VITAL SIGNS

COLORADO

Business leaders in Colorado 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 good news is that Colorado students have made real progress in math over the past decade. Yet not enough students have to the chance to learn challenging content to prepare them for college and careers, and many students of color lack access to critical resources and materials in science.

COLORADO NEEDS MORE STEM TALENT

STEM fields are growing in Colorado

Between 2017 and 2027:

STEM jobs will grow

23%

Non-STEM jobs will grow

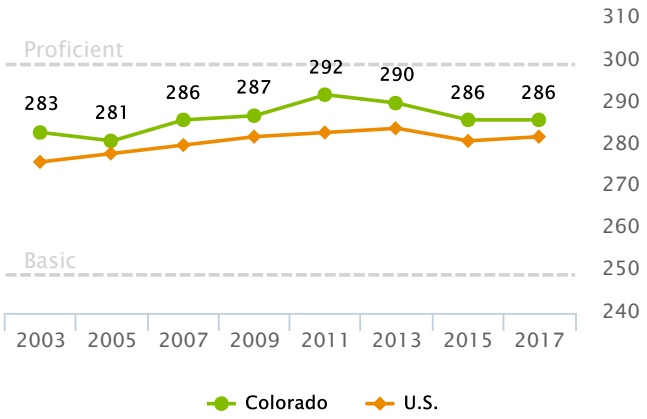
19%

THE COLORADO STEM SKILLS SHORTAGE STARTS EARLY

Progress in math has faltered

After years of steady progress in K-12 math, Colorado students have lost ground.

Trends in 8th grade math scores, 2003-2017

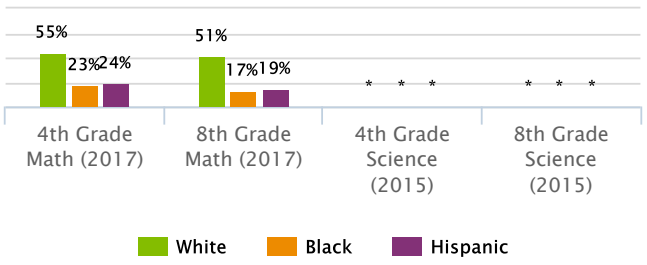


SOURCE: U.S. Department of Education, 2003–2017

Students of color lag farthest behind

Closing achievement gaps must remain a priority.

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



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

*Data not available or reporting requirements not met.

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

EDUCATION COMMISSION OF THE STATES

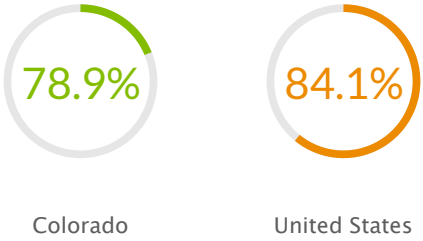
COLORADO

VITAL SIGNS

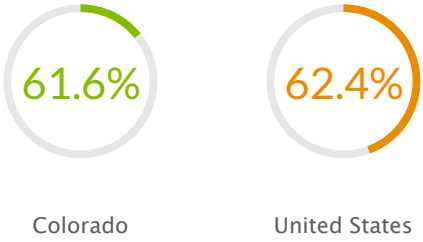
The state must plug the gaps in the STEM pipeline

The Colorado STEM pipeline loses young people at every level of the education system. Low graduation rates narrow the pipeline of students who can gain advanced STEM skills. Of those students who do graduate, few get a post-secondary degree in STEM.

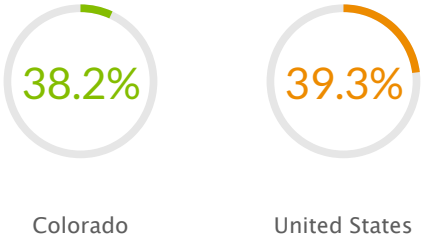
What percentage of high school students graduate? (2014-2015)



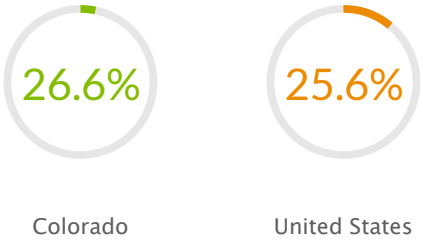
Of high school graduates who enter a 4-year degree program, what percentage graduate? (2012-2013)



