



Idaho's STEM Vital Signs

University of Idaho

May 28, 2014











{ **CHANGE THE**
EQUATION }™

STEM Skills Shortage?











- Employers repeatedly say that they cannot find the STEM talent they need
- Some researchers cite the number of people graduating with STEM degrees as sufficient to fill new jobs
 - STEM wages aren't rising fast enough to signify a scarcity
- Is it a lack of qualified talent, a geographic mismatch and/or a subspecialty mismatch?

What's a STEM Occupation?

STEM occupations requiring the most knowledge

<i>Occupation</i>	<i># of jobs</i>	<i>avg. wages</i>
 Biomedical Engineers	16,590	\$88,360
 Chemical Engineers	27,860	\$99,440
 Biochemists and Biophysicists	25,160	\$87,640
 Engineers, All Other	125,590	\$92,260
 Nuclear Engineers	18,430	\$105,160
 Agricultural Engineers	2,650	\$78,400
 Materials Scientists	7,900	\$86,600
 Engineering Teachers	33,660	\$97,260
 Hydrologists	6,960	\$79,070
 Materials Engineers	22,160	\$86,790

Most common STEM occupations requiring an Associate's Degree or less

<i>Occupation</i>	<i># of jobs</i>	<i>avg. wages</i>
 Registered Nurses	2,724,570	\$69,110
 Auto Techs and Mechanics	589,570	\$38,560
 Carpenters	578,910	\$44,330
 Supervisors of Prod. & Ops. Workers	559,350	\$56,890
 Electricians	512,290	\$52,910
 Computer Systems Analysts	487,740	\$82,320
 Supervisors of Mechanics, etc.	418,530	\$62,190
 Machinists	368,510	\$40,520
 Plumbers, Pipefitters, Steamfitters	349,320	\$51,830
 Welders, Cutters, Solderers, Brazers	316,290	\$37,920

What's the Magnitude?



There are

26 MILLION

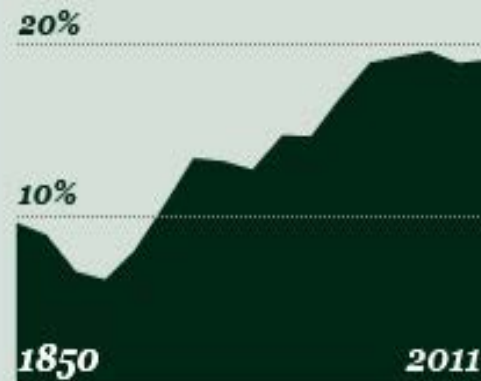
STEM jobs in the U.S.



STEM jobs comprise

20%

of all U.S. jobs.



