

VITAL SIGNS

NEW YORK

Business leaders in New York 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.

New York students have made some progress in math over the past decade, yet not enough students--least of all minority students--have the chance to learn challenging content to prepare them for college and careers. Too many of the state's math and science teachers say they don't have the resources they need to succeed. Again, Black and Latino students bear the brunt of this problem.

NEW YORK NEEDS MORE STEM TALENT

STEM fields are growing in New York

Between 2017 and 2027:

STEM jobs will grow

Non-STEM jobs will grow

14%

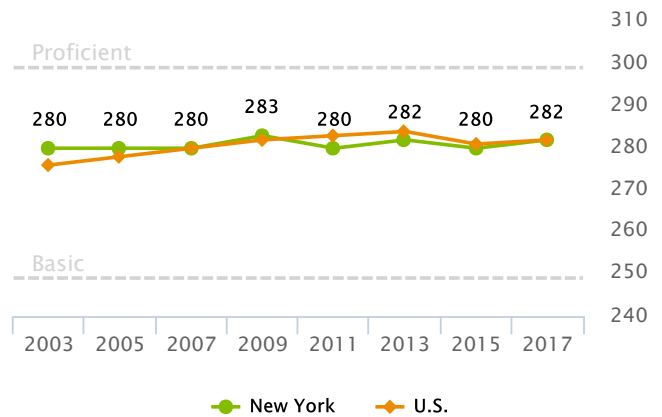
10%

THE NEW YORK STEM SKILLS SHORTAGE STARTS EARLY

Performance in math has been flat

New York has made minimal progress in K-12 math.

Trends in 8th grade math scores, 2003-2017

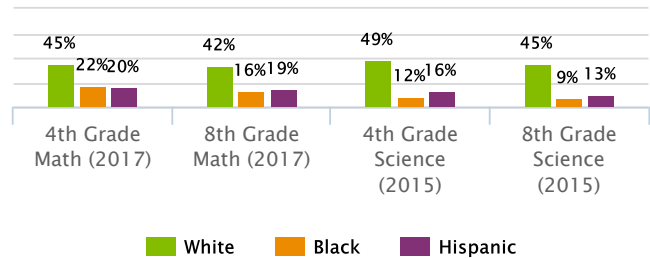


SOURCE: U.S. Department of Education, 2003-2017

Students of color lag farthest behind

Closing achievement gaps must remain a priority.

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



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

*Data not available or reporting requirements not met.

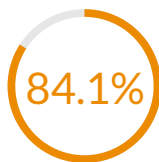
The state must plug the gaps in the STEM pipeline

The New York 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. Of those students who do graduate, few get a post-secondary degree in STEM.

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

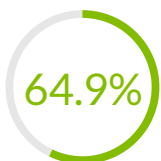


New York

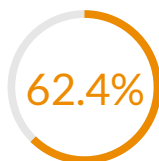


United States

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



New York

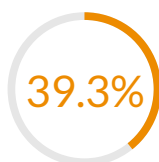


United States

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



New York

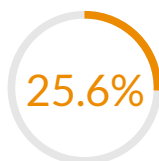


United States

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



New York



United States

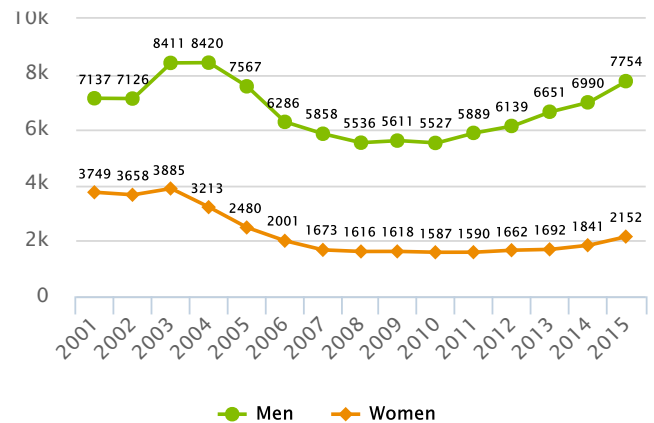
TAP NEW YORK'S FEMALE AND MINORITY TALENT

Together, females and minorities make up more than half of New York'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 New York

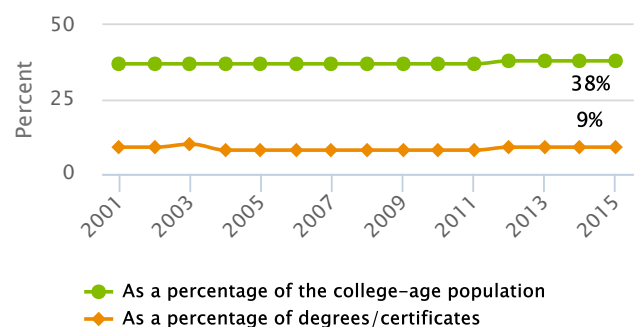


SOURCE: U.S. Department of Education, 2001-2015

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 New York earning engineering degrees/certificates



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

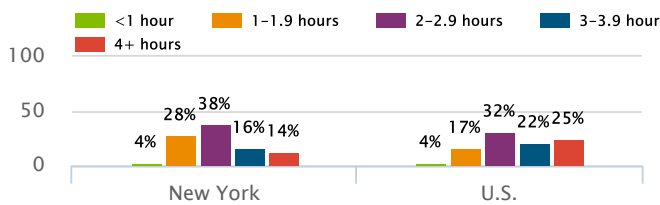
*Data not available or reporting requirements not met.

