

## VITAL SIGNS

# ILLINOIS

**B**usiness leaders in Illinois 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.

Students have made progress in math over the past decade. Yet not enough students--least of all minorities--get the chance to learn challenging content that prepares them for college and careers, and the state faces some of the biggest racial and ethnic achievement gaps in the nation. Students of color are least likely to be in schools that have the resources they need in math and science, and few eighth graders of any race or ethnicity have teachers with an undergraduate major in math or science.

## ILLINOIS NEEDS MORE STEM TALENT

### STEM fields are growing in Illinois

Between 2017 and 2027:

**STEM jobs will grow**

**Non-STEM jobs will grow**

9%

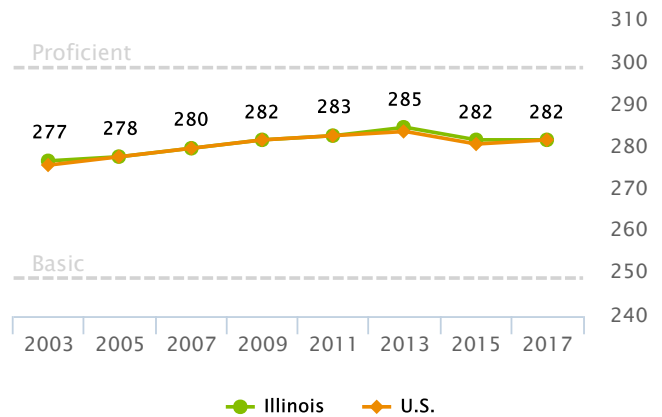
4%

## THE ILLINOIS STEM SKILLS SHORTAGE STARTS EARLY

### Progress in math has faltered

After years of progress in math, Illinois students have lost ground.

Trends in 8th grade math scores, 2003-2017

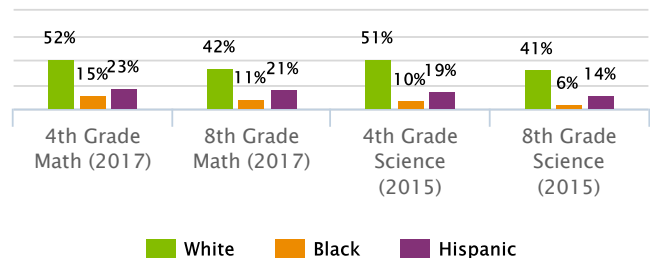


SOURCE: U.S. Department of Education, 2003-2017

### Students of color lag farthest behind

Closing achievement gaps must remain a priority.

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



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

\*Data not available or reporting requirements not met.

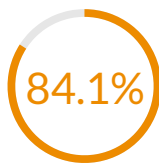
### The state must plug the gaps in the STEM pipeline

The Illinois 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)



Illinois

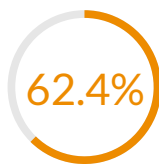


United States

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

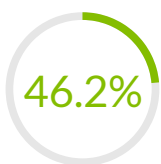


Illinois

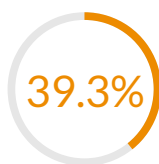


United States

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



Illinois

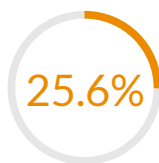


United States

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



Illinois



United States

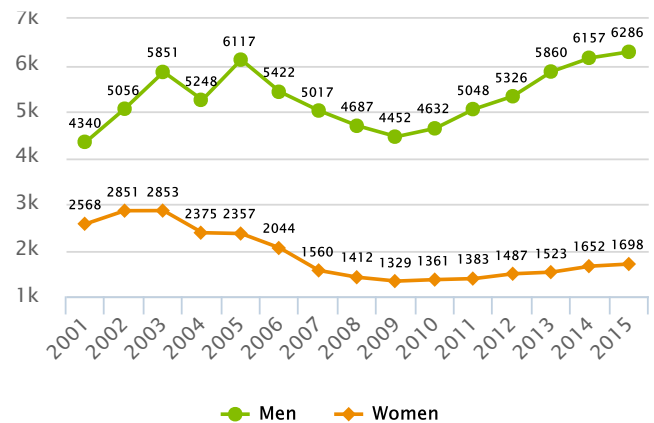
### TAP ILLINOIS'S FEMALE AND MINORITY TALENT

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

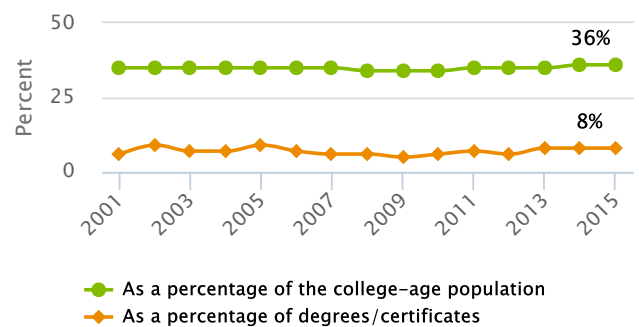


SOURCE: U.S. Department of Education, 2001-2015

#### People of color are gaining little ground in engineering

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 Illinois earning engineering degrees/certificates



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

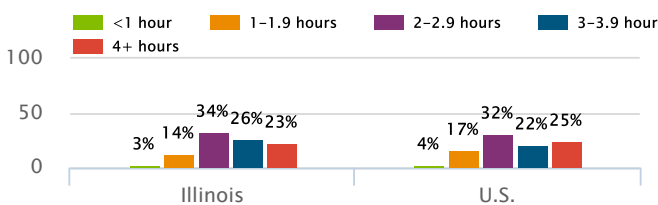
\*Data not available or reporting requirements not met.