The share of jobs requiring
STEM knowledge has

doubled

since the Industrial
Revolution

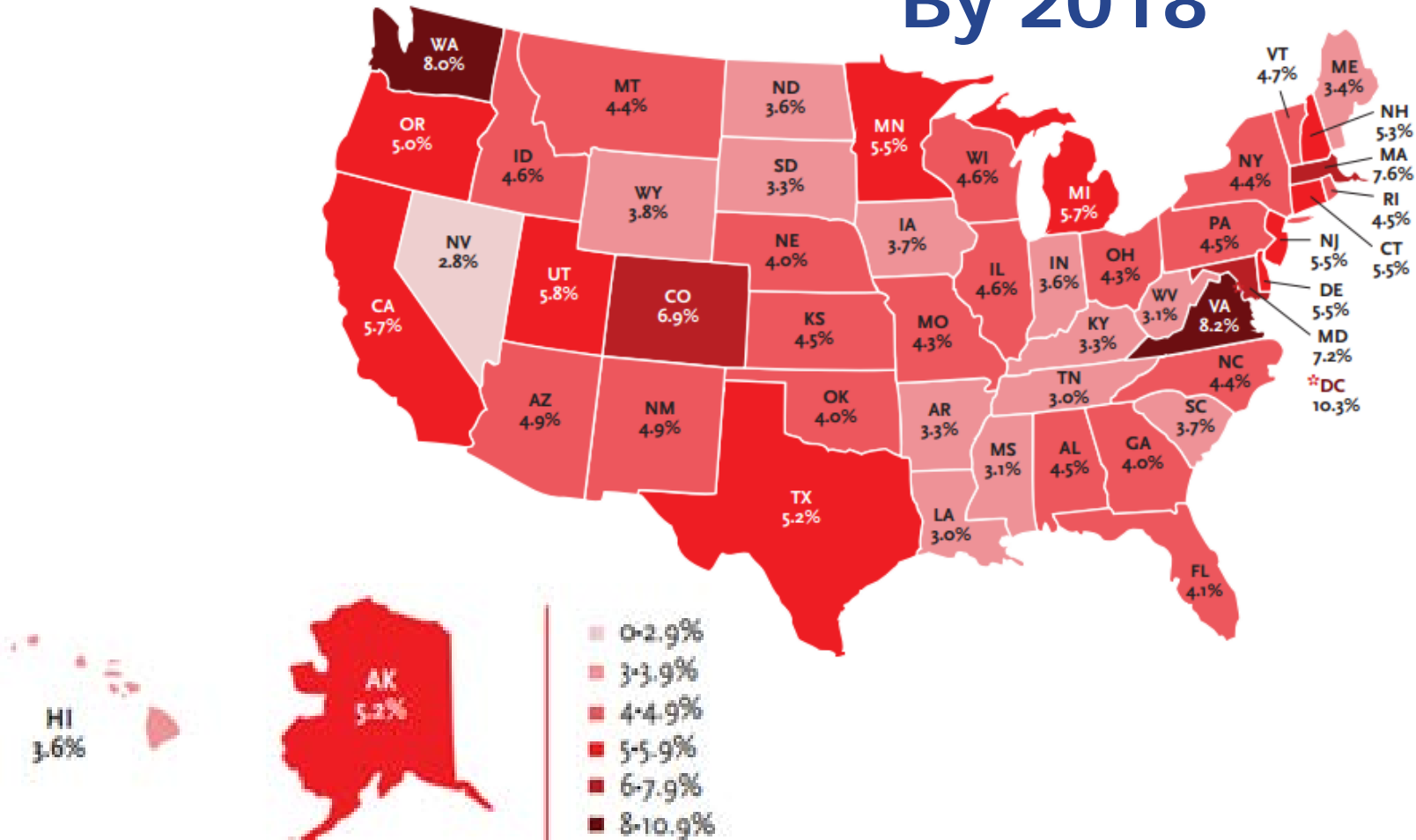
New Occupations

facebook®



STEM as Percent of Total Jobs

By 2018



Education for STEM Jobs

THE MAJORITY OF STEM JOBS IN IDAHO WILL REQUIRE
POSTSECONDARY EDUCATION OR TRAINING BY 2018

High school or less	3,800	10%
Some College/No Degree	6,820	12%
Associate's degrees	4,590	18%
Bachelor's degrees	16,910	45%
Master's degrees	5,050	13%
Doctoral degrees	670	2%
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TOTAL ^A	37,840	100%

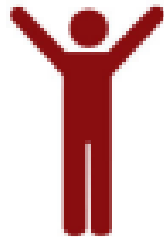
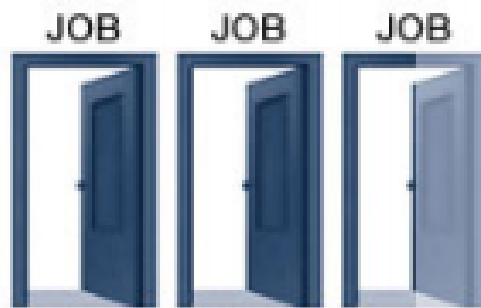
Totals may differ slightly due to rounding

STEM Help Wanted

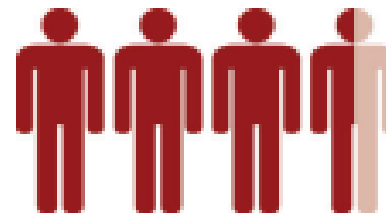
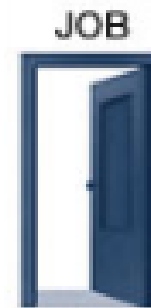
STEM SKILLS ARE IN DEMAND

In Idaho, STEM skills have stayed in demand even through the economic downturn.

