MINNESOTA

2023 State of Computer Science Education

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. This report calls upon advocates to embrace the urgency of this matter and revamp school curricula to align with the demands of the 21st century, including requiring that all students learn computer science.
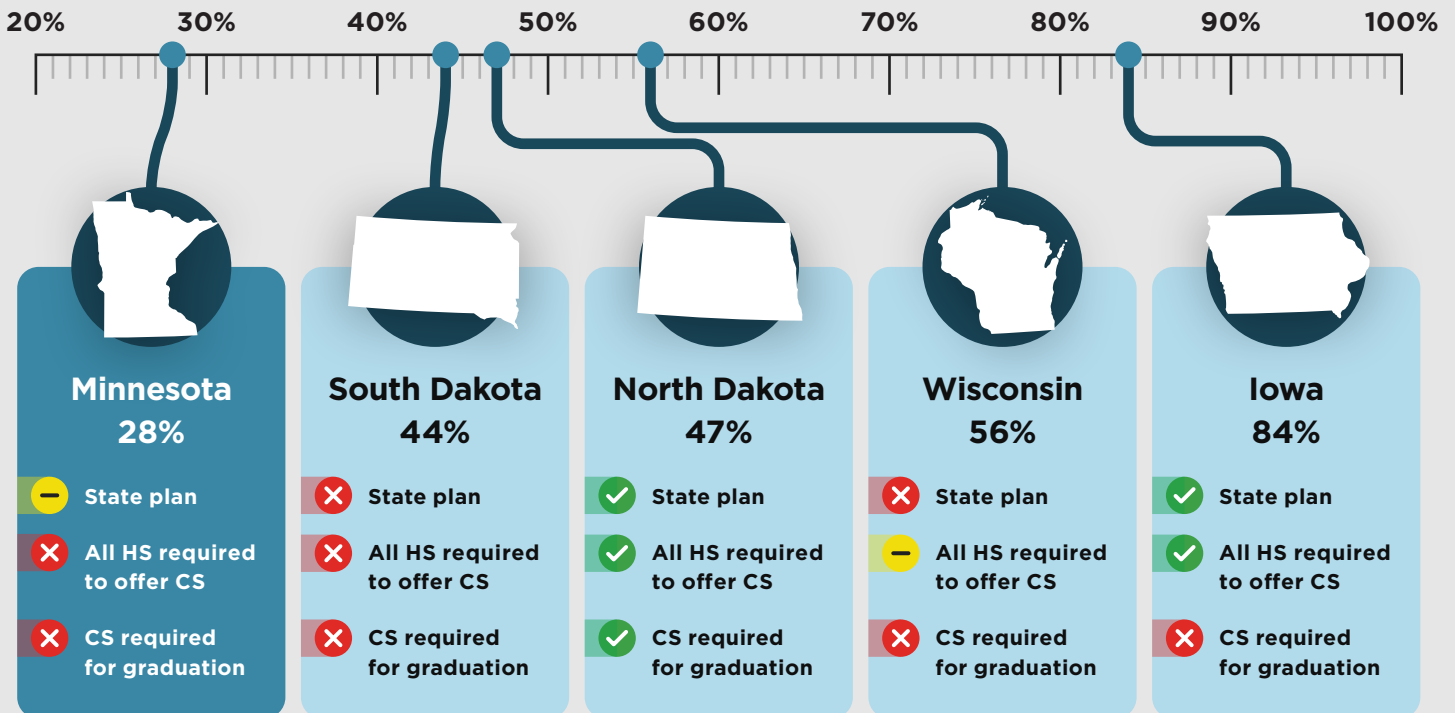
Currently, 57.5% of public high schools in the United States (U.S.) offer a foundational computer science class—an achievement marking the largest percentage growth in the last five years. Across the 35 states* where data is available, 5.8% of high school students are enrolled in foundational computer science. Even with growing access this growth, large disparities still exist, and we must continue to focus on eliminating participation gaps.

