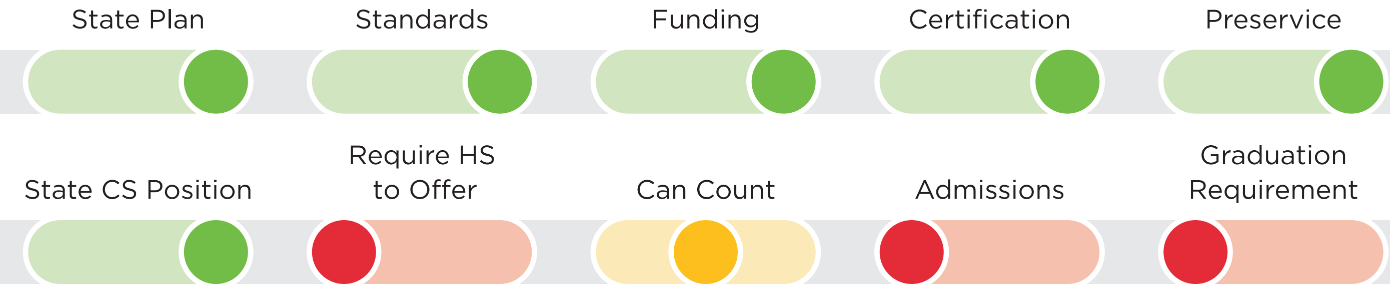
31% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

** New Mexico's participation data includes a small number of middle school students who took a high school level course

View even more data at: **advocacy.code.org/state-handouts/New-Mexico.pdf**

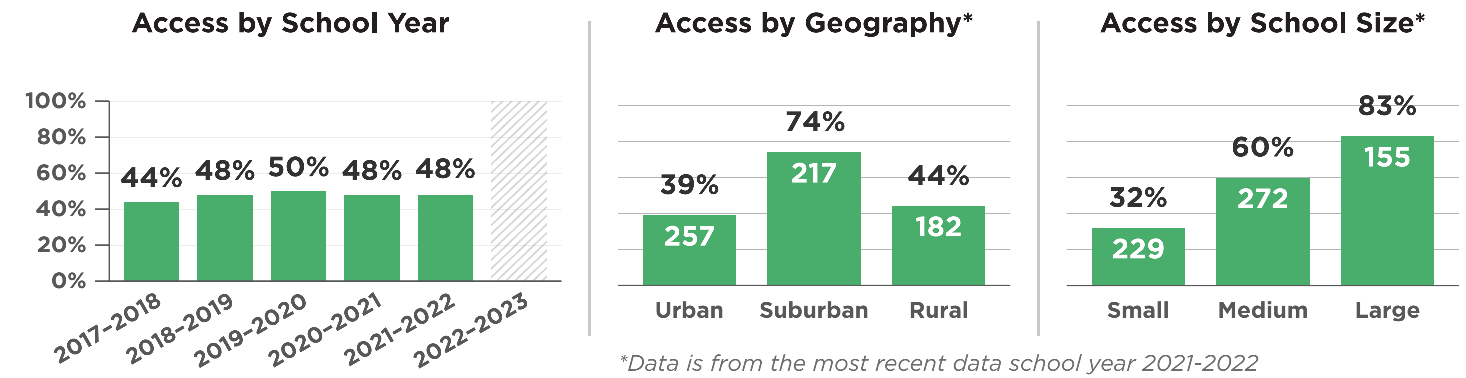
NEW YORK



How Can New York Increase Opportunities for Students?

- New York should adopt a graduation requirement for all high school students in computer science.
- New York should require all preservice teachers to receive instruction in computer science education. This will ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

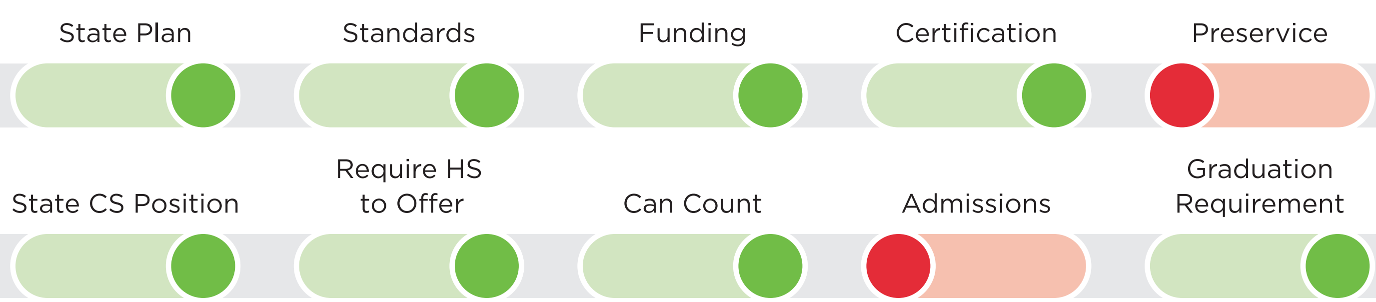
4.3% of high school students took foundational computer science in 2021-2022

33% of students who took foundational computer science were female

Black students are **1.5 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/New-York.pdf**

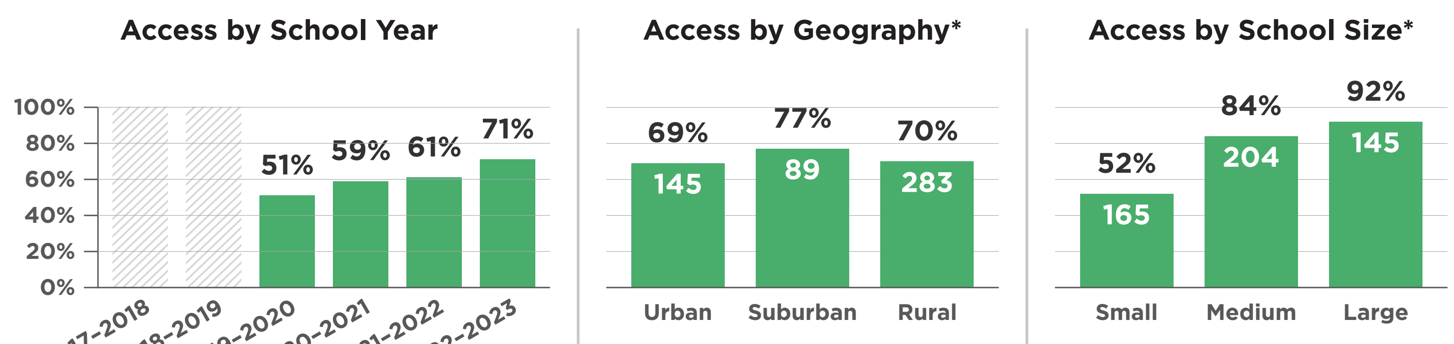
NORTH CAROLINA



How Can North Carolina Increase Opportunities for Students?

- North Carolina should require all preservice teachers to receive instruction in computer science education. This will ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

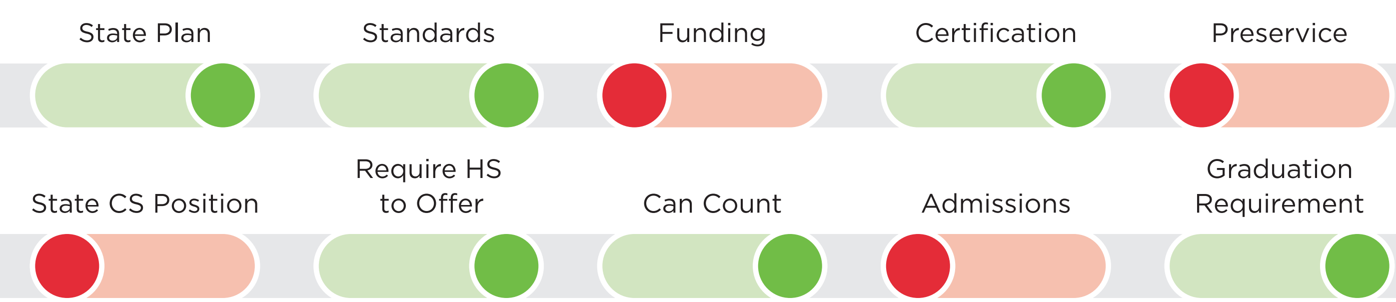
4.0% of high school students took foundational computer science in 2022-2023

26% of students who took foundational computer science were female

Black students are **1.6 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/North-Carolina.pdf**

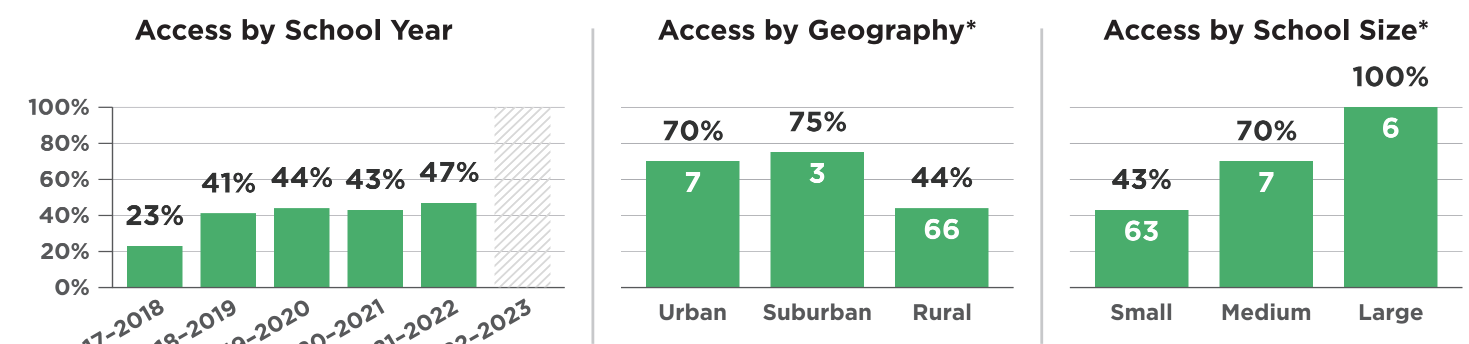
NORTH DAKOTA



How Can North Dakota Increase Opportunities for Students?