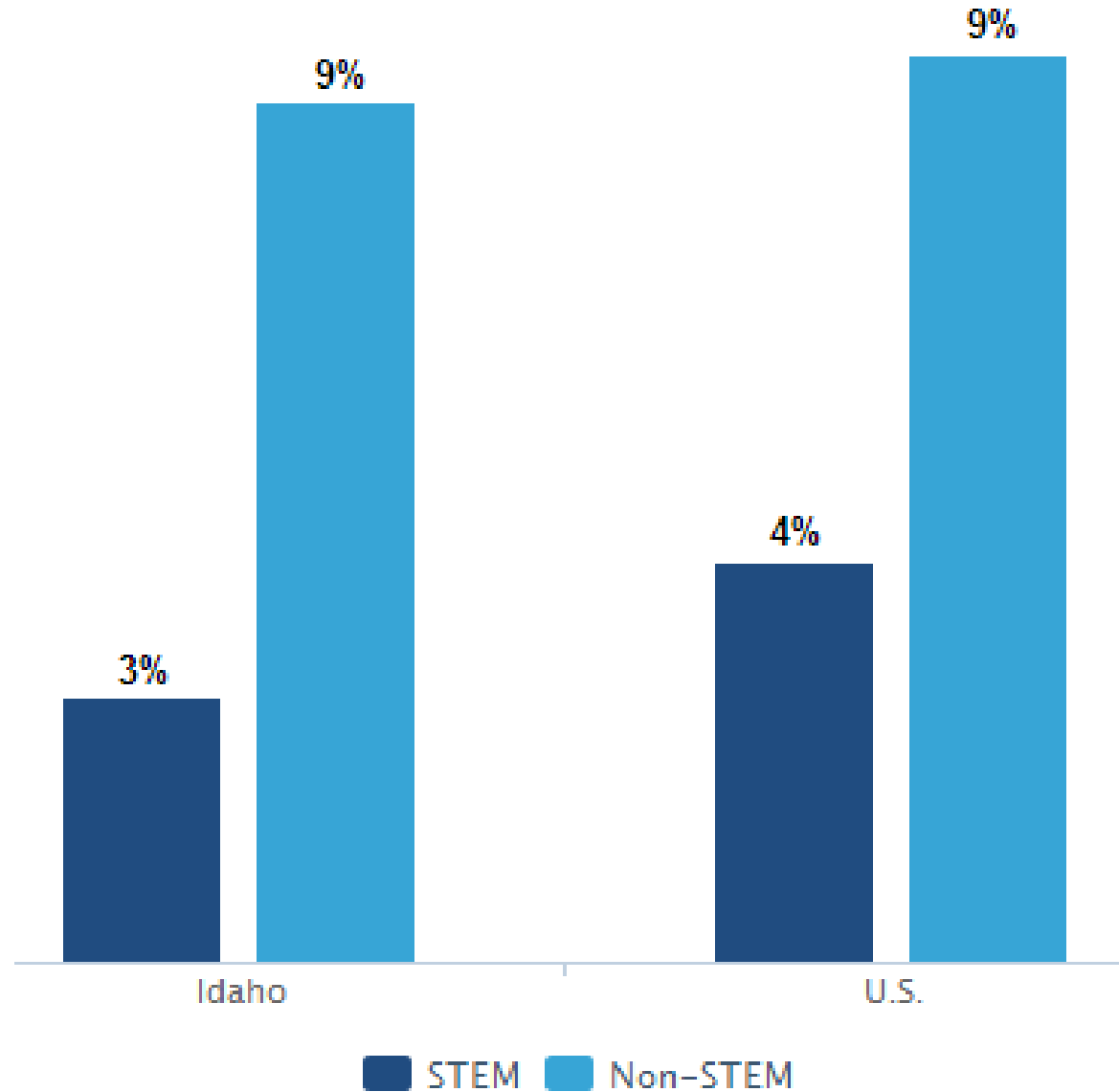
STEM:
2.4 jobs for every
1 unemployed person