GIVE NEW YORK 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

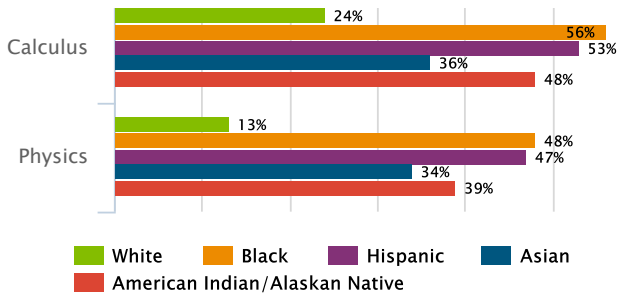
Hours per week spent on science, grades 1-4, 2015



The state should improve access to advanced courses

Many students lack access to such courses.

Students in New York 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 New York:

	Took AP Math Exam	Scored 3+ on AP Math Exam
All Students	14%	9%
White	15%	11%
Black	6%	2%
Hispanic	7%	3%
Asian	33%	23%
American Indian/Alaskan Native	8%	5%

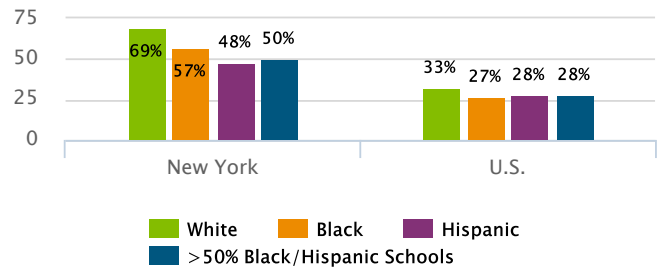


DEVELOP AND RETAIN TALENTED STEM TEACHERS IN NEW YORK

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

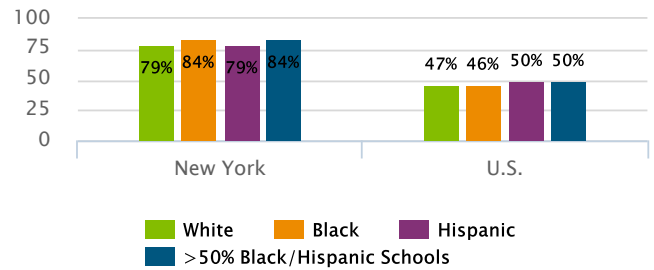
Boost teachers' content knowledge

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

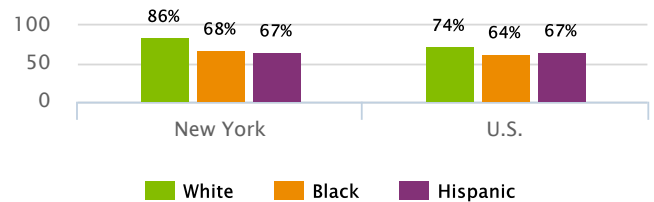


SOURCE: U.S. Department of Education 2015

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

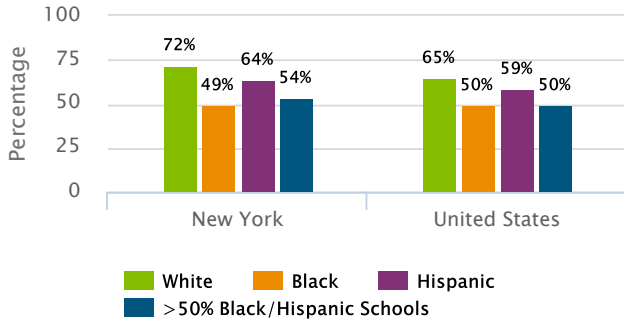
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GIVE NEW YORK SCHOOLS AND TEACHERS THE RESOURCES THEY NEED

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

Too many teachers lack the tools of their trade

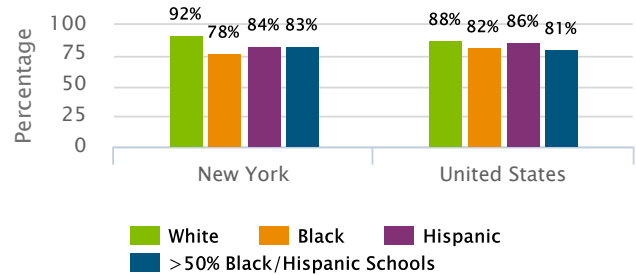
Eighth-graders whose science teachers say they have all or most of the resources they need, 2015



SOURCE: U.S. Department of Education, 2015

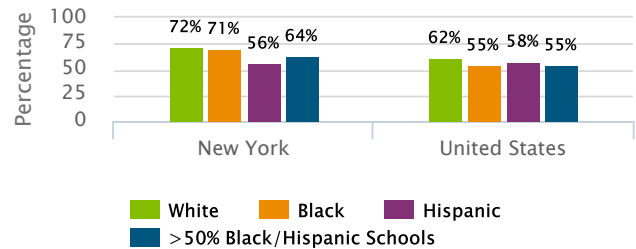
The state should improve access to science resources

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

*Data not available or reporting requirements not met.

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

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