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)



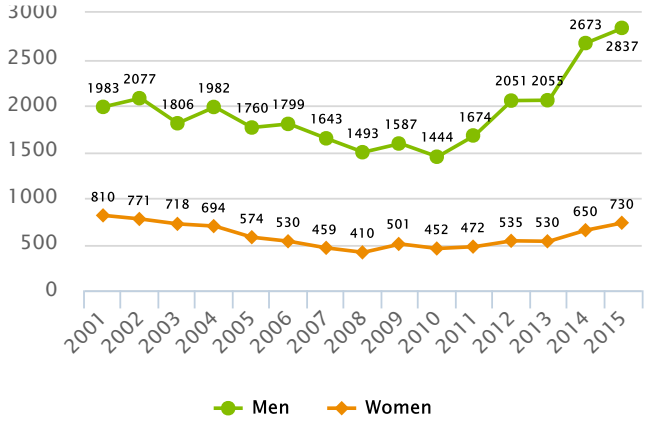
TAP COLORADO'S FEMALE AND MINORITY TALENT

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

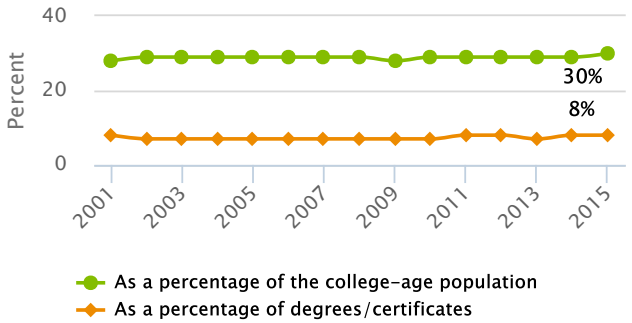


SOURCE: U.S. Department of Education, 2001–2015

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 Colorado earning engineering degrees/certificates



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

*Data not available or reporting requirements not met.

EDUCATION COMMISSION OF THE STATES

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

COLORADO

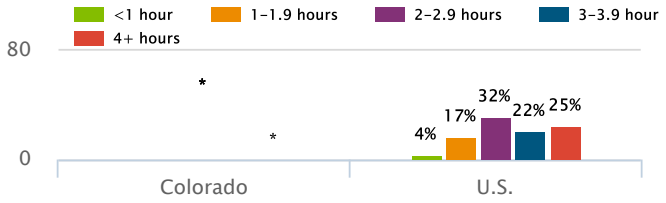
VITAL SIGNS

GIVE COLORADO 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 more time for elementary science

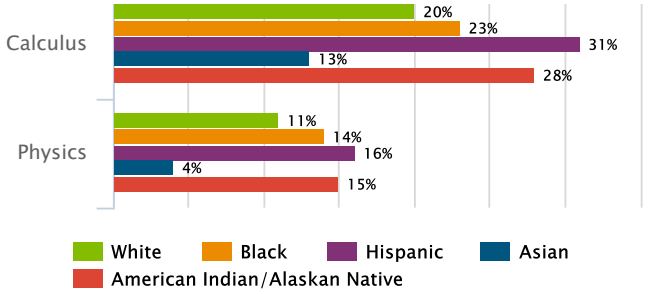
Hours per week spent on science, grades 1-4, 2015



The state should improve access to advanced courses

Many students lack access to such courses.

Students in Colorado 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 Colorado:

	Took AP Math Exam	Scored 3+ on AP Math Exam
All Students	18%	11%
White	21%	13%
Black	11%	5%
Hispanic	9%	3%
Asian	43%	28%
American Indian/Alaskan Native	12%	7%