Non-STEM:
3.7 unemployed
people for every **1 job**



Lower Unemployment Rates



Two “D’s” Deepen Shortages

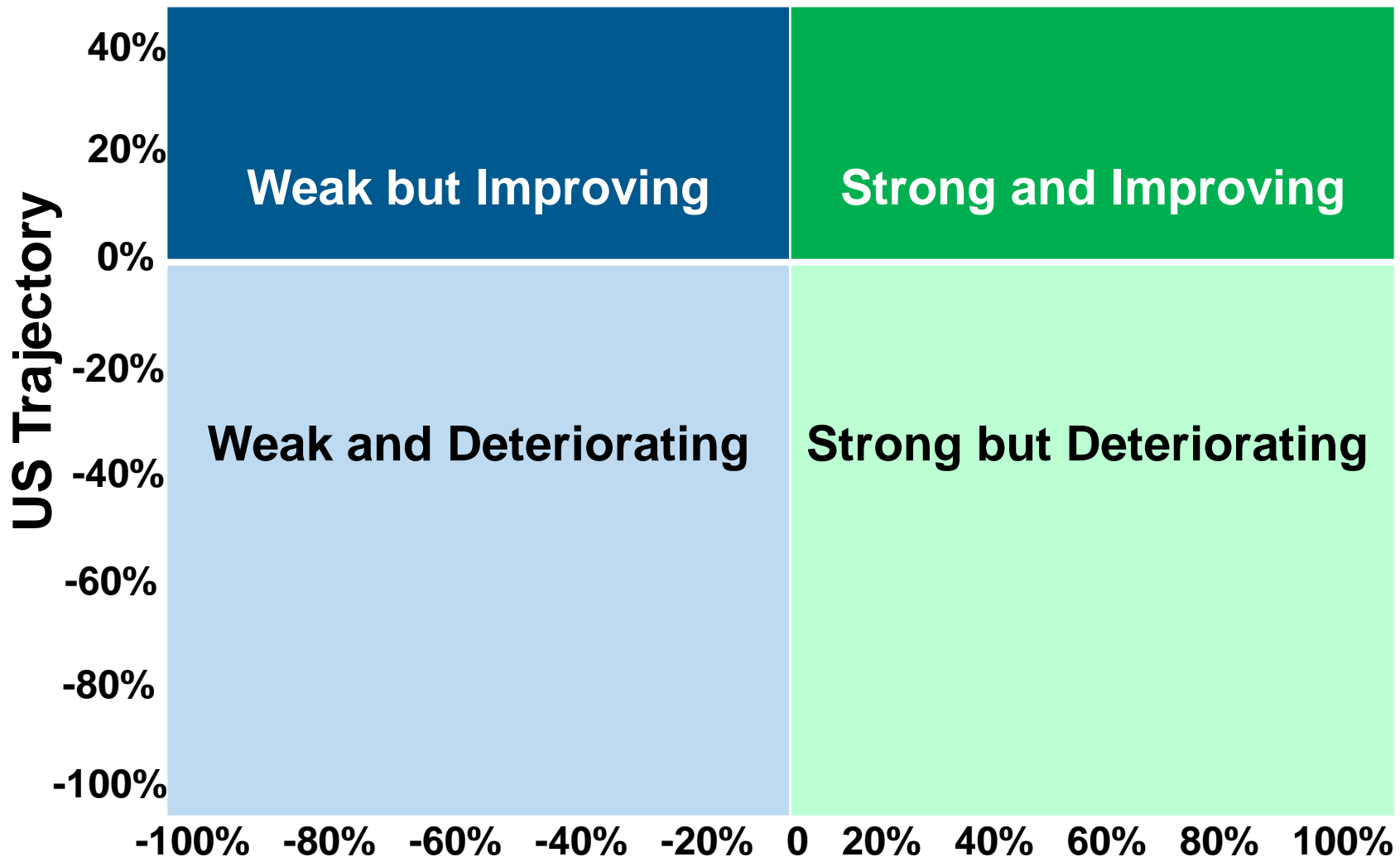
Demographics

- U.S. will be majority-minority by 2043
- White males alone cannot be our engine of STEM innovation or workforce

Diversion

- STEM skills are in demand well beyond STEM occupations
- Engineers go into management, for example, but your average MBA can’t go into engineering

