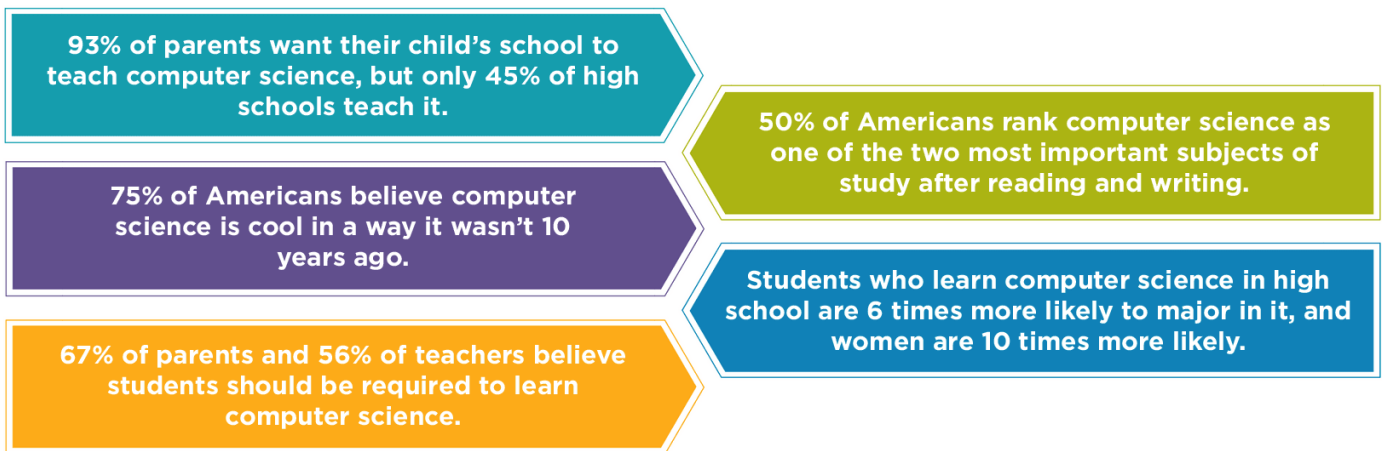
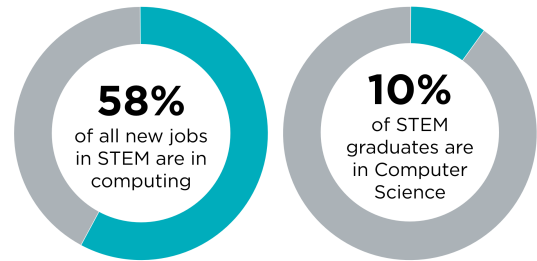


Support K-12 Computer Science Education in Massachusetts

Computer science drives job growth and innovation throughout our economy and society. Computing occupations are the **number 1 source of all new wages in the U.S.** and make up over half of all projected new jobs in STEM fields, making Computer Science one of the most in-demand college degrees. And computing is used all around us and in virtually every field. It's foundational knowledge that all students need. But computer science is marginalized throughout education. Only 45% of U.S. high schools teach any computer science courses and only 10% of STEM graduates study it. We need to improve access for all students, including groups who have traditionally been underrepresented.

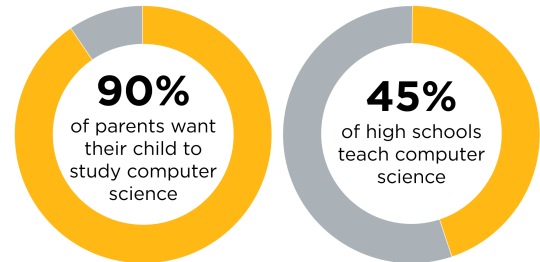


Computer science in Massachusetts

- Massachusetts currently has **16,523 open computing jobs** (2.6 times the average demand rate in Massachusetts).
- The average salary for a computing occupation in MA is **\$103,278**, which is significantly higher than the average salary in the state (\$62,110). The existing open jobs alone represent a **\$1,706,456,115 opportunity** in terms of annual salaries.
- Massachusetts had only **2,641 computer science graduates** in 2017; only **25%** were female.
- In Massachusetts, only **67% of all public high schools teach computer science**.
- Only **4,181 exams were taken in AP Computer Science by high school students in Massachusetts** in 2018 (2,314 took AP CS A and 1,867 took AP CSP).
- Only 27% were female (24% for AP CS A and 30% for AP CSP); only 331 exams were taken by Hispanic or Latino students (144 took AP CS A and 187 took AP CSP); only 263 exams were taken by Black students (84 took AP CS A and 179 took AP CSP); only 8 exams were taken by American Indian or Alaska Native students (1 took AP CS A and 7 took AP CSP); only 1 exam was taken by Native Hawaiian or Pacific Islander students (0 took AP CS A and 1 took AP CSP).
- Only **196 schools** in MA (43% of MA schools with AP programs) offered an AP Computer Science course in 2017-2018 (32% offered AP CS A and 24% offered AP CSP), which is 28 more than the previous year. There are fewer AP exams taken in computer science than in any other STEM subject area.