- North Dakota should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- North Dakota should require all schools to submit computer science course offerings and enrollment to the Department of Public Instruction, and this data should be made publicly available.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

3.4% of high school students took foundational computer science in 2022-2023

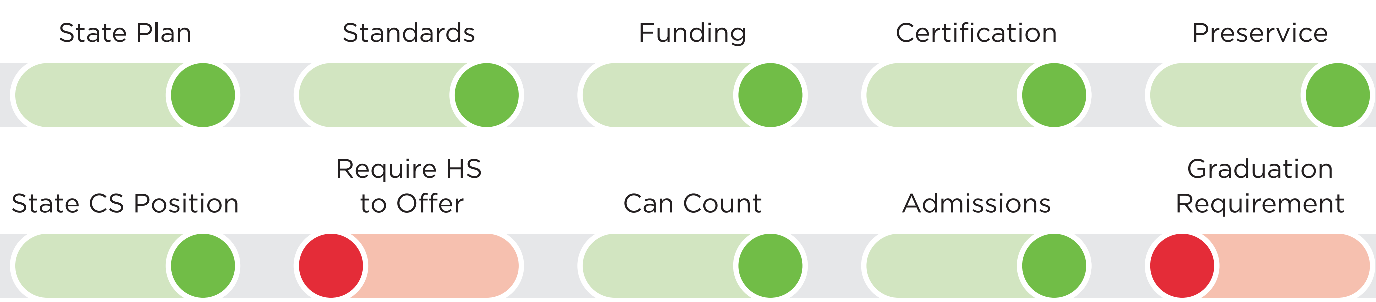
20% of students who took foundational computer science were female

Although Native American students make up 9% of the population, **only 1** Native American student took AP CS exams.**

** North Dakota does not collect race/ethnicity data for foundational courses

View even more data at: **advocacy.code.org/state-handouts/North-Dakota.pdf**

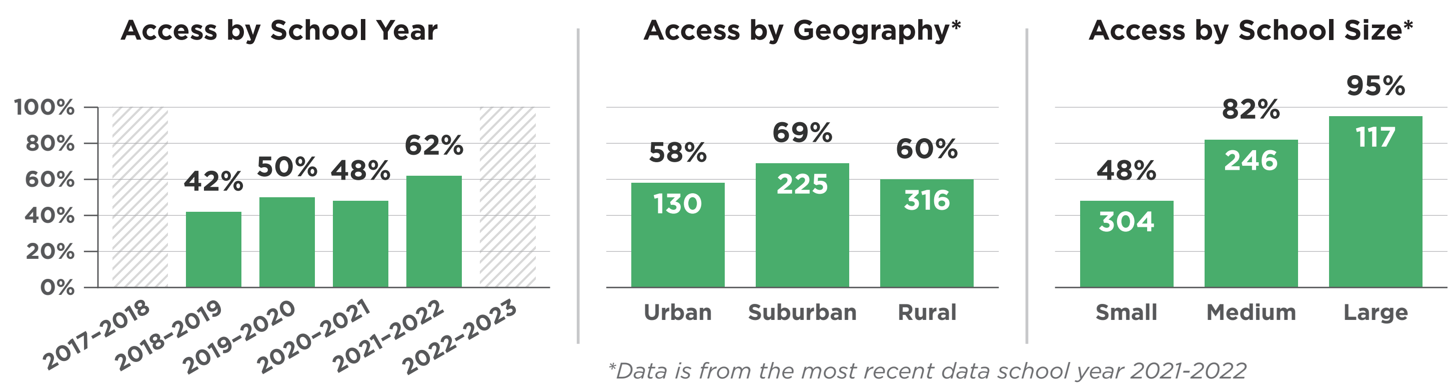
OHIO



How Can Ohio Increase Opportunities for Students?

- Ohio should adopt a graduation requirement for all high school students in computer science and should require all elementary and middle schools to offer instruction in computer science.
- Ohio should require all schools to submit computer science course offerings and enrollment to the Department of Education, and this data should be made publicly available.

Percentage of Public High Schools Offering Foundational Computer Science



Data is from the most recent data school year 2021-2022

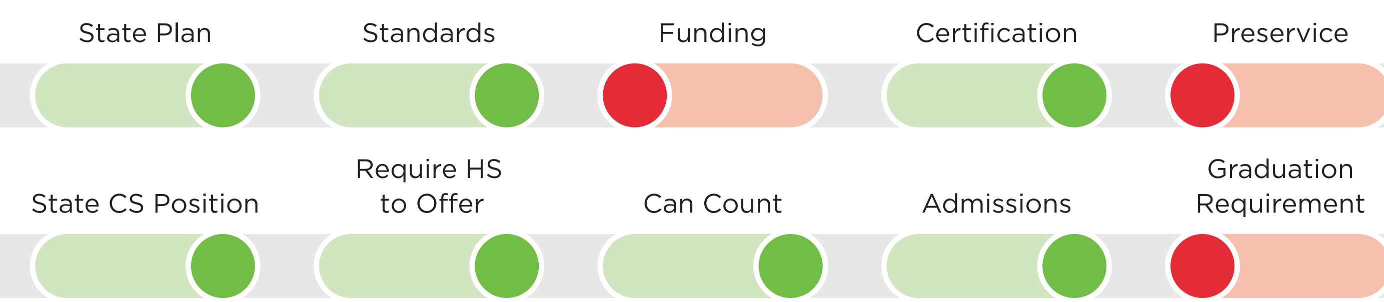
Course enrollment data for all foundational computer science courses is not available from Ohio. Nationally, we know that participation in all foundational computer science is broader than AP participation

27% of students who took AP computer science exams were female

Black students are **1.5 times** less likely to take AP CS exams than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Ohio.pdf**

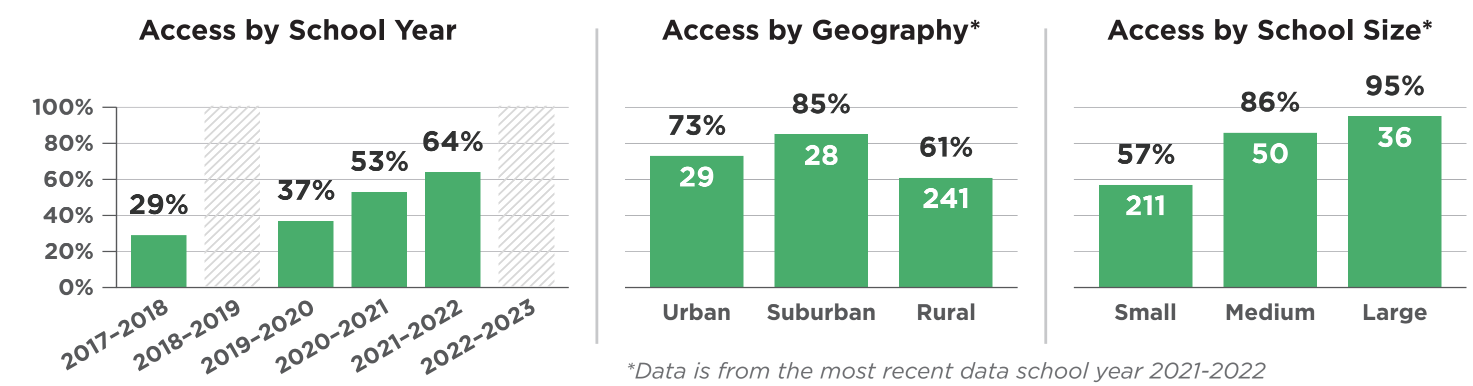
OKLAHOMA



How Can Oklahoma Increase Opportunities for Students?

- Oklahoma should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- Oklahoma should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



Data is from the most recent data school year 2021-2022

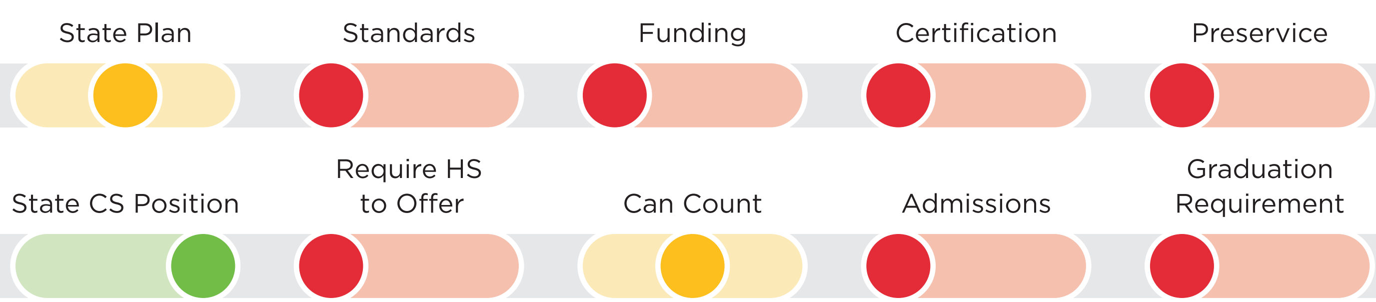
4.8% of high school students took foundational computer science in 2021-2022

37% of students who took foundational computer science were female

Black students are **1.6 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Oklahoma.pdf**