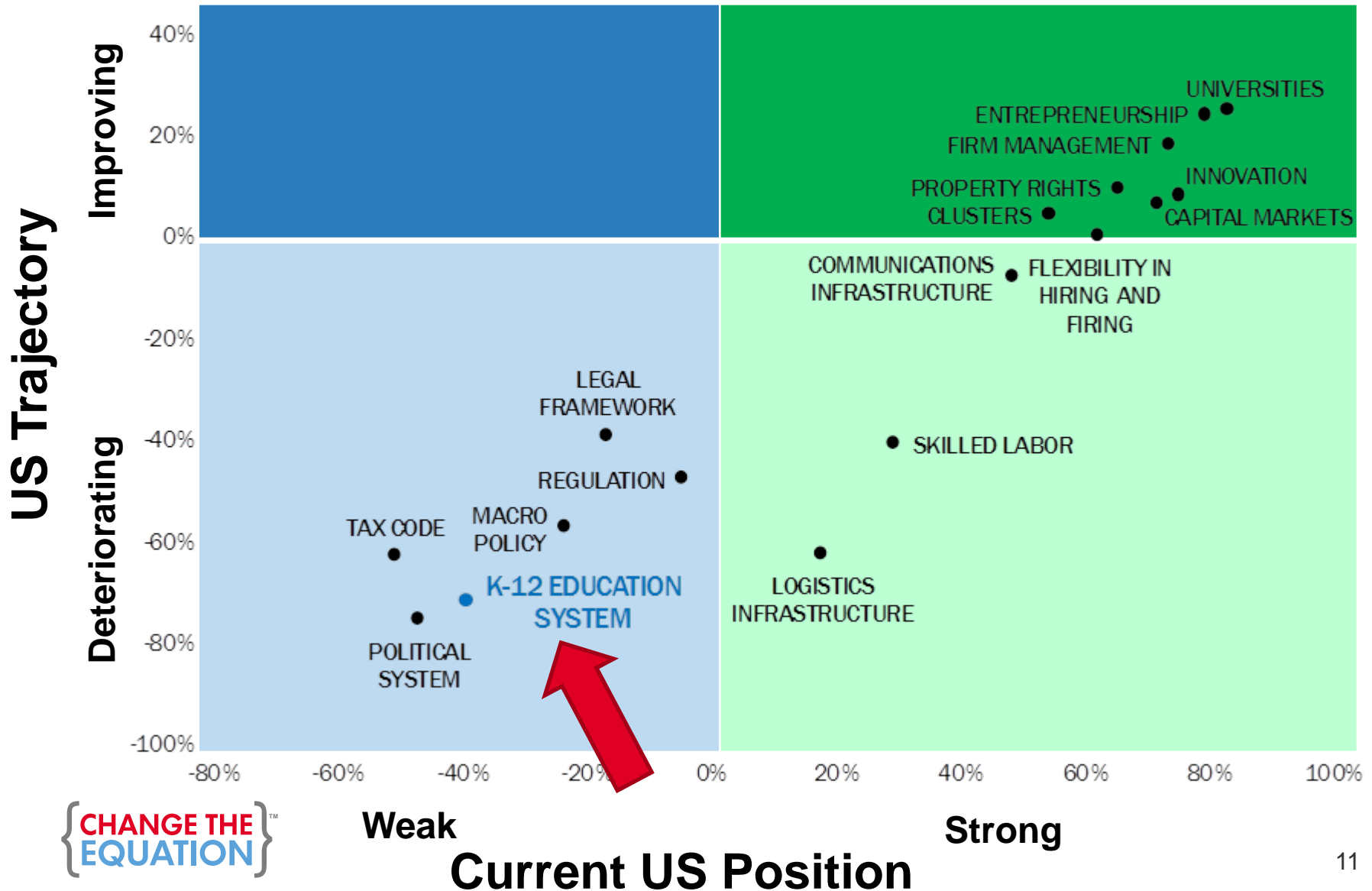
Health of Business Environment



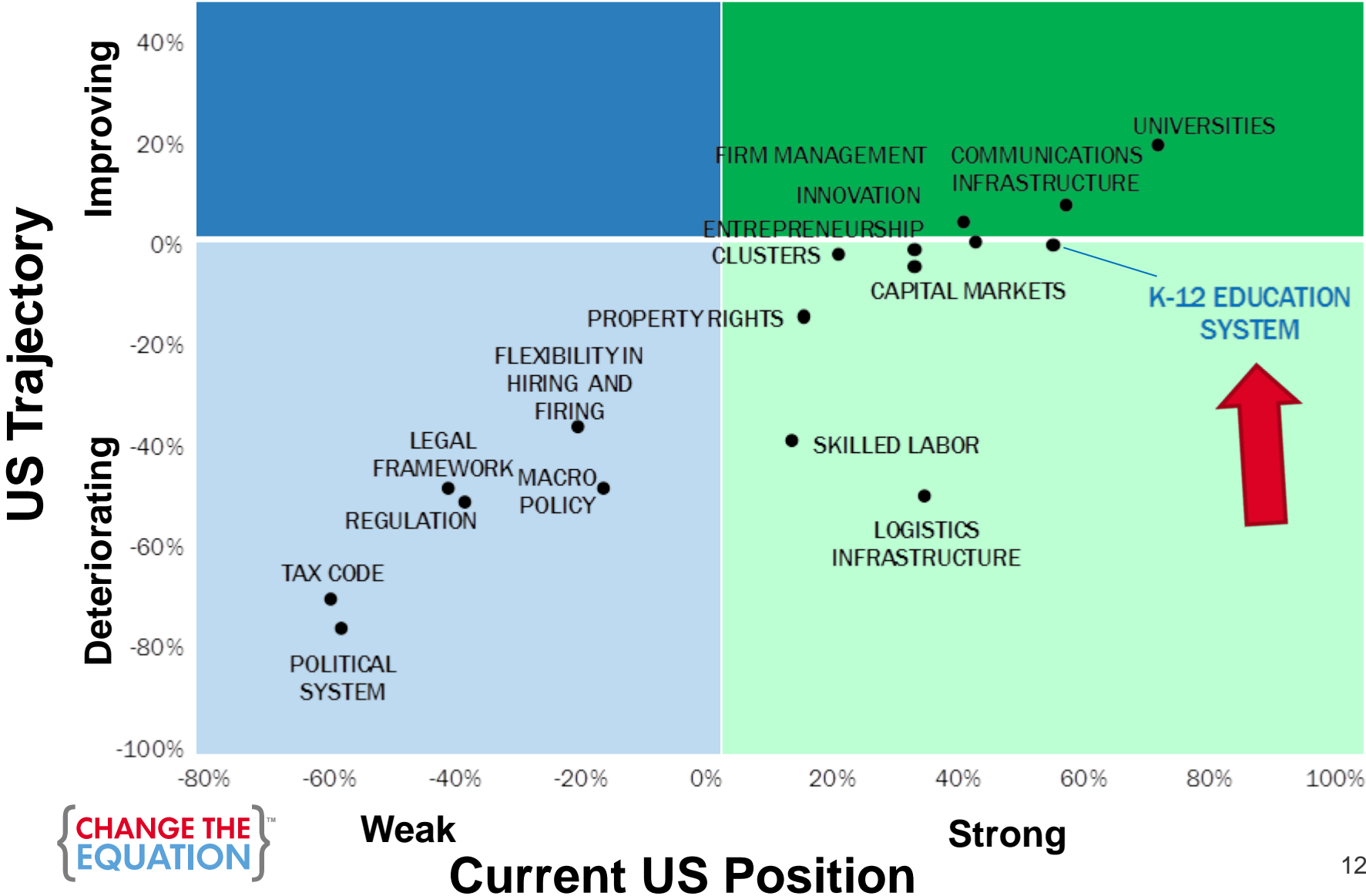
Current US Position

*Partial Credit: How America's School Supts
See Business as a Partner; HBS; Feb. 2014*

