VITAL SIGNS

MARYLAND

Business leaders in Maryland cannot find the science, technology, engineering and mathematics (STEM) talent they need to stay competitive. Students' lagging performance in K-12 is a critical reason why. The good news is that the nation's most effective STEM education programs can help turn the tide.

The state's students have made at least some progress in math over the past decade, and the state leads the nation in the share of students taking and passing AP tests. Even so, not enough students--least of all minorities--get the chance to learn rich and challenging content that prepares them for college and careers. What's more, large achievement gaps separate students of color and their white peers, and students of color are least likely to be in schools that have the resources they need in math and science.

MARYLAND NEEDS MORE STEM TALENT

STEM fields are growing in Maryland

Between 2017 and 2027:

STEM jobs will grow

15%

Non-STEM jobs will grow

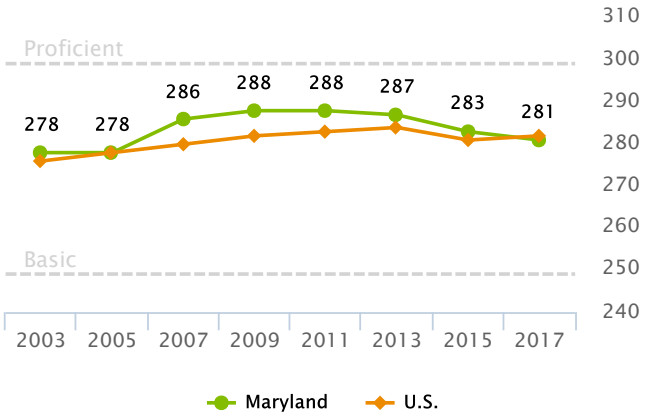
13%

THE MARYLAND STEM SKILLS SHORTAGE STARTS EARLY

Progress in math has faltered

After early progress in K-12 math, Maryland students have lost ground.

Trends in 8th grade math scores, 2003-2017

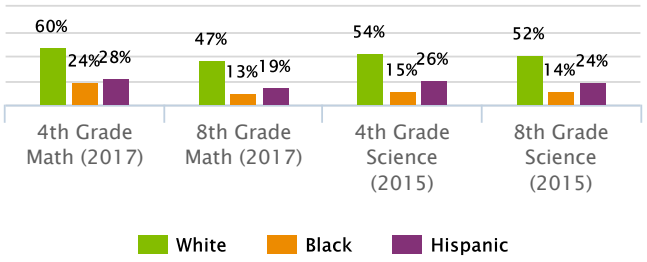


SOURCE: U.S. Department of Education, 2003–2017

Students of color lag farthest behind

Closing achievement gaps must remain a priority.

Percentage of Maryland students at or above proficient, by race/ethnicity



SOURCE: U.S. Department of Education, 2015–2017

*Data not available or reporting requirements not met.

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For the complete state report, methodology, and sources, see vitalsigns.ecs.org (vitalsigns.ecs.org)

MARYLAND

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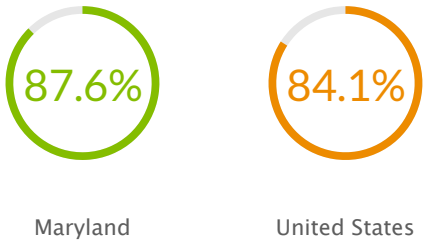
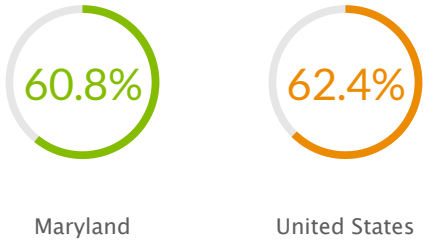
The state must plug the gaps in the STEM pipeline

The Maryland STEM pipeline loses young people at every level of the education system. Some fail to graduate from high school and many do not finish college, which narrows the pipeline of students who can gain advanced STEM skills. The 2-year college graduation rate is particularly low. Of those students who do graduate, few get a post-secondary degree in STEM.

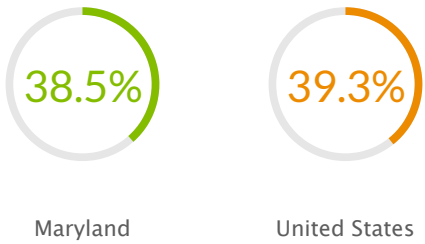
What percentage of high school students graduate? (2014-2015)



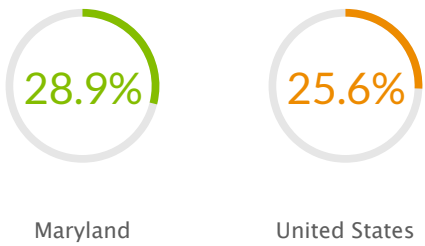
Of high school graduates who enter a 4-year degree program, what percentage graduate? (2012-2013)