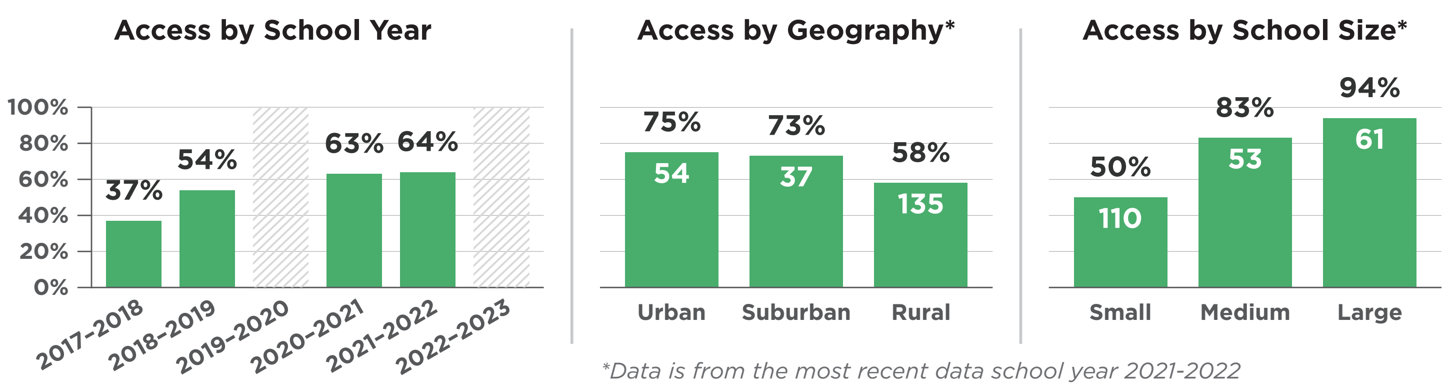
OREGON



How Can Oregon Increase Opportunities for Students?

- Oregon should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- Oregon should require all high schools to offer at least one computer science course.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

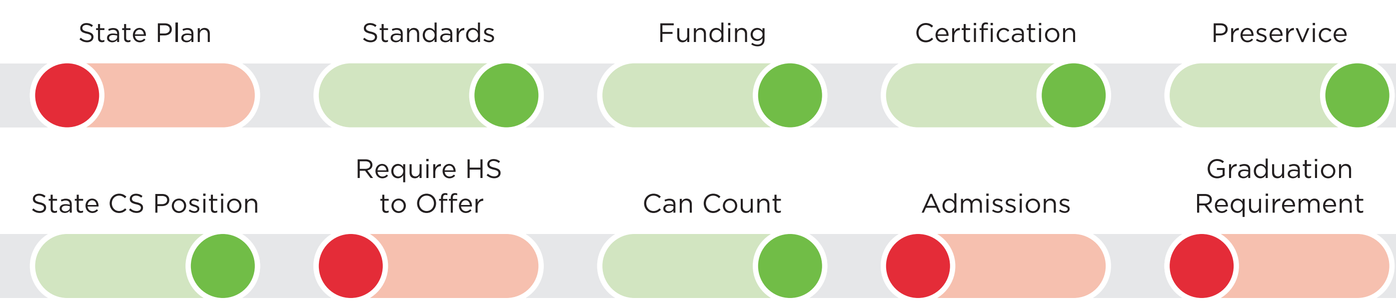
6.0% of high school students took foundational computer science in 2021-2022

22% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Oregon.pdf**

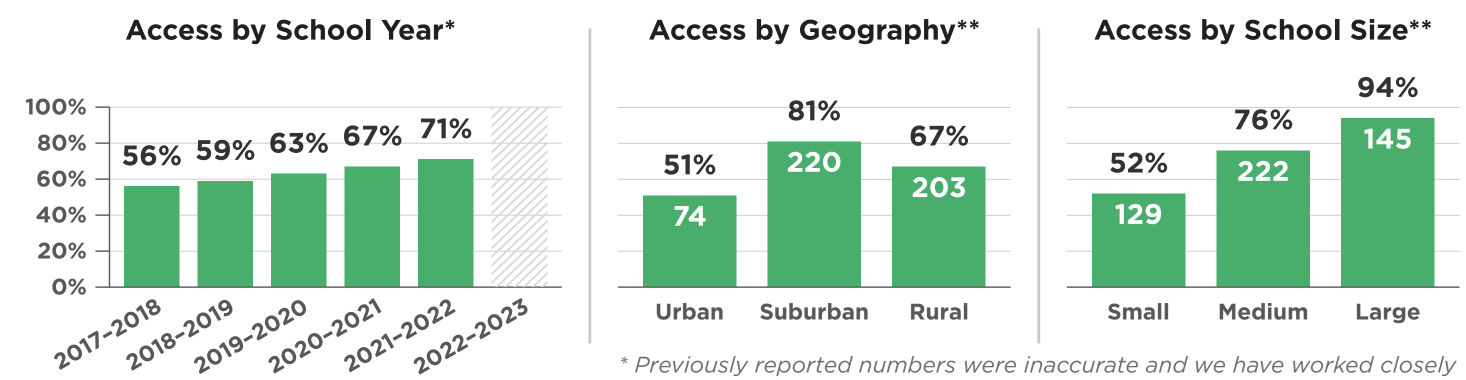
PENNSYLVANIA



How Can Pennsylvania Increase Opportunities for Students?

- Pennsylvania should create a state plan to establish strategies and goals for computer science education statewide.
- Pennsylvania should require all high schools to offer at least one computer science course.

Percentage of Public High Schools Offering Foundational Computer Science



* Previously reported numbers were inaccurate and we have worked closely with the state with this to correct the data.

**Data is from the most recent data school year 2021-2022

10% of high school students took foundational computer science in 2021-2022

40% of students who took foundational computer science were female

Black students are **1.4 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Pennsylvania.pdf**

RHODE ISLAND

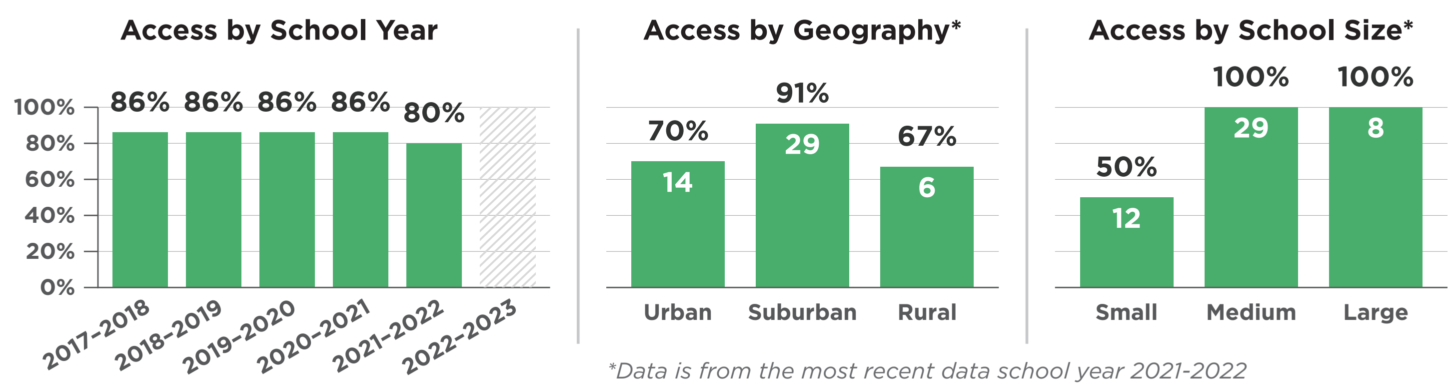
State Plan · Standards · Funding · Certification · Preservice

State CS Position · Require HS to Offer · Can Count · Admissions · Graduation Requirement

How Can Rhode Island Increase Opportunities for Students?

- Rhode Island should require all preservice teachers to receive instruction in computer science education. This will ensure there are enough teachers prepared to teach computer science in every school.
- Rhode Island should require all elementary and middle schools to offer instruction in computer science.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

11% of high school students took foundational computer science in 2021-2022

36% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Rhode-Island.pdf**

SOUTH CAROLINA

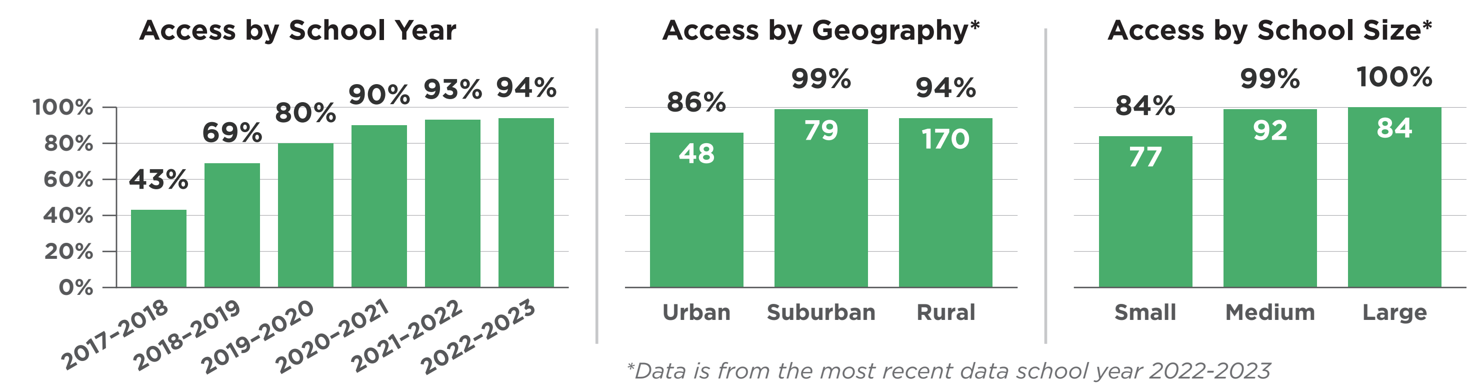
State Plan · Standards · Funding · Certification · Preservice

State CS Position · Require HS to Offer · Can Count · Admissions · Graduation Requirement

How Can South Carolina Increase Opportunities for Students?