Business Leaders' View



School Superintendents' View

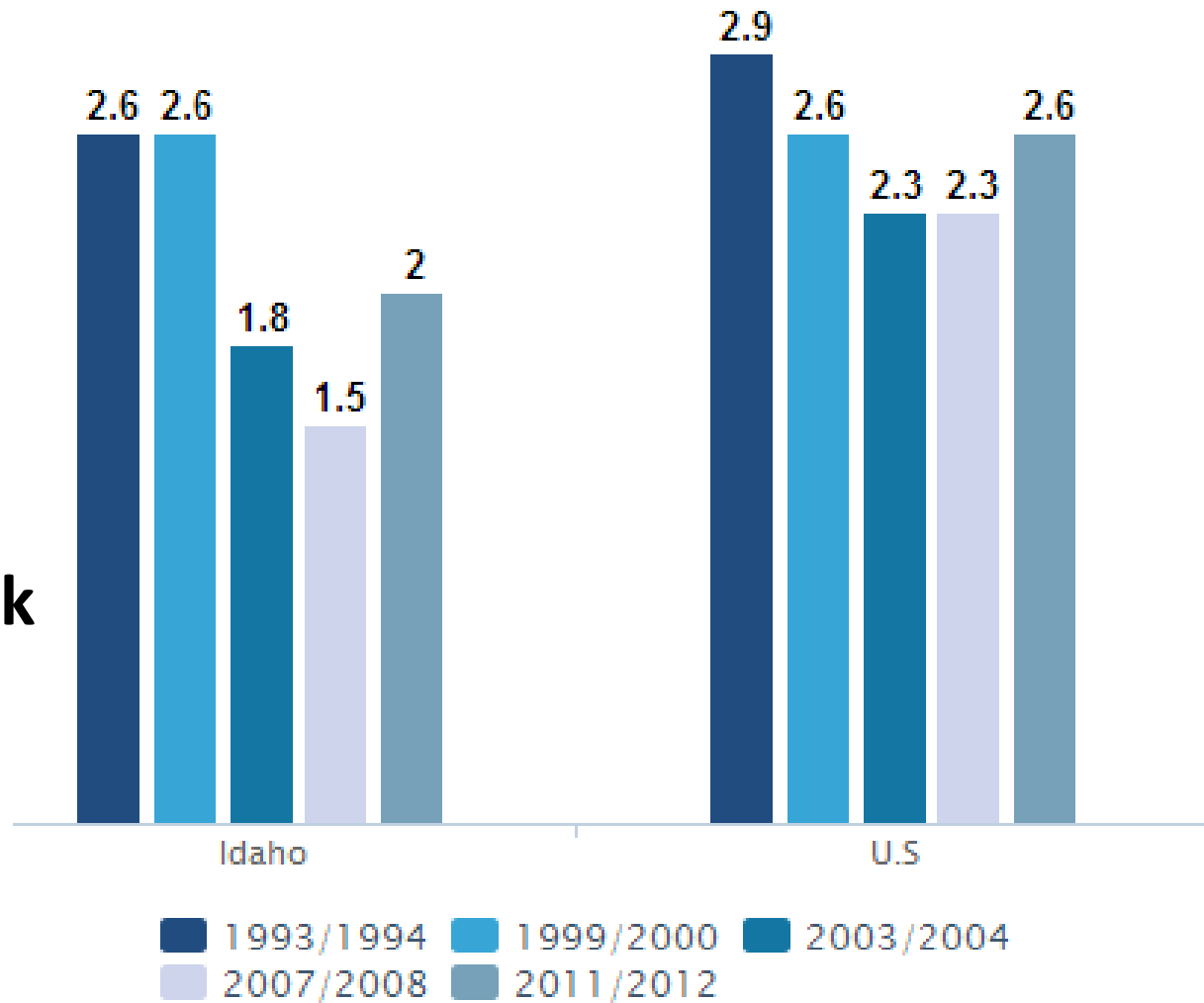


K-12 STEM Data

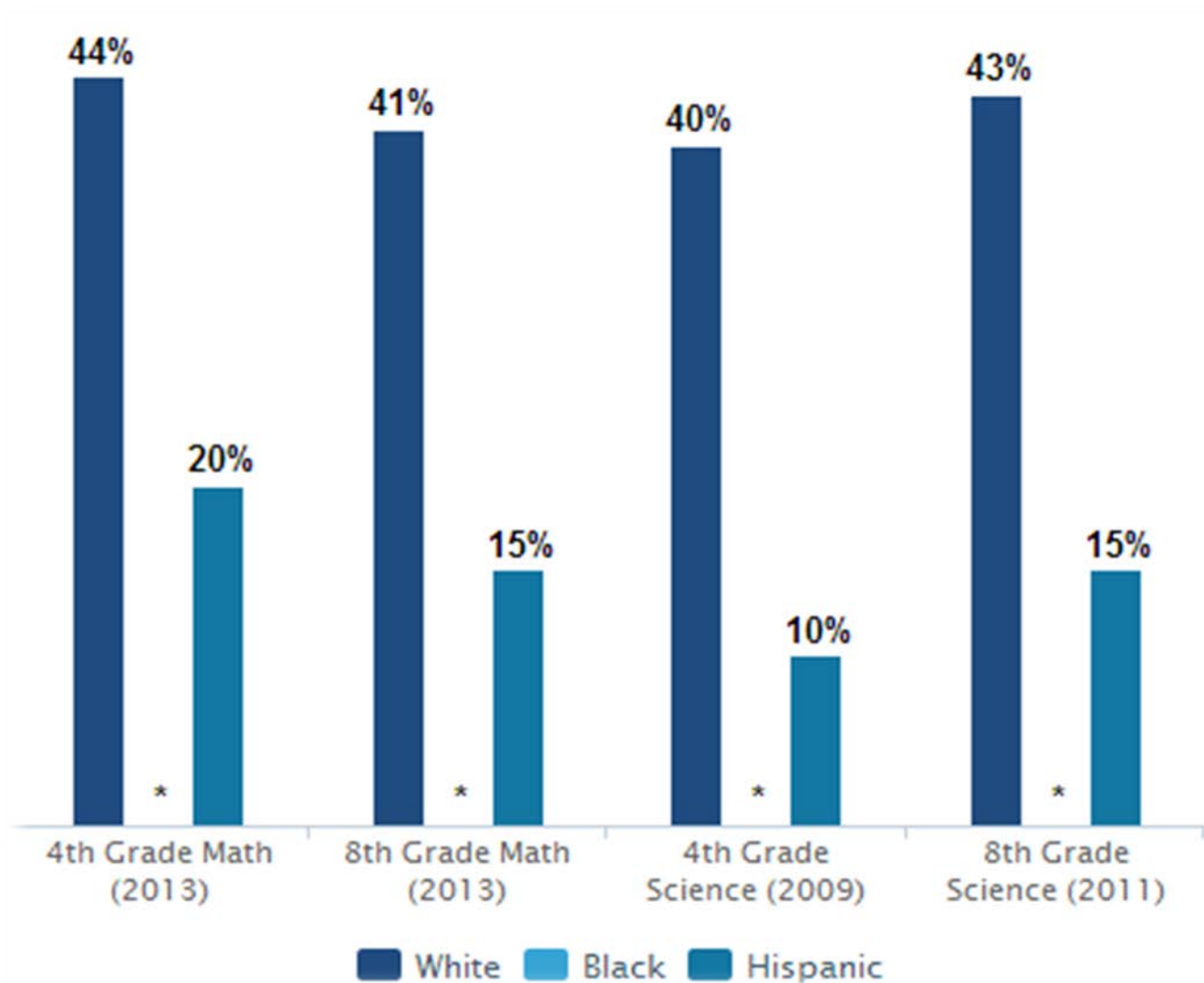
- What can we learn about the K-12 learning enterprise?
 - What is working?
 - What is not working?

Time Spent on Science

Grades 1-4
Hours per week



Proficient according to NAEP



Improvements, but ...