### GIVE ILLINOIS 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

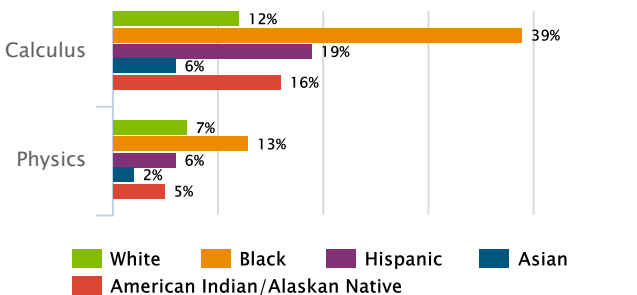
Hours per week spent on science, grades 1-4, 2015



#### The state should improve access to advanced courses

Many students lack access to such courses.

Students in Illinois 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 Illinois:

	Took AP Math Exam	Scored 3+ on AP Math Exam
All Students	15%	10%
White	15%	11%
Black	7%	2%
Hispanic	11%	4%
Asian	44%	33%
American Indian/Alaskan Native	7%	6%

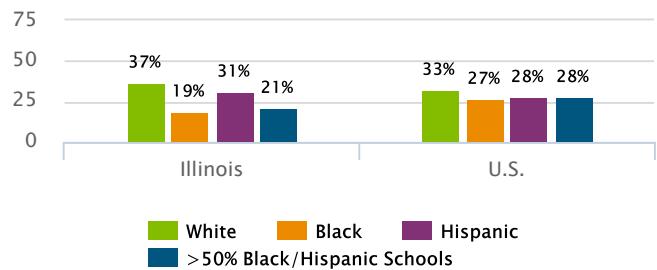


### DEVELOP AND RETAIN TALENTED STEM TEACHERS IN ILLINOIS

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

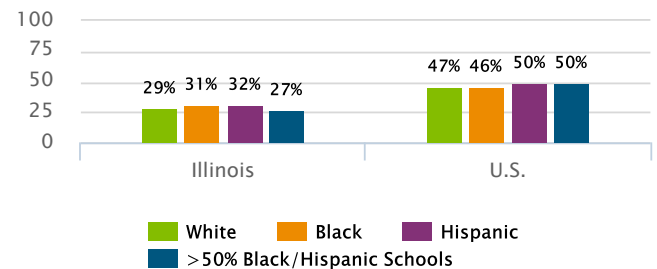
#### Boost teachers' content knowledge

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

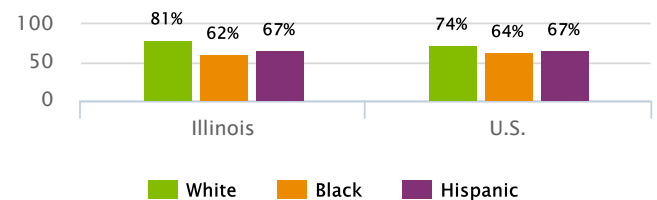


SOURCE: U.S. Department of Education 2015

#### 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

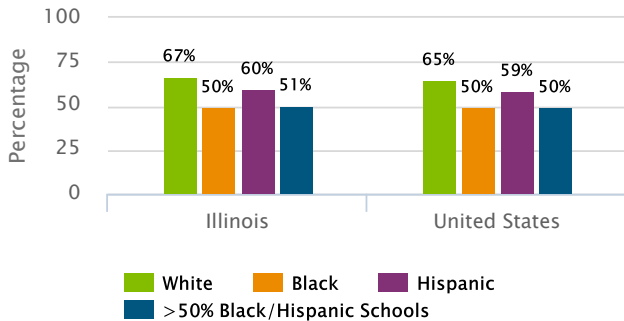
\*Data not available or reporting requirements not met.

### GIVE ILLINOIS SCHOOLS AND TEACHERS THE RESOURCES THEY NEED

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

#### Too many teachers lack the tools of their trade

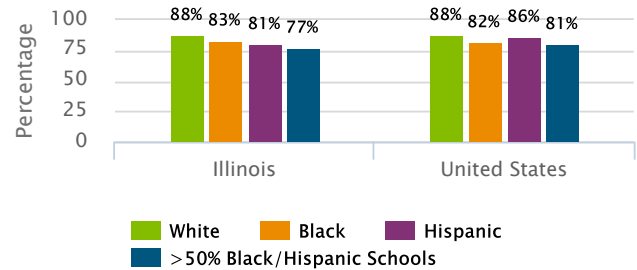
Eighth-graders whose science teachers say they have all or most of the resources they need, 2015



SOURCE: U.S. Department of Education, 2015

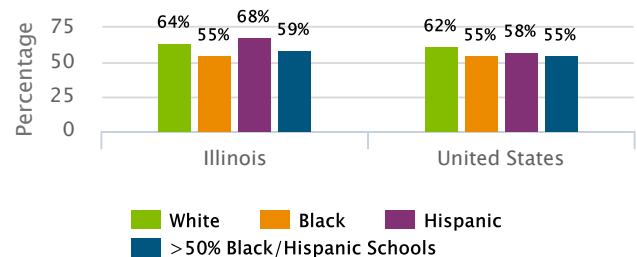
### The state should improve access to science facilities and supplies

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

\*Data not available or reporting requirements not met.

For the complete state report, methodology, and sources, see [vitalsigns.ecs.org](http://vitalsigns.ecs.org) ([vitalsigns.ecs.org](http://vitalsigns.ecs.org))

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