- South Carolina should require all elementary and middle schools to offer instruction in computer science.
- South Carolina should expand their data collection to K–5 schools.
- South Carolina should finalize and publish their state plan.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

18% of middle and high school students took foundational computer science in 2022-2023

47% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/South-Carolina.pdf**

SOUTH DAKOTA

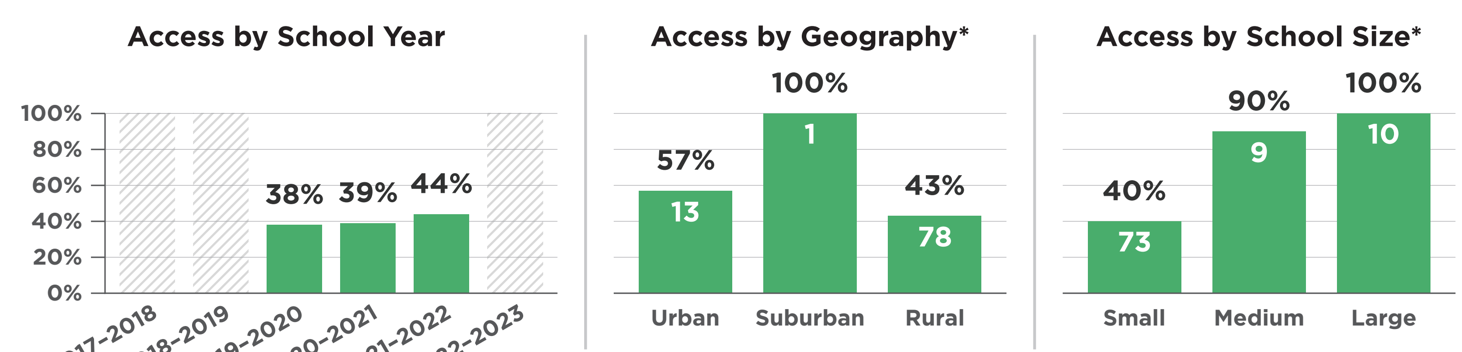
State Plan | Standards | Funding | Certification | Preservice

State CS Position | Require HS to Offer | Can Count | Admissions | Graduation Requirement

How Can South Dakota Increase Opportunities for Students?

- South Dakota should create a state plan to establish strategies and goals for computer science education across the state.
- South Dakota should create K–12 computer science standards that address the core concepts and practices in the K–12 Computer Science Framework.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2021-2022

Course enrollment data for all foundational computer science courses is not available from South Dakota. Nationally, we know that participation in all foundational computer science is broader than AP participation

20% of students who took AP computer science exams were female

Although Native American students make up 10% of the population, **no** Native American students took AP CS exams.

View even more data at: **advocacy.code.org/state-handouts/South-Dakota.pdf**

TENNESSEE

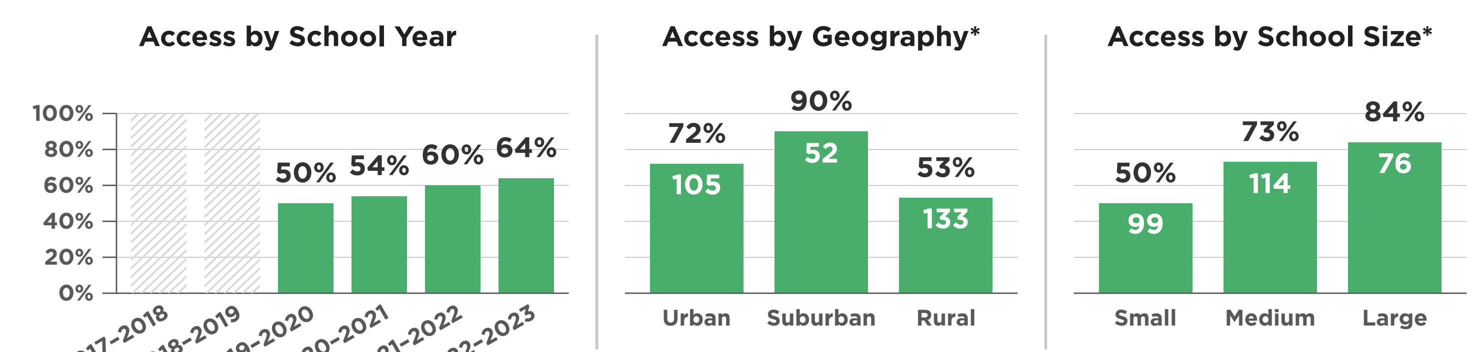
State Plan | Standards | Funding | Certification | Preservice

State CS Position | Require HS to Offer | Can Count | Admissions | Graduation Requirement

How Can Tennessee Increase Opportunities for Students?

- Tennessee should ensure its institutions of higher education have re-aligned their admission requirements to the new high school policy.

Percentage of Public High Schools Offering Foundational Computer Science



*Data is from the most recent data school year 2022-2023

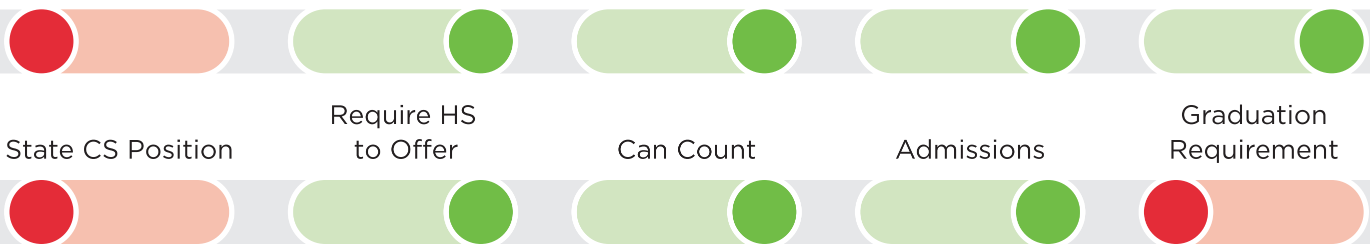
7.0% of high school students took foundational computer science in 2022-2023

29% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Tennessee.pdf**

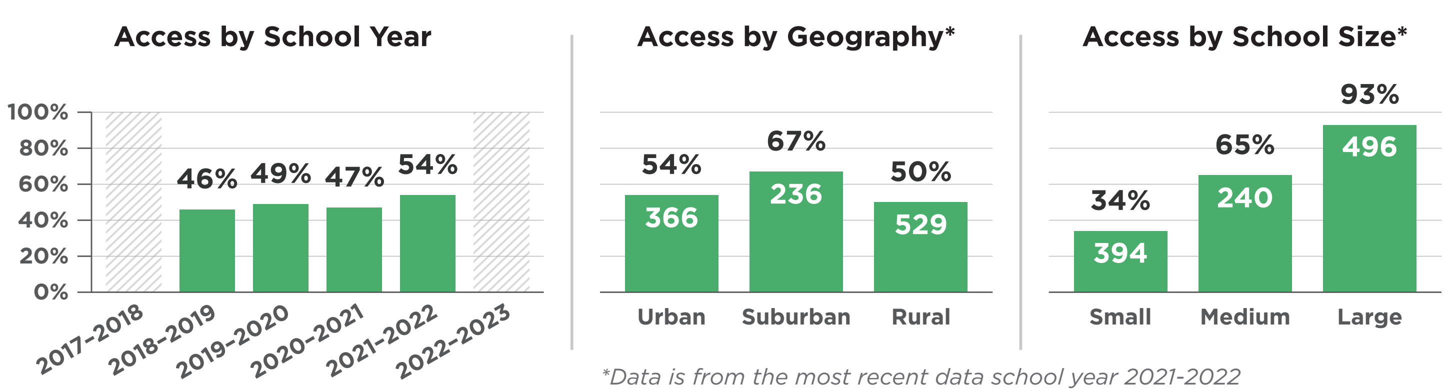
TEXAS



How Can Texas Increase Opportunities for Students?

- Although HB 2984 (2019) required the development of a state plan for computer science, Texas has yet to make progress towards a state plan.
- Texas should revisit its policy to require all high schools to offer computer science (2014), as only 54% of schools are meeting this requirement.

Percentage of Public High Schools Offering Foundational Computer Science



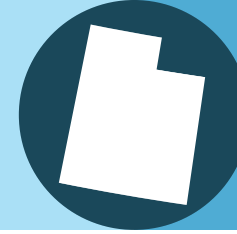
**Data is from the most recent data school year 2021-2022*

5.6% of high school students took foundational computer science in 2021-2022

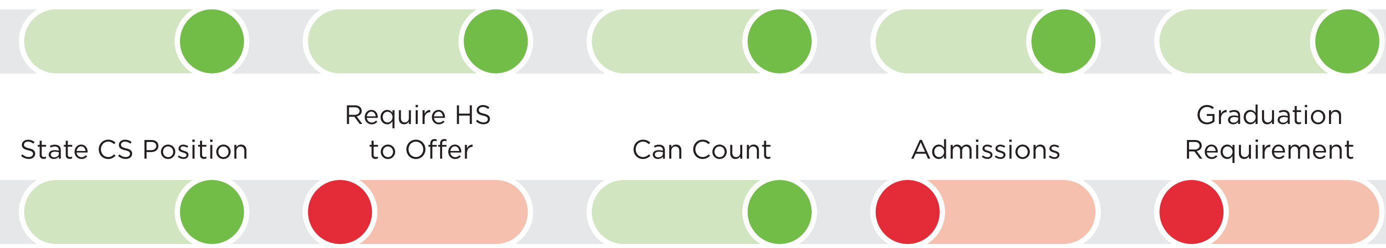
28% of students who took foundational computer science were female

Black and Hispanic students are **2 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Texas.pdf**