7,384
In 2023, MN averaged 7,384 open computing jobs each month

$105,311
These jobs have an average salary of $105,311

*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, WV, WI

Comparative Access to Computer Science Courses
(percentage of high schools offering)

20%　30%　40%　50%　60%　70%　80%　90%　100%

	Minnesota 28%	South Dakota 44%	North Dakota 47%	Wisconsin 56%	Iowa 84%
State plan	➖	❌	✅	❌	✅
All HS required to offer CS	❌	❌	✅	➖	✅
CS required for graduation	❌	❌	✅	❌	❌

Ten Policies to Make Computer Science Foundational

1.

Create a **statewide plan** for K–12 computer science

2.

Define computer science and establish standards for K–12 computer science

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 university programs to **encourage all preservice teachers** to gain exposure to computer science

6.

Establish **dedicated computer science** positions in a state education agency

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

What Has Minnesota Done to Advance Computer Science Education?

Minnesota passed $1M for computer science in 2023, the first fully dedicated funding for the subject in the state.

Minnesota added a full-time computer science specialist to the Department of Education in 2023, joining the department's part-time specialist.

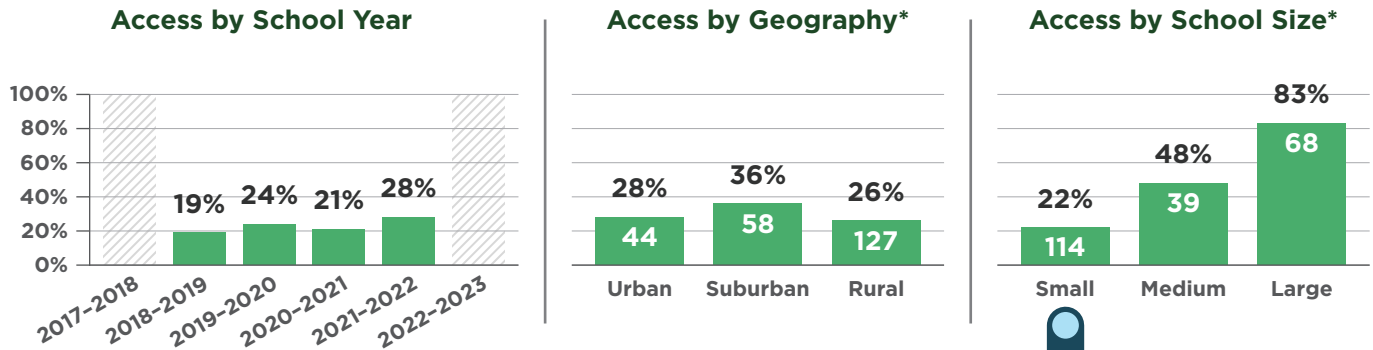## How Can Minnesota Increase Opportunities for Students?

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.

MINNESOTA

Percentage of Public High Schools Offering Foundational Computer Science

Access by School Year

School Year	Percentage
2017–2018	
2018–2019	19%
2019–2020	24%
2020–2021	21%
2021–2022	28%
2022–2023	

Access by Geography*

	Urban	Suburban	Rural
Percentage	28%	36%	26%
Count	44	58	127

Access by School Size*

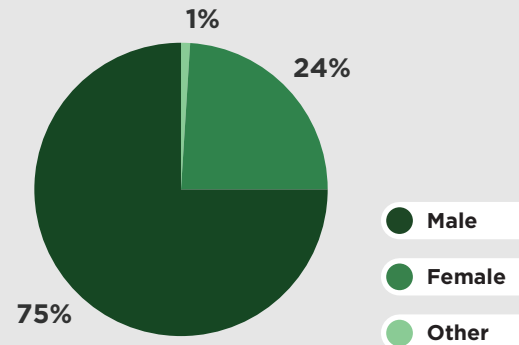|	Small	Medium	Large
Percentage	22%	48%	83%
Count	114	39	68