Of high school graduates who enter a 2-year associate's degrees program, what percentage graduate? (2012-2013)



What percentage of certificates and degrees is in STEM fields? (2014-2015)



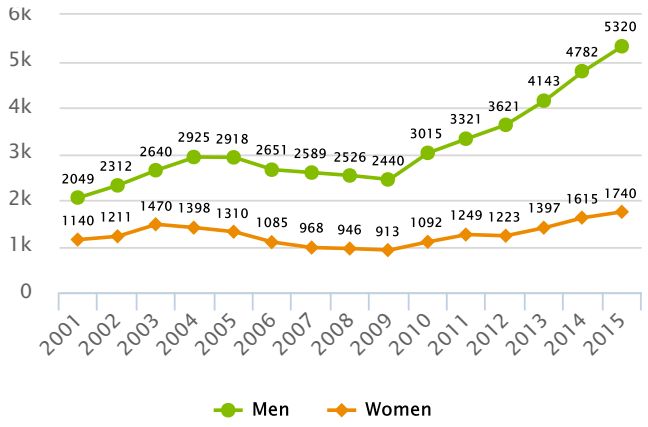
TAP MARYLAND'S FEMALE AND MINORITY TALENT

Together, females and minorities make up more than half of Maryland's population, yet they are much less likely to earn STEM degrees or become STEM professionals. Closing these gaps can pay big dividends in the state.

Women have lost ground in computing

The available talent in computer science would rise dramatically if the state simply closed the gender gap in these subjects.

Number of computing degrees/certificates in Maryland

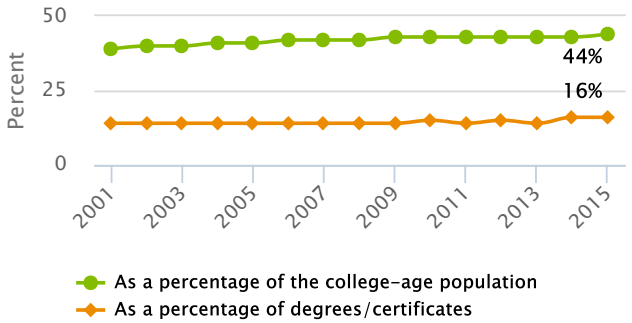


SOURCE: U.S. Department of Education, 2001–2015

People of color are not gaining ground in engineering degrees

It is critical to prepare and inspire many more students of color to pursue STEM subjects such as computer science and engineering.

Underrepresented minorities in Maryland earning engineering degrees/certificates



SOURCE: U.S. Department of Education, 2001–2015

*Data not available or reporting requirements not met.

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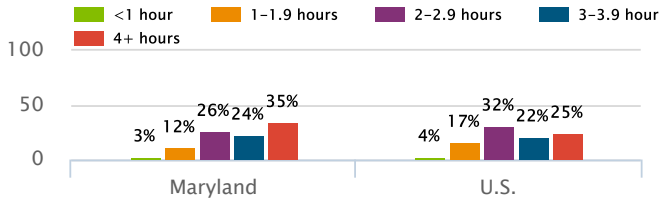
VITAL SIGNS

GIVE MARYLAND STUDENTS ACCESS TO BETTER STEM LEARNING OPPORTUNITIES

Lack of access to such opportunities severely limits young people's college and career prospects.

The state should make time for elementary science

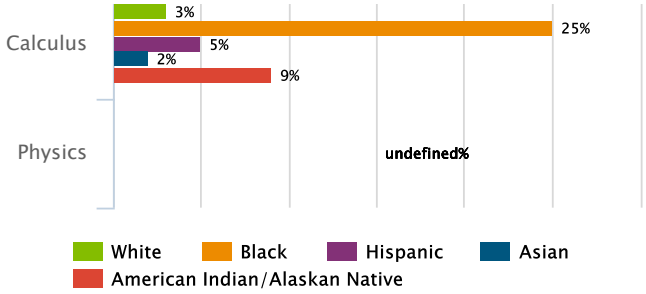
Hours per week spent on science, grades 1-4, 2015



The state should improve access to advanced courses

Many students lack access to such courses.

Students in Maryland high schools that do not offer challenging math and science courses, 2013/14



Success in Advanced Placement courses can put more students on a path to STEM careers.