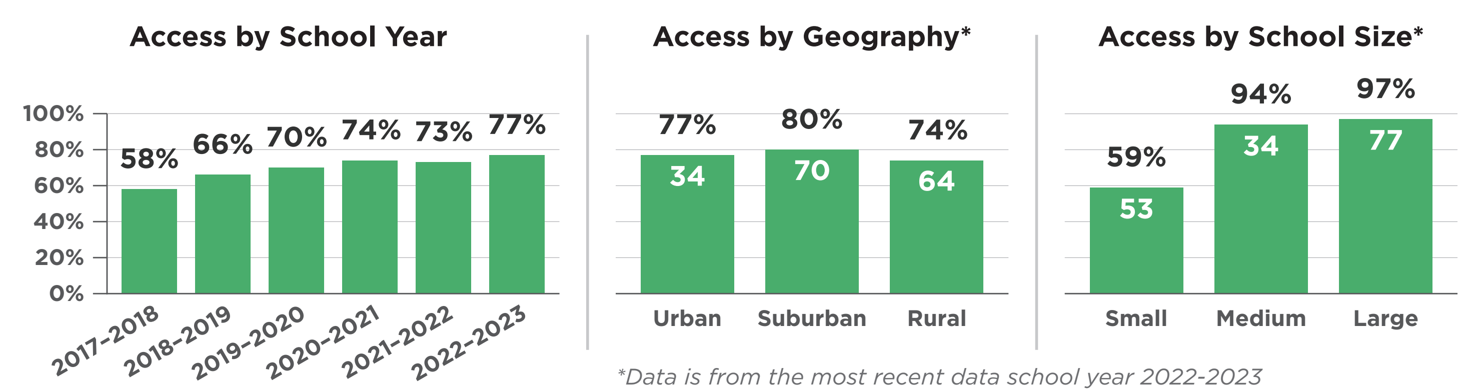
UTAH



How Can Utah Increase Opportunities for Students?

- Utah should adopt a graduation requirement for all high school students in computer science.
- Utah should require all preservice teachers to receive instruction in computer science education. This will ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



**Data is from the most recent data school year 2022-2023*

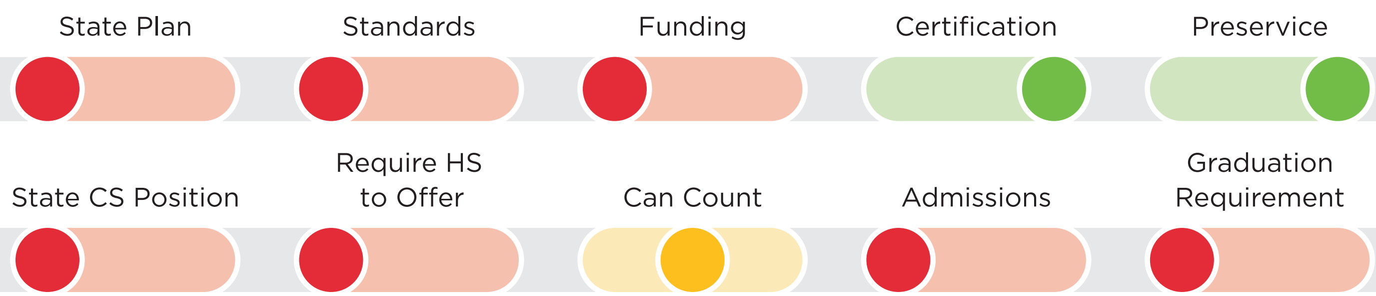
13% of high school students took foundational computer science in 2022-2023

34% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/Utah.pdf**

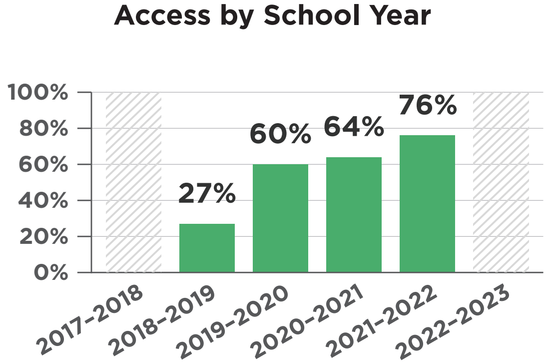
VERMONT

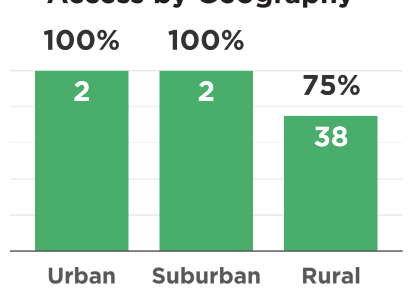


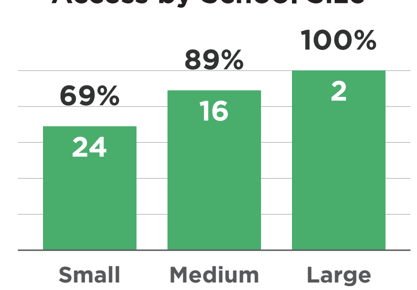
How Can Vermont Increase Opportunities for Students?

- Vermont should create a state plan to establish strategies and goals for computer science education statewide.
- Vermont should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science







Data is from the most recent data school year 2021-2022

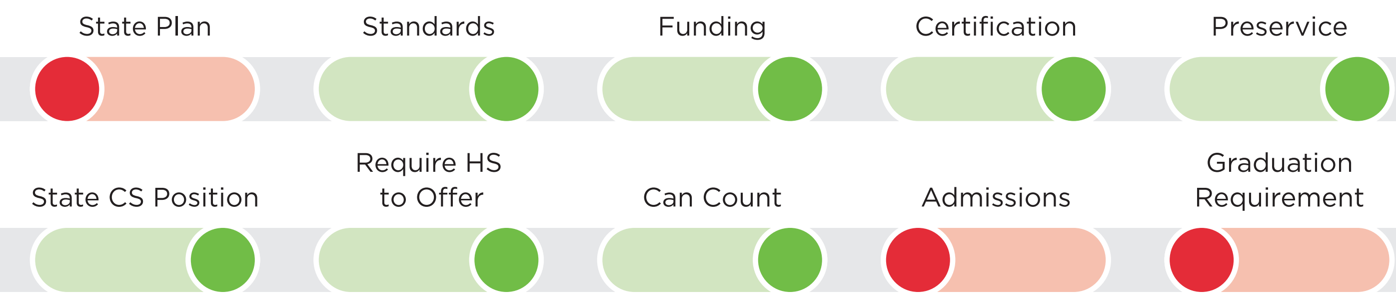
2.0% of high school students took foundational computer science in 2021-2022

30% of students who took foundational computer science were female

Black students are **1.8 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Vermont.pdf**

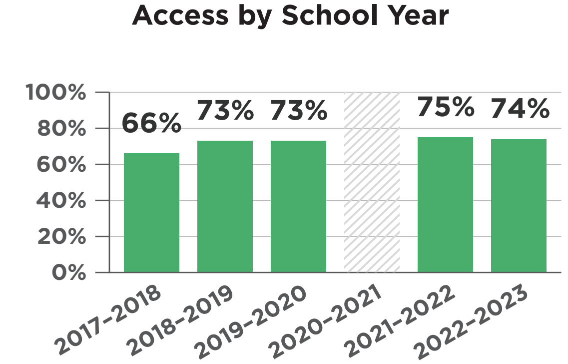
VIRGINIA

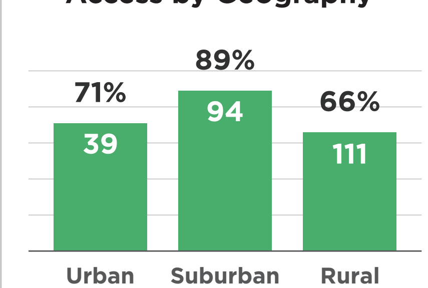


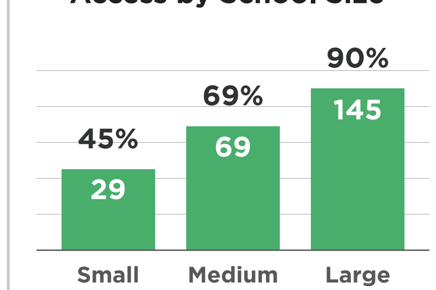
How Can Virginia Increase Opportunities for Students?

- Virginia should create a state plan to establish strategies and goals for computer science education across the state.
- Virginia should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science







Data is from the most recent data school year 2022-2023

5.6% of high school students** took foundational computer science in 2022-2023

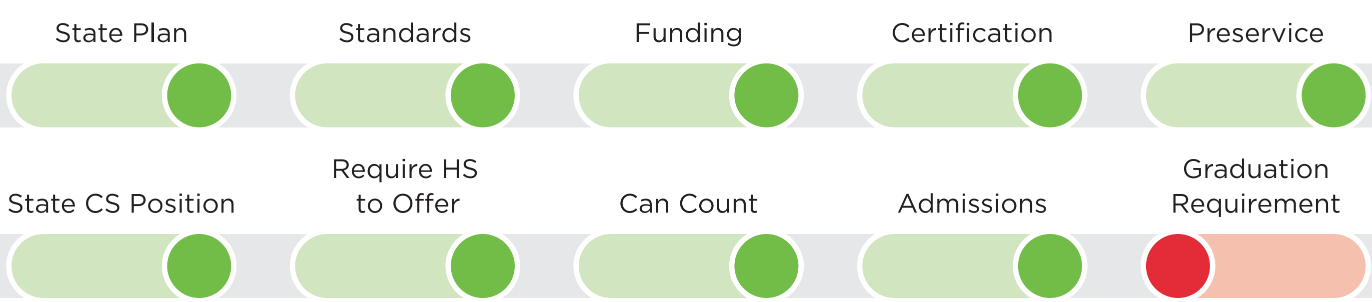
28% of students who took foundational computer science were female