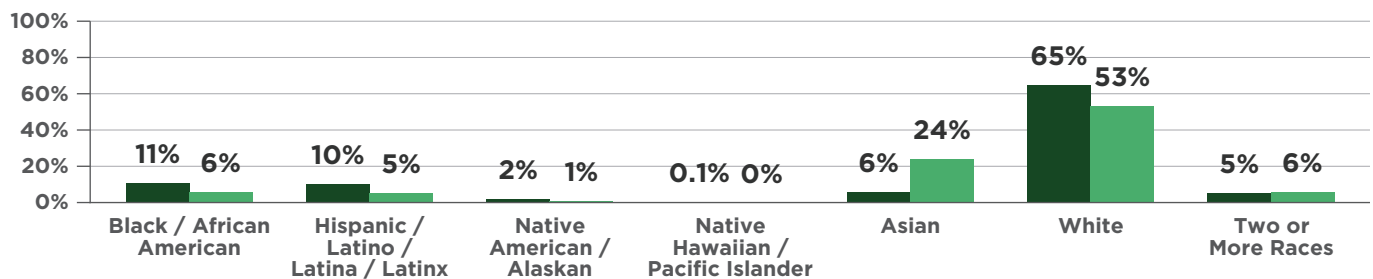**Small schools are 3 less likely to offer foundational computer science than medium and large schools**

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

Participation in AP Computer Science Exams by Gender

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.

- 1%
- 24%
- 75%

● Male
● Female
● Other

Participation in AP Computer Science Exams by Race/Ethnicity

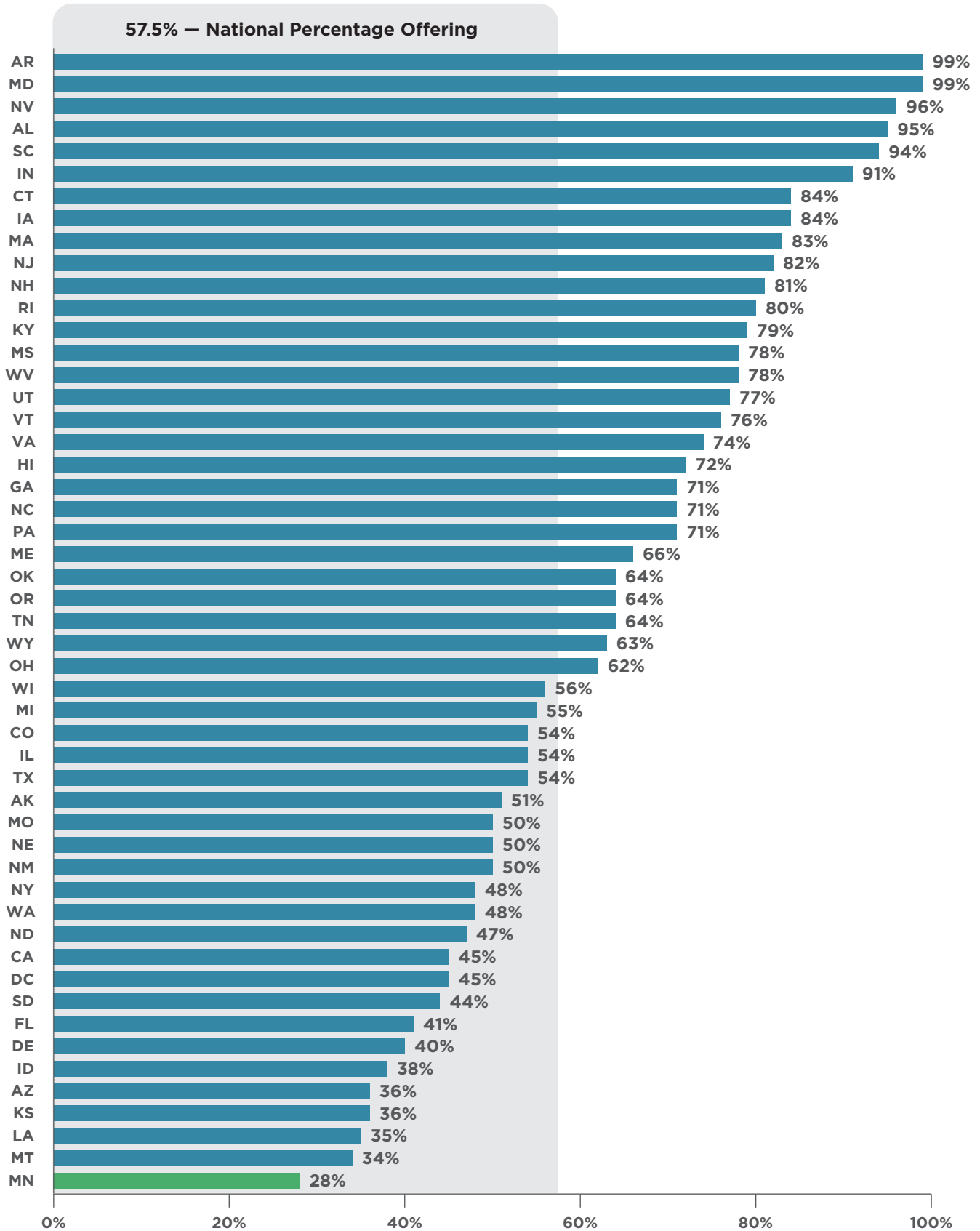|	Black / African American	Hispanic / Latino / Latina / Latinx	Native American / Alaskan	Native Hawaiian / Pacific Islander	Asian	White	Two or More Races
Student Demographics 9–12	11%	10%	2%	0.1%	6%	65%	5%
AP Exam Takers	6%	5%	1%	0%	24%	53%	6%