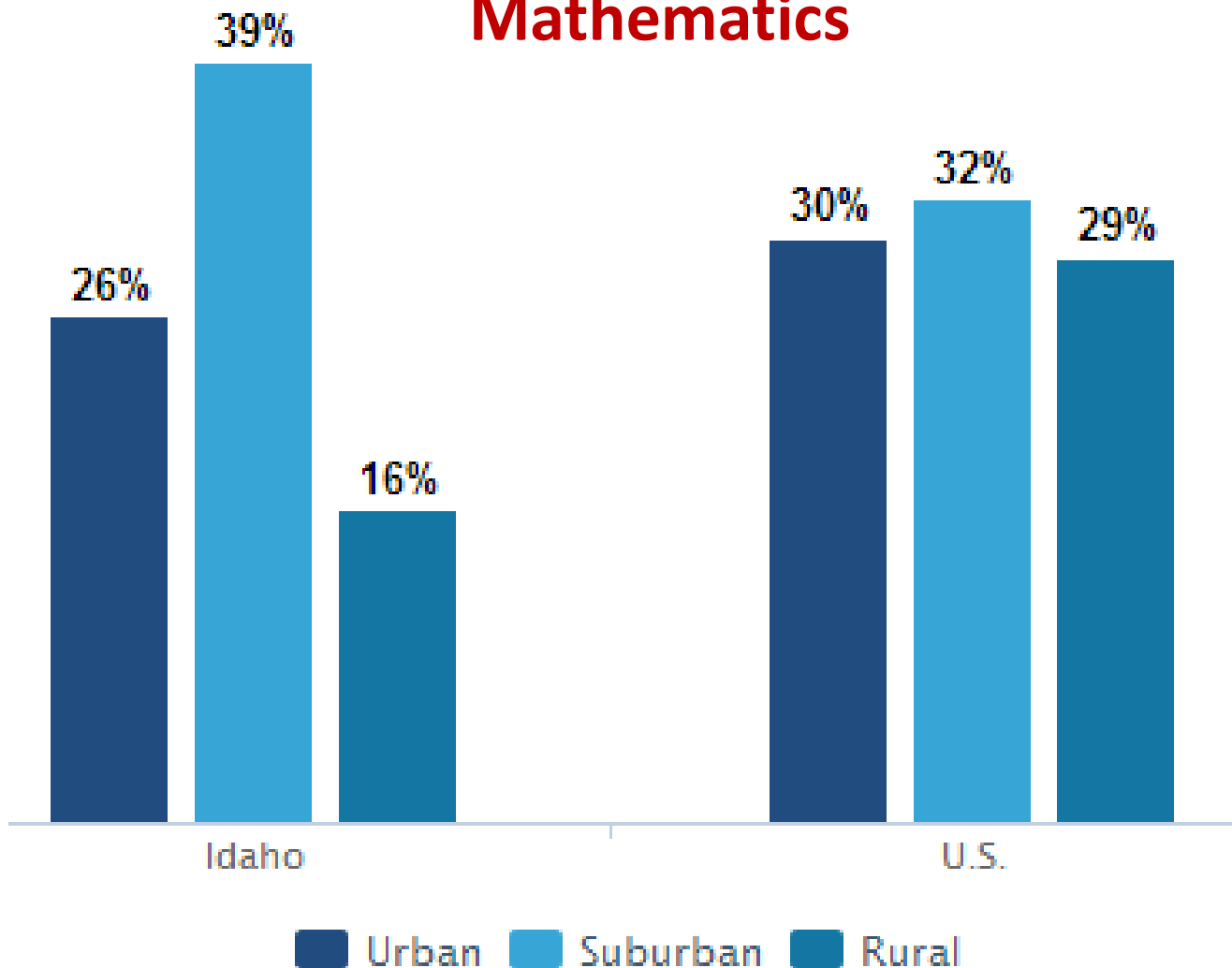
8th Grade Mathematics

	NAEP Scale Score		Change Since 2003	
	2003	2011	ID	Most Improved State
AI	280	287	+7	+22 (DC)
Low Income	267	276	+9	+22 (DC,NJ)