Hispanic students are **2.3 times** less likely to take foundational CS than their white and Asian peers

*** Virginia's participation data includes a small number of middle school students who took a high school level course*

View even more data at: **advocacy.code.org/state-handouts/Virginia.pdf**

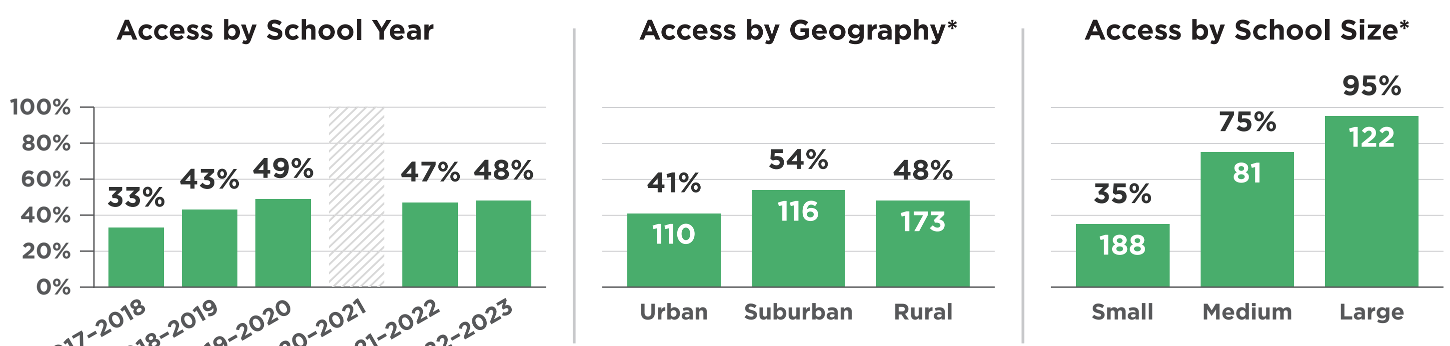
WASHINGTON



How Can Washington Increase Opportunities for Students?

- Washington should adopt a graduation requirement for all high school students in computer science.
- Washington should continue implementing policies requiring high schools to offer computer science.
- Washington should expand its data collection to include K–5 schools.

Percentage of Public High Schools Offering Foundational Computer Science



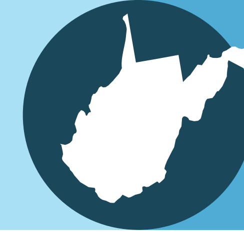
Data is from the most recent data school year 2022-2023

5.0% of middle and high school students took foundational computer science in 2022-2023

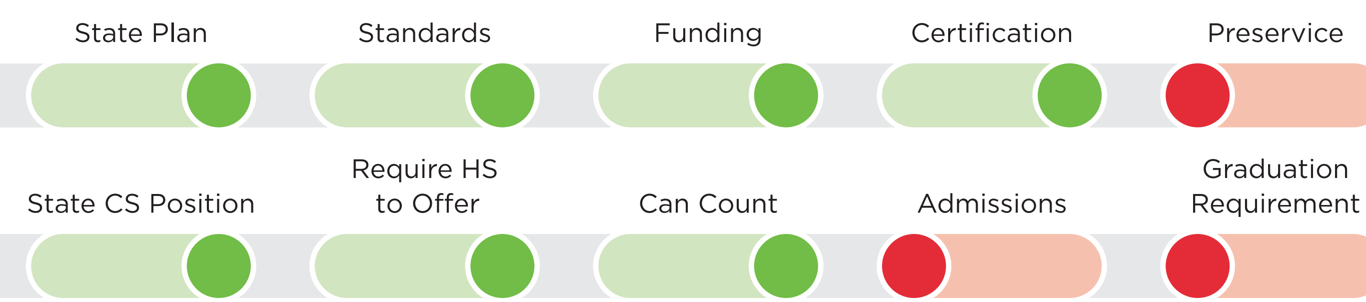
30% of students who took foundational computer science were female

Hispanic students are **1.4 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Washington.pdf**



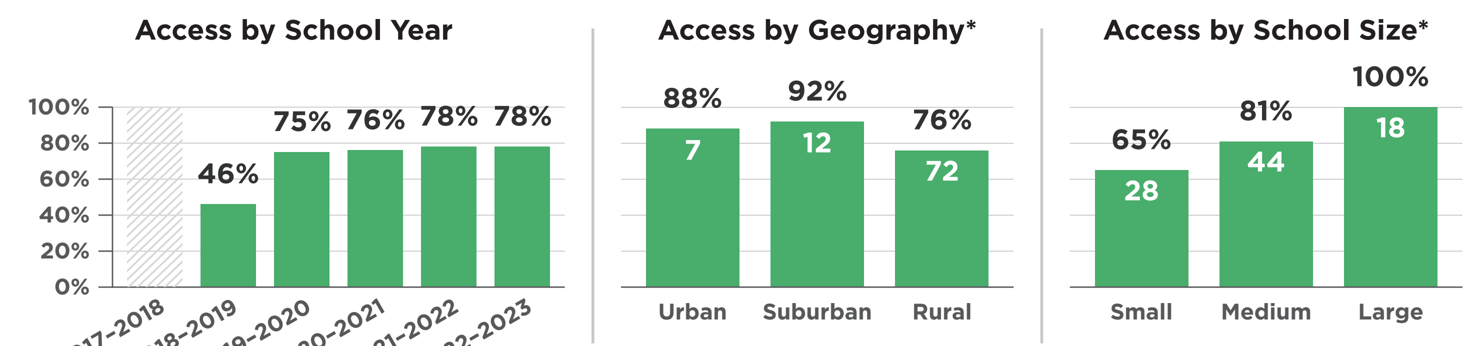
WEST VIRGINIA



How Can West Virginia Increase Opportunities for Students?

- West Virginia should adopt a graduation requirement for all high school students in computer science.
- West Virginia should require all preservice teachers to receive instruction in computer science education. This will ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science



Data is from the most recent data school year 2022-2023

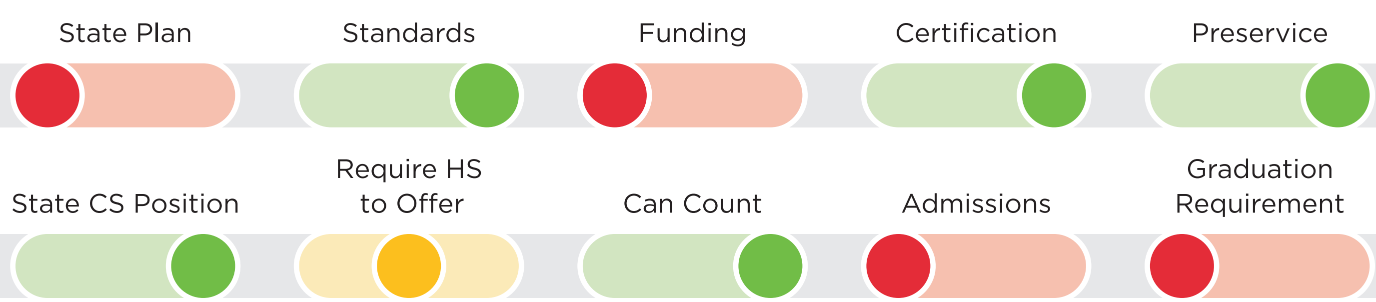
4.0% of high school students took foundational computer science in 2022-2023

26% of students who took foundational computer science were female

Students of all racial and ethnic groups are **similarly likely** to take foundational computer science

View even more data at: **advocacy.code.org/state-handouts/West-Virginia.pdf**

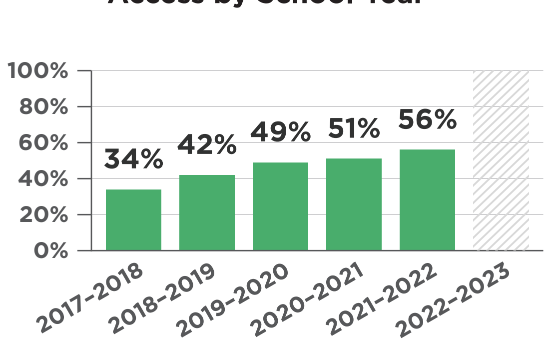
WISCONSIN

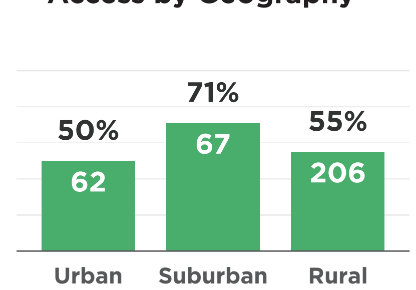


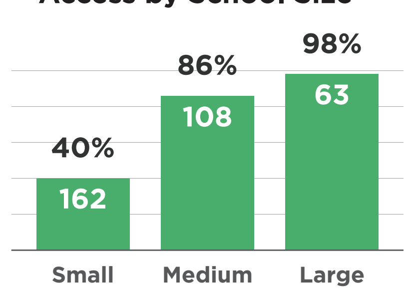
How Can Wisconsin Increase Opportunities for Students?

- Wisconsin should fund professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.
- Wisconsin should adopt a graduation requirement for all high school students in computer science.