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

● Student Demographics 9–12
● AP Exam Takers
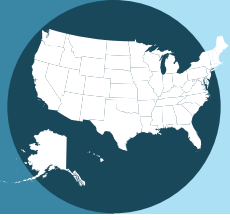
UNITED STATES

Percentage of Public High Schools Offering Foundational Computer Science Nationally

57.5% — National Percentage Offering

| State	Percentage
AR	99%
MD	99%
NV	96%
AL	95%
SC	94%
IN	91%
CT	84%
IA	84%
MA	83%
NJ	82%
NH	81%
RI	80%
KY	79%
MS	78%
WV	78%
UT	77%
VT	76%
VA	74%
HI	72%
GA	71%
NC	71%
PA	71%
ME	66%
OK	64%
OR	64%
TN	64%
WY	63%
OH	62%
WI	56%
MI	55%
CO	54%
IL	54%
TX	54%
AK	51%
MO	50%
NE	50%
NM	50%
NY	48%
WA	48%
ND	47%
CA	45%
DC	45%
SD	44%
FL	41%
DE	40%
ID	38%
AZ	36%
KS	36%
LA	35%
MT	34%
MN	28%

## THE 2024 MINNESOTA COMPUTER SCIENCE EDUCATION ADVANCEMENT PROGRAM
HF 3492

In 2023, Minnesota allocated $1 million for computer science education. This allocation was the first step to ensuring all Minnesota students have access to computer science. Minnesota needs to continue investing in this foundational subject. The examples below show how other states have made sustained multi-year investments in computer science education.