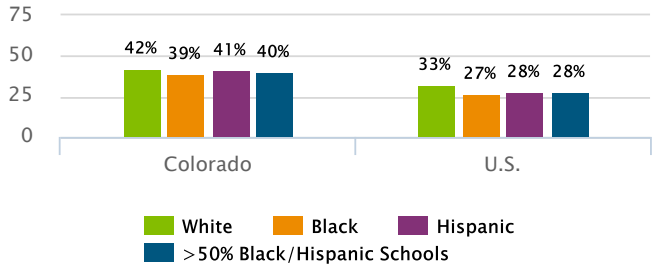
EDUCATION COMMISSION OF THE STATES

DEVELOP AND RETAIN TALENTED STEM TEACHERS IN COLORADO

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

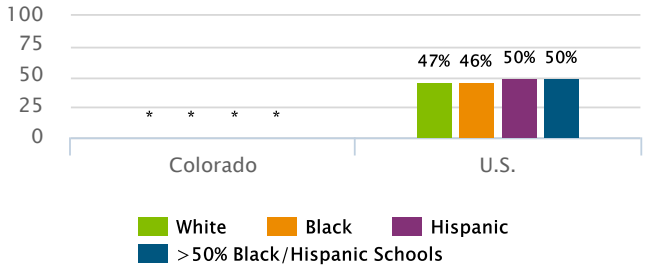
Boost teachers' content knowledge

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

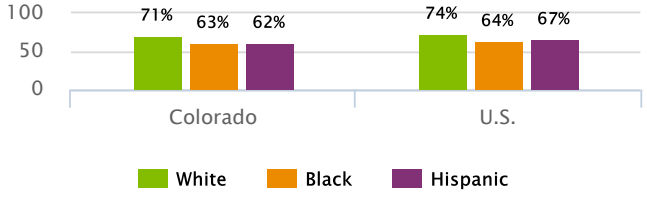


SOURCE: U.S. Department of Education 2015

Retain excellent teachers

Research shows that new teachers are less effective than teachers with three to five years of experience.

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.

COLORADO

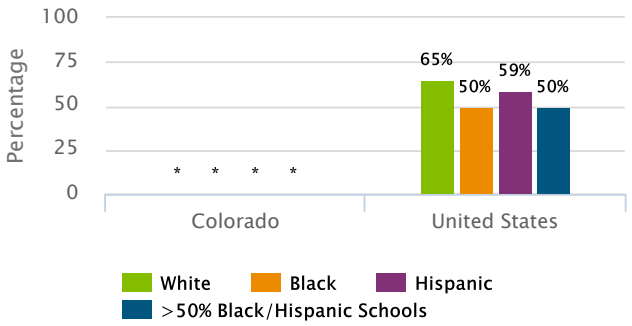
VITAL SIGNS

GIVE COLORADO SCHOOLS AND TEACHERS THE RESOURCES THEY NEED

Teachers in Colorado 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

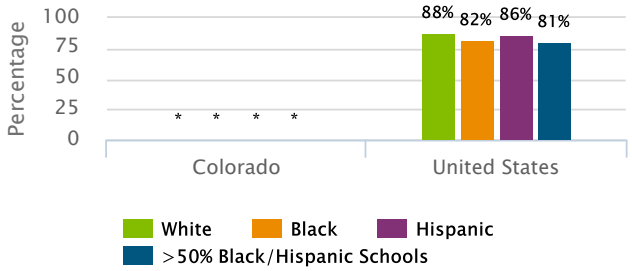


SOURCE: U.S. Department of Education, 2015

*Data not available or reporting requirements not met.

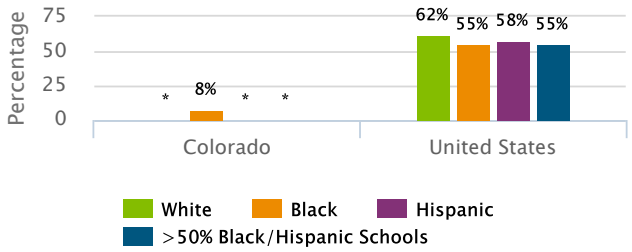
The state should improve access to science resources

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

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

Education Commission of the States serves as a partner to state policymakers by providing personalized support and helping education leaders come together and learn from one another. Through our programs and services, policymakers gain the insight and experience needed to create effective education policy.

EDUCATION COMMISSION OF THE STATES

Education Commission of the States, 700 Broadway, Suite 810, Denver, CO 80203, 303.299.3600