Percentage of Public High Schools Offering Foundational Computer Science







** Previously reported numbers were inaccurate and we have worked closely with the state with this to correct the data.*

***Data is from the most recent data school year 2021-2022*

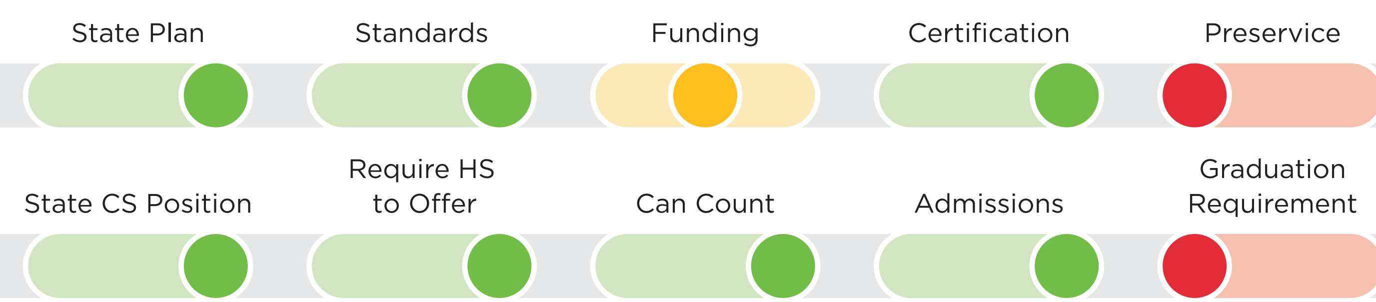
3.3% of high school students took foundational computer science in 2021-2022

21% of students who took foundational computer science were female

Hispanic students are **1.3 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Wisconsin.pdf**

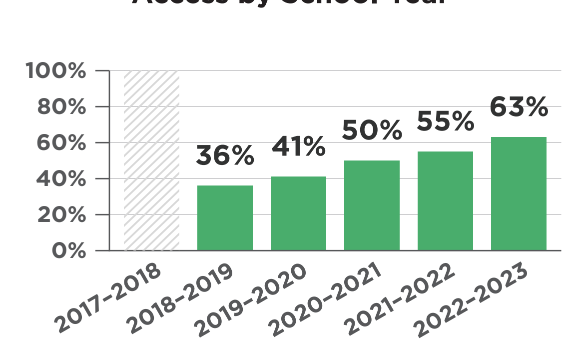
WYOMING

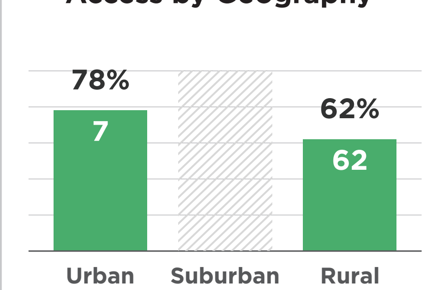


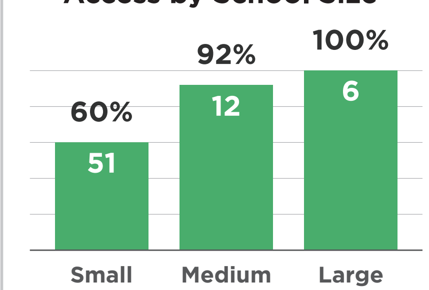
How Can Wyoming Increase Opportunities for Students?

- Wyoming should adopt a graduation requirement for all high school students in computer science.
- Wyoming should provide dedicated funding for professional development opportunities for teachers to ensure there are enough teachers prepared to teach computer science in every school.

Percentage of Public High Schools Offering Foundational Computer Science







**Data is from the most recent data school year 2022-2023*

5.0% of middle and high school students took foundational computer science in 2022-2023

30% of students who took foundational computer science were female

Native American students are **2.5 times** less likely to take foundational CS than their white and Asian peers

View even more data at: **advocacy.code.org/state-handouts/Wyoming.pdf**

APPENDIX 1: STATE-BY-STATE POLICY TABLE AND POLICY RUBRICS

State-by-State Policy Adoption

State-by-State Policy Adoption

STATE	STATE PLAN	STANDARDS	FUNDING	CERTIFICATION	PRESERVICE INCENTIVES	STATE CS SUPERVISOR	REQUIRE HS TO OFFER	CAN COUNT	ADMISSIONS	GRADUATION REQUIREMENT
AL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
AK	Yes	Yes	No	Yes	No	Yes	No	District Decision	No	No
AZ	No	Yes	Yes	Yes	No	Yes	No	District Decision	No	No
AR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CA	Yes	Yes	Yes	Yes	No	Yes	No	District Decision	Yes	No
CO	No	No	Yes	No	No	Yes	No	District Decision	Yes	No
CT	Yes	Yes	No	Yes	Yes	Yes	Yes	District Decision	No	No
DE	No	Yes	No	No	No	No	Yes	Yes	No	No
DC	No	No	No	Yes	No	No	No	Yes	No	No
FL	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
GA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
HI	Yes	Yes	Yes - Historic Yes	Yes	No	Yes	Yes	Yes	No	Other
ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
IL	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
IN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
IA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	District Decision	Yes	No
KS	No	Yes	Yes	In Progress	Yes	Yes	Yes	District Decision	No	No
KY	Yes	Yes	Yes	Yes	No	Yes	No	District Decision	Yes	No
LA	In Progress	No	Yes	Yes	No	No	No	Yes	Yes	No
ME	Yes	No	Yes	No	No	Yes	No	Yes	No	No
MD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
MA	Yes	Yes	Yes - Historic Yes	Yes	Yes	Yes	No	Yes	Yes	No
MI	No	Yes	Yes	No	No	Yes	No	Yes	No	No
MN	In Progress	No	Yes	No	No	Yes	No	Yes	No	No
MS	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
MO	In Progress	Yes	Yes	Yes	No	In Progress	Yes	Yes	Yes	No
MT	No	Yes	Yes	Yes	Yes	No	No	District Decision	No	No
NE	In Progress	In Progress	No	No	No	Yes	Yes	Yes	No	Yes
NV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	District Decision	No	No
NJ	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
NM	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No
NY	Yes	Yes	Yes	Yes	Yes	Yes	No	District Decision	No	No
NC	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes
ND	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Yes
OH	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
OK	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No
OR	In Progress	No	No	No	No	Yes	No	District Decision	No	No
PA	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
RI	Yes	Yes	Yes - Historic Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
SC	Soon In Progress	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
SD	No	No	No	Yes	No	No	No	Yes	No	No
TN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
TX	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
UT	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
VT	No	No	No	Yes	Yes	No	No	District Decision	No	No
VA	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
WA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
WV	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
WI	No	Yes	No	Yes	Yes	Yes	Other	Yes	No	No
WY	Yes	Yes	Other	Yes	No	Yes	Yes	Yes	Yes	No

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, strategies for achieving the goals and a schedule for how often it will be revisited and updated; 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 incentives for 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.

Each of the above involves a state-led effort; individual programs led by universities are not sufficient to meet this state policy. We are moving towards a policy that requires all preservice teachers to gain exposure in computer science.

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.

We are moving towards a policy that requires all K-12 schools to offer computer science

Computer Science Can Satisfy a Core High School Graduation Credit

A state is considered to allow computer science to count towards a core graduation credit 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.

A Requirement for All Students to Take Computer Science to Earn a High School Diploma

A state is considered to have a computer science graduation requirement if the policy meets the following criteria:

- Requires all students to earn a credit named "computer science" or has a related name that includes "computer science" to receive a standard diploma for high school graduation;
- List of courses or standards that satisfy the requirement, all of which must include computer science topics and standards; this list must be available before the graduation requirement goes into effect; and
- A description of the requirement is publicly accessible.

APPENDIX 2: COMPUTER SCIENCE ACCESS AND PARTICIPATION METHODOLOGY

9–12 Computer Science Access Report Methodology

The high school data set includes all public and public charter high schools from every state and D.C. Based on this data, 14,408 public high schools in the U.S. offer foundational computer science (there are 24,987 public high schools in the nation). Data was collected between spring and summer 2023 for the most recent school year with available data from each state.

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, and rolled statewide 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, searching school course catalogs and data from other providers. The main source(s) of data for each state are included in Appendix 3. State education agencies also worked collaboratively to identify schools that should not be included in this report, such as credit recovery centers. 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 https://code.org/yourschool.

School IDs were cross-referenced with data from the U.S. Department of Education to determine each school's geography (urban, suburban, 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 multilingual learners.

<table>
<tr><th>Data</th><th>Data Source</th></tr>
<tr><td>Total schools in the U.S.</td><td rowspan="5">NCES Common Core of Data (CCD) Public Elementary/ Secondary School (Survey 2021-22, generated from the ElSi Table Generator) with input from State Education Agencies</td></tr>
<tr><td>School characteristics (grades offered)</td></tr>
<tr><td>Student demographics (race/ethnicity)</td></tr>
<tr><td>School enrollment</td></tr>
<tr><td>Percentage of students who qualify for free and reduced-price meals programs (per school)</td></tr>
<tr><td>School locale code/geography</td><td>NCES Education Demographic and Geographic Estimates (2021-22)</td></tr>
<tr><td>Percentage of students who qualify for services under IDEA</td><td>NCES Digest of Education Statistics Table 204.70 (2021–22)</td></tr>
<tr><td>Percentage of students who qualify for services under Section 504 of the Rehabilitation Act</td><td>Civil Rights Data Collection School-Level Data (2017–18)</td></tr>
<tr><td>Percentage of students identified as (English Language Learners)</td><td>NCES Digest of Education Statistics Table 204.20 (2020-21)</td></tr>
<tr><td>Percentage of students who qualify for free and reduced-price meals programs (statewide)</td><td>NCES Digest of Education Statistics Table 204.10 (2021-22)</td></tr>
<tr><td>Course codes</td><td>School Courses for the Exchange of Data (SCED), state education agency course catalogs, and local course catalogs</td></tr>
<tr><td>Course offerings per school</td><td>• State education agencies;
• National or state-specific organizations (BootUp, Cambridge International Assessment, College Board, SkillsStruck, TEALS);
• District/school course catalogs or direct contact with school employees; and
• Survey responses from teachers, administrators, and parents at code.org/yourschool</td></tr>
<tr><td>Course enrollment, including demographics</td><td>State education agencies</td></tr>
</table>

High Schools

For the school list, we use the 2021–22 NCES list of schools that enroll students in at least one high school grade (10–12) and remove schools that have since closed, do not offer academic courses, or serve transient populations (e.g., specialized programs or some juvenile detention centers), and CTE centers that are co-located with a high school.