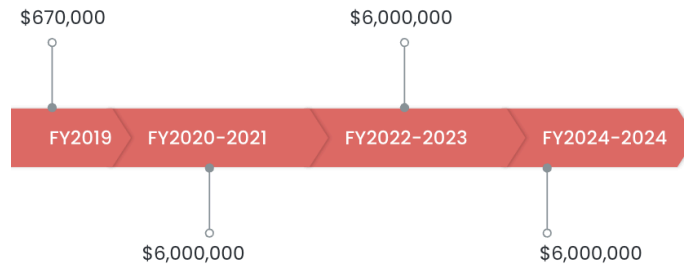## State Funding Comparison: States with Similar Populations to Minnesota

Since 2016, states have allocated more than $330 million to computer science education. Among the 35 states that have allocated funding, on average, 63% of their high schools offer a foundational computer science course, which is 10 percentage points higher than the average of states who have not funded computer science efforts.
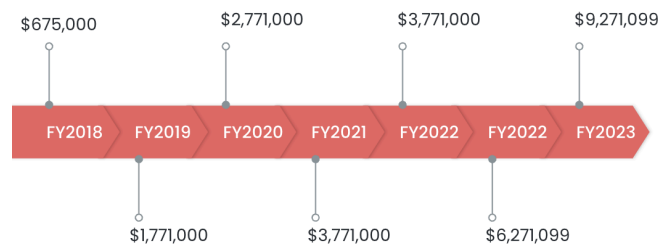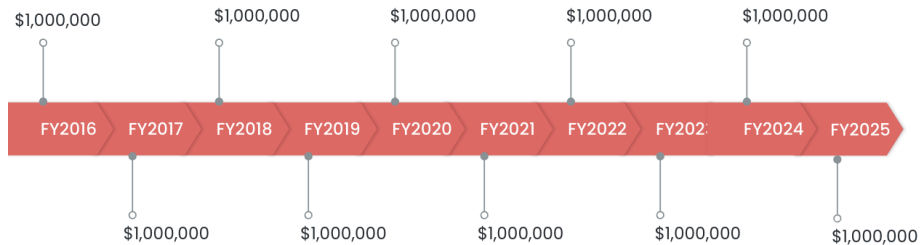

Alabama has allocated over **$28 million** to computer science education between 2018-2023. In 2017, **39%** of high schools in Alabama taught foundational computer science, which rose to **95%** in 2023. Most of this funding went to high-quality professional development for teachers. Alabama has also created a specific grant program for middle schools, which has contributed to 90% of Alabama middle schools teaching foundational computer science.
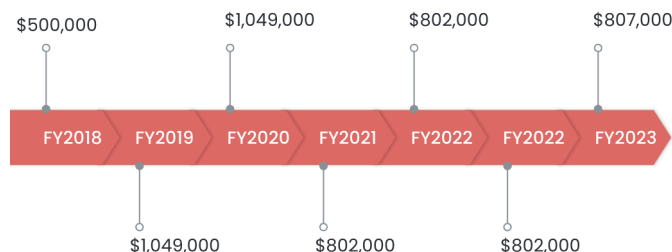
Colorado has allocated **$5.8 million** to computer science education between 2018-2023. In 2017, **38%** of high schools in Colorado taught foundational computer science, which rose to **54%** in 2022. This funding has been allocated to competitive grants administered by the Department of Education, resulting in over 2,000 teachers receiving training to teach computer science.

$670,000 $6,000,000

$18.6 million

| FY2019 | FY2020-2021 | FY2022-2023 | FY2024-2024 |

$6,000,000 $6,000,000

Indiana has allocated **$18.6 million** to computer science education between 2019-2025. In 2018, **62%** of high schools in Indiana taught foundational computer science, which rose to **91%** in 2023. This funding has been allocated for professional development by approved state entities.

$1,000,000 $1,000,000 $1,000,000 $1,000,000 $1,000,000

$10 million

| FY2016 | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 | FY2022 | FY202: | FY2024 | FY2025 |

$1,000,000 $1,000,000 $1,000,000 $1,000,000 $1,000,000

Washington has allocated **$10 million** to computer science education between fiscal years 2016-2025. In 2017, **33%** of high schools in Washington taught foundational computer science, which rose to **48%** of high schools in 2023. This funding has been allocated to competitive grants administered by the Office of the Superintendent of Public Instruction