Of the high school graduating class of 2015 in Maryland:

	Took AP Math Exam	Scored 3+ on AP Math Exam
All Students	20%	13%
White	25%	17%
Black	9%	3%
Hispanic	13%	6%
Asian	49%	36%
American Indian/Alaskan Native	16%	6%

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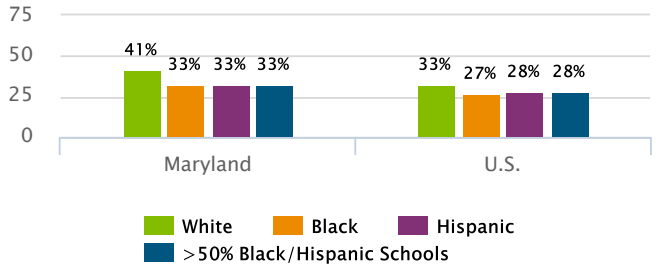
DEVELOP AND RETAIN TALENTED STEM TEACHERS IN MARYLAND

Research shows that teachers' content knowledge and teaching experience can affect student performance

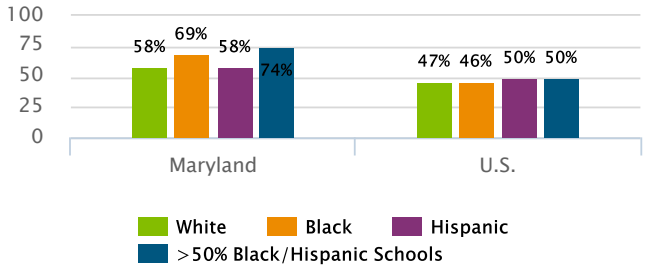
Boost teachers' content knowledge

Eighth-graders whose math teachers have an undergraduate major in math, 2017



SOURCE: U.S. Department of Education 2017

Eighth-graders whose science teachers have an undergraduate major in science, 2015

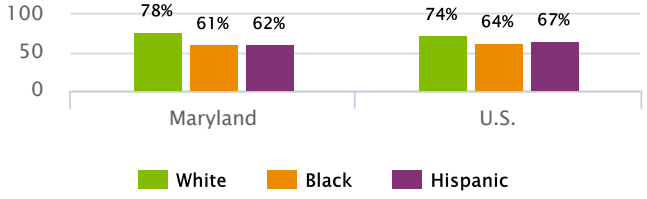


SOURCE: U.S. Department of Education 2015

Retain excellent teachers

Minority students are most likely to have inexperienced teachers

Eighth-graders whose math teachers have 6+ years of experience teaching their subject



SOURCE: U.S. Department of Education 2017

*Data not available or reporting requirements not met.

MARYLAND

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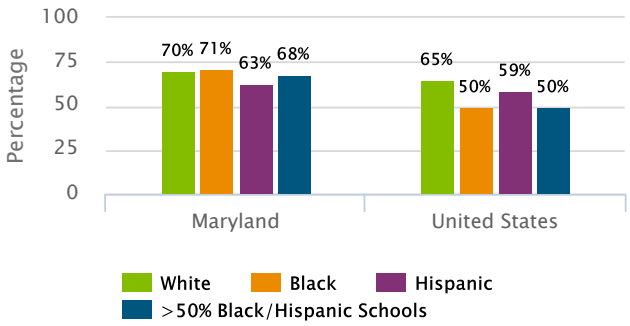
GIVE MARYLAND SCHOOLS AND TEACHERS THE RESOURCES THEY NEED

Teachers in Maryland need better resources, facilities, and teaching materials to succeed.

Too many teachers lack the tools of their trade

Eighth-graders whose science teachers say they have all or most of the resources they need, 2015

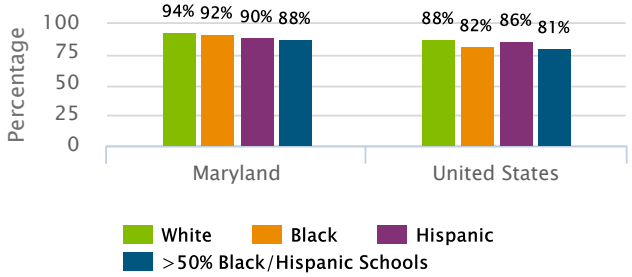


SOURCE: U.S. Department of Education, 2015

*Data not available or reporting requirements not met.

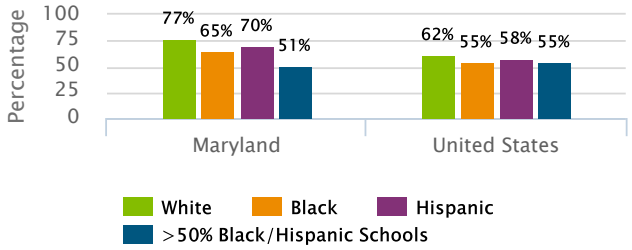
The state should improve access to science facilities and supplies

Eighth-graders whose schools have science labs, 2015



SOURCE: U.S. Department of Education, 2015

Eighth-graders whose schools report that supplies or materials for science labs are available "to a large extent," 2015



SOURCE: U.S. Department of Education, 2015

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