Courses

The Access Report describes the prevalence of 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.

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. 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). Virtual offerings available to students across the state are only counted if they are listed on a school's course catalog. The list of courses for each state can be found at https://advocacy.code.org/stateofcs

Data Carryover

Each year, unless new data is provided, we roll over the data from the previous year. This data is only carried over for a maximum of one year before it is replaced with new data. Ideally, we strive for all schools in every state to have new data, but this is not always possible.

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 7–8 grades. A school is included in the elementary school data set if it offers at least one of the K–6 grades. Thus, schools that offer grade levels in multiple bands (e.g., K–8 or K–12) are included in multiple data sets.

Enrollment data, as reported here, is likely lower than actual enrollment due to several factors. Overall participation is compared to the total enrollment in the school, and thus may appear to be lower in schools with other grade bands. Participation data does not include masked data due to low numbers. We also know that 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, we have created a more formalized process to handle conflicting data for whether a school offers foundational computer science. Data from the state education agency is viewed as the ultimate source of truth; if the agency says a school is offering foundational computer science, it is coded as a yes in our report (this has always been the case), even if other sources do NOT report the school as offering. If there are any other conflicts, such as an agency saying a school is NOT offering, but College Board says the school is offering, we manually check with the school and also confer with the state.

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

Disparity Index Methodology

A disparity index[33] is used to quantify the difference in access and participation for underrepresented groups. An example of a disparity index formula for Hispanic/Latino/Latina student participation is:

$$\frac{\dfrac{\textbf{Number of white and Asian students enrolled in computer science}}{\textbf{Number of white and Asian students in the school population}}}{\dfrac{\textbf{Number of Hispanic/Latino/Latina students enrolled in computer science}}{\textbf{Number of Hispanic/Latino/Latina students in the school population}}}$$

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.

APPENDIX 3: COMPUTER SCIENCE ACCESS AND PARTICIPATION DATA TABLES

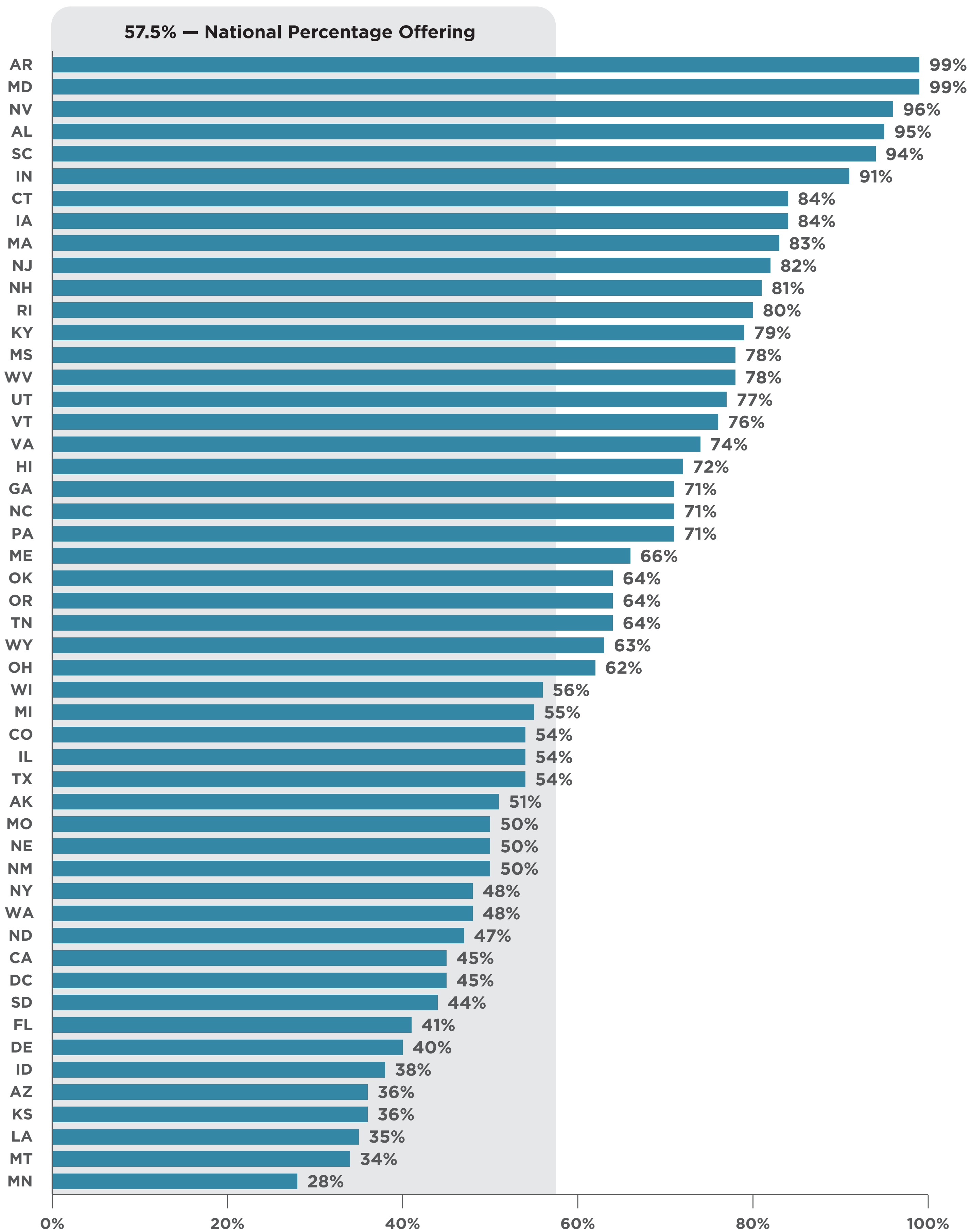
All data included in this appendix and additional data (including total numbers of schools and numbers in each category) can be downloaded from advocacy.code.org/stateofcs.

Percentage of High Schools Offering Foundational Computer Science Courses

	2017–18 Access	2018–19 Access	2019–20 Access	2020–21 Access	2021–22 Access	2022–23 Access	Primary data source
AL	39%	49%	57.%	82%	85%	95%	State Education Agency
AK		19%	32%	42%	51%		School Catalogs
AZ			38%	36%			State Education Agency
AR	64%	78%	89%	92%	92%	99%	State Education Agency
CA	47%	40%				45%	School Catalogs
CO	38%			57.%	54%		State Education Agency
CT		67%	82%	77%	84%		State Education Agency
DE		65%	68%	55%	40%		State Education Agency
DC		20%	41%	37%	45%		School Catalogs
FL	23%	30%	33%	38%	41%		State Education Agency
GA	50%	52%	55%	61%	66%	71%	State Education Agency
HI	47%	57%	62%	72%	77%	72%	State Education Agency and School Catalogs
ID			38%	40%	38%	38%	State Education Agency
IL	37%	45%	43%	44%	54%		State Education Agency
IN	51%	62%	72%	74%	85%	91%	State Education Agency
IA	49%	58%	66%	64%	71%	84%	State Education Agency
KS	26%	28%	27%		40%	36%	State Education Agency
KY			45%	51%	63%	79%	State Education Agency
LA	15%	23%	23%	29%	32%	35%	State Education Agency
ME			56%	60%	66%		State Education Agency
MD	62%	83%	90%	92%	98%	99%	State Education Agency
MA	67%	75%	82%	78%	83%		State Education Agency
MI			37%	44%	46%	55%	State Education Agency and School Catalogs
MN		19%	24%	21%	28%		State Education Agency and School Catalogs
MS	28%	47%	48%	65%	60%	78%	State Education Agency
MO	32%	38%	50%	49%	50%		State Education Agency
MT	25%	31%	36%	37%	36%	34%	State Education Agency
NE	40%	44%	46%	52%	50%		State Education Agency
NV		57%	77%	83%	83%	96%	State Education Agency
NH		49%	67%	78%	82%	81%	School Catalogs
NJ	59%	67%	68%	67%	82%		State Education Agency
NM		23%	32%	44%	41%	50%	State Education Agency
NY	44%	48%	50%	48%	48%		State Education Agency
NC			51%	59%	61%	71%	State Education Agency
ND	23%	41%	44%	43%	44%	59%	State Education Agency
OH		42%	50%	48%	62%		State Education Agency and School Catalogs
OK	29%		37%	53%	64%		State Education Agency
OR	37%	54%		63%	64%		State Education Agency
PA	56%	59%	63%	67%	71%		State Education Agency
RI	86%	86%	86%	86%	80%		State Education Agency
SC	43%	69%	80%	90%	93%	94%	State Education Agency
SD			38%	39%	44%		State Education Agency
TN			50%	54%	60%	64%	State Education Agency
TX		46%	49%	47%	54%		State Education Agency
UT	58%	66%	70%	74%	73%	77%	State Education Agency
VT		27%	60%	64%	76%		State Education Agency and School Catalogs
VA	66%	73%	73%		75%	74%	State Education Agency
WA	33%	43%	49%		48%	47%	State Education Agency
WV		46%	75%	76%	78%	78%	State Education Agency
WI	34%	42%	49%	51%	56%		State Education Agency
WY		36%	41%	50%	55%	63%	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*
**HI: Data includes public DOE from 22-23 and public charter schools data from 21-22*
**AK, AZ, DE, DC, FL, ND, OK, VT: Re-reporting last year's data with some additional data*

Percentage of High Schools Offering Computer Science by State



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

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 100 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 statelevel computer science education reform. Working with the collective impact model, ECEP supports an alliance of 30 states and Puerto Rico to identify and develop effective educational interventions, and expand state-level infrastructure to drive educational policy change.

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