- Universities in Massachusetts did not graduate a single new teacher prepared to teach computer science in 2016.
- According to a representative survey from Google/Gallup, school administrators in MA support expanding computer science education opportunities: 70% of principals surveyed think CS is just as or more important than required core classes. And one of their biggest barriers to offering computer science is the lack of funds for hiring and training teachers.

What can you do to support K-12 CS education in Massachusetts?



1. Nominate a teacher for a professional learning scholarship: www.code.org/nominate
2. Send a letter:
 - To your school/district asking them to expand computer science offerings at every grade level: www.code.org/promote/letter
 - To your elected officials asking them to support computer science education policy in Massachusetts: www.votervoicenet.org/Code/campaigns/58463/respond
3. Find out if your school teaches computer science or submit information about your school's offerings at www.code.org/yourschool.
4. Visit www.code.org/educate/3rdparty to find out about courses and curriculum from a variety of providers, including Code.org.
5. Visit www.code.org/promote/MA to learn more about supporting computer science in your state.

Who can you connect with locally to talk about K-12 CS education policy?

- You can reach Code.org's policy contact for your state, Sean Roberts, at sean@code.org.
- The Expanding Computing Education Pathways (ECEP) Alliance (www.ecepalliance.org), an NSF funded Broadening Participation in Computing Alliance, seeks to increase the number and diversity of students in computing and computing-intensive degrees by promoting state-level computer science education reform. ECEP supports 22 states and the territory of Puerto Rico to develop effective and replicable interventions to broaden participation in computing and to create state-level infrastructure to foster equitable computing education policies. You can reach your ECEP point of contact Anne DeMallie at ademallie@doe.mass.edu or Paul Foster at fosterp@springfieldpublicschools.com.

Code.org's impact in Massachusetts

- In Massachusetts, Code.org's curriculum is used in
 - 19% of elementary schools
 - 22% of middle schools
 - 20% of high schools

- There are 8,247 teacher accounts and 375,300 student accounts on Code.org in Massachusetts.
- Of students in Massachusetts using Code.org curriculum last school year,
 - 31% attend high needs schools
 - 8% are in rural schools
 - 46% are female students
 - 40% are underrepresented minority students (Black/African American, Hispanic/Latino, American Indian, or Hawaiian)
- Code.org, its regional partner(s) BATEC, UMass Boston, and 13 facilitators have provided professional learning in Massachusetts for
 - 899 teachers in CS Fundamentals (K-5)
 - 105 teachers in Exploring Computer Science or Computer Science Discoveries
 - 81 teachers in Computer Science Principles

“Computer Science is a liberal art: it’s something that everybody should be exposed to and everyone should have a mastery of to some extent.”

— Steve Jobs

What can your state do to improve computer science education?

States and local school districts need to adopt a broad policy framework to provide all students with access to computer science. The following nine recommendations are a menu of best practices that states can choose from to support and expand computer science. Not all states will be in a position to adopt all of the policies. Read more about these 9 policy ideas at https://code.org/files/Making_CS_Fundamental.pdf and see our rubric for describing state policies at <http://bit.ly/9policiesrubric>.

- Massachusetts is in the process of developing a state plan for K-12 computer science.
- Massachusetts has established K-12 computer science standards.
- Massachusetts has historically funded computer science professional development. Massachusetts has an opportunity to expand computer science by designating state funds for computer science.
- Massachusetts has clear certification pathways for computer science teachers.
- Massachusetts has established programs at institutions of higher education to offer computer science to preservice teachers.
- Massachusetts has a dedicated computer science position in the state education agency.
- Massachusetts **does not yet** require that all secondary schools offer computer science. The state can support the expansion of computer science courses by adopting policies that require schools to offer a computer science course based on rigorous standards, with appropriate implementation timelines and allowing for remote and/or in-person courses.
- Massachusetts has passed policy that is permissive and encouraging for schools to allow computer science to count for a core graduation requirement, but it is not a requirement for schools. Find out how Massachusetts allows computer science to count towards graduation at <http://bit.ly/9policies>.

☑ Massachusetts allows computer science to count as a core admission requirement at institutions of higher education.

Follow us!

Join our efforts to give every student in every school the opportunity to learn computer science. Learn more at code.org, or follow us on [Facebook](#) and [Twitter](#).

Launched in 2013, Code.org® is a nonprofit dedicated to expanding access to computer science, and increasing participation by women and underrepresented students of color. Our vision is that every student in every school should have the opportunity to learn computer science.

Data is from the Conference Board for job demand, the Bureau of Labor Statistics for state salary and national job projections data, the College Board for AP exam data, the National Center for Education Statistics for university graduate data, the Gallup and Google research study Education Trends in the State of Computer Science in U.S. K-12 Schools for parent demand, the 2018 Computer Science Access Report for schools that offer computer science, and Code.org for its own courses, professional learning programs, and participation data.