White	284	291	+7	+18 (HI)
Black	*	*	*	+21 (DC,NJ)
Hispanic	251	267	+16	+22 (MA)

Totals may not sum due to rounding errors.

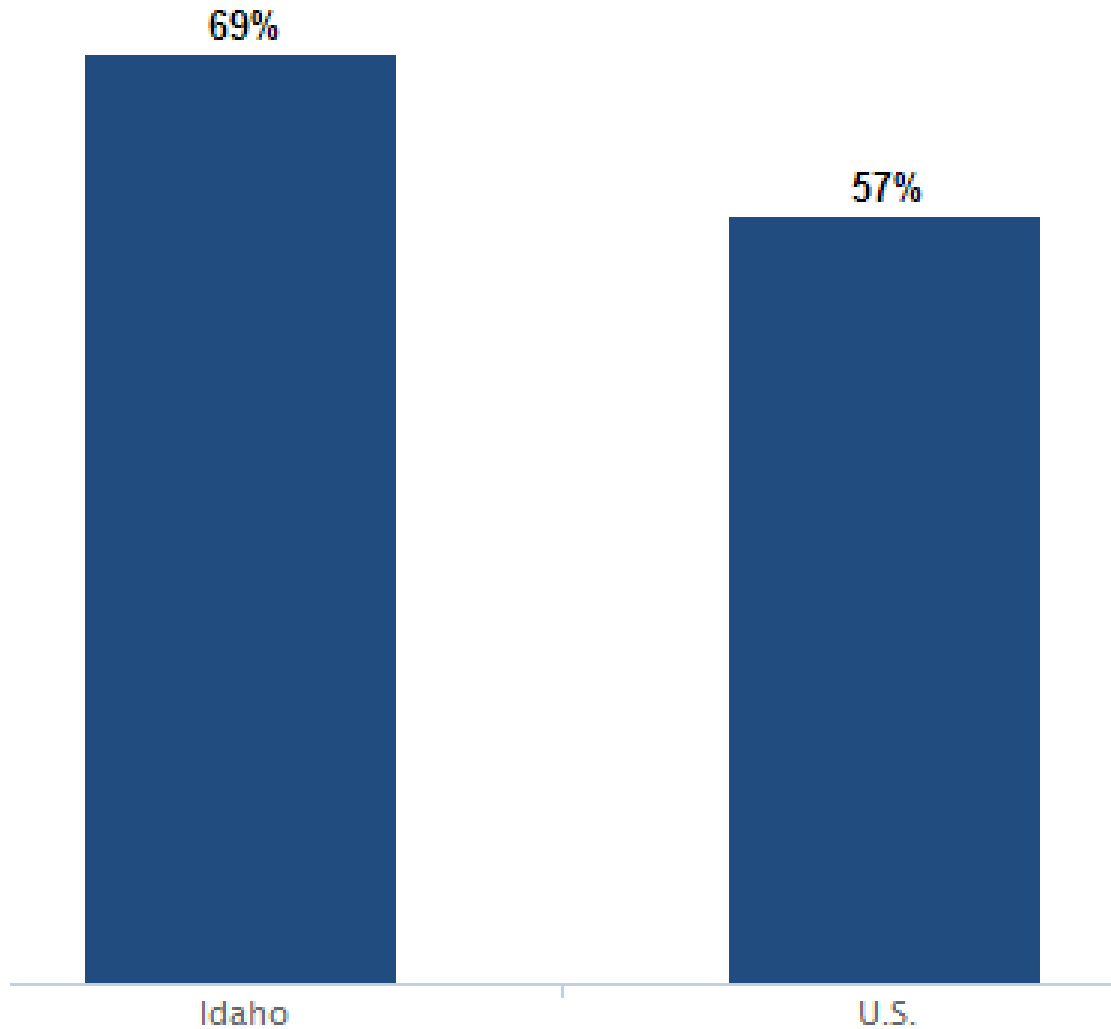
8th Grade Students' Teachers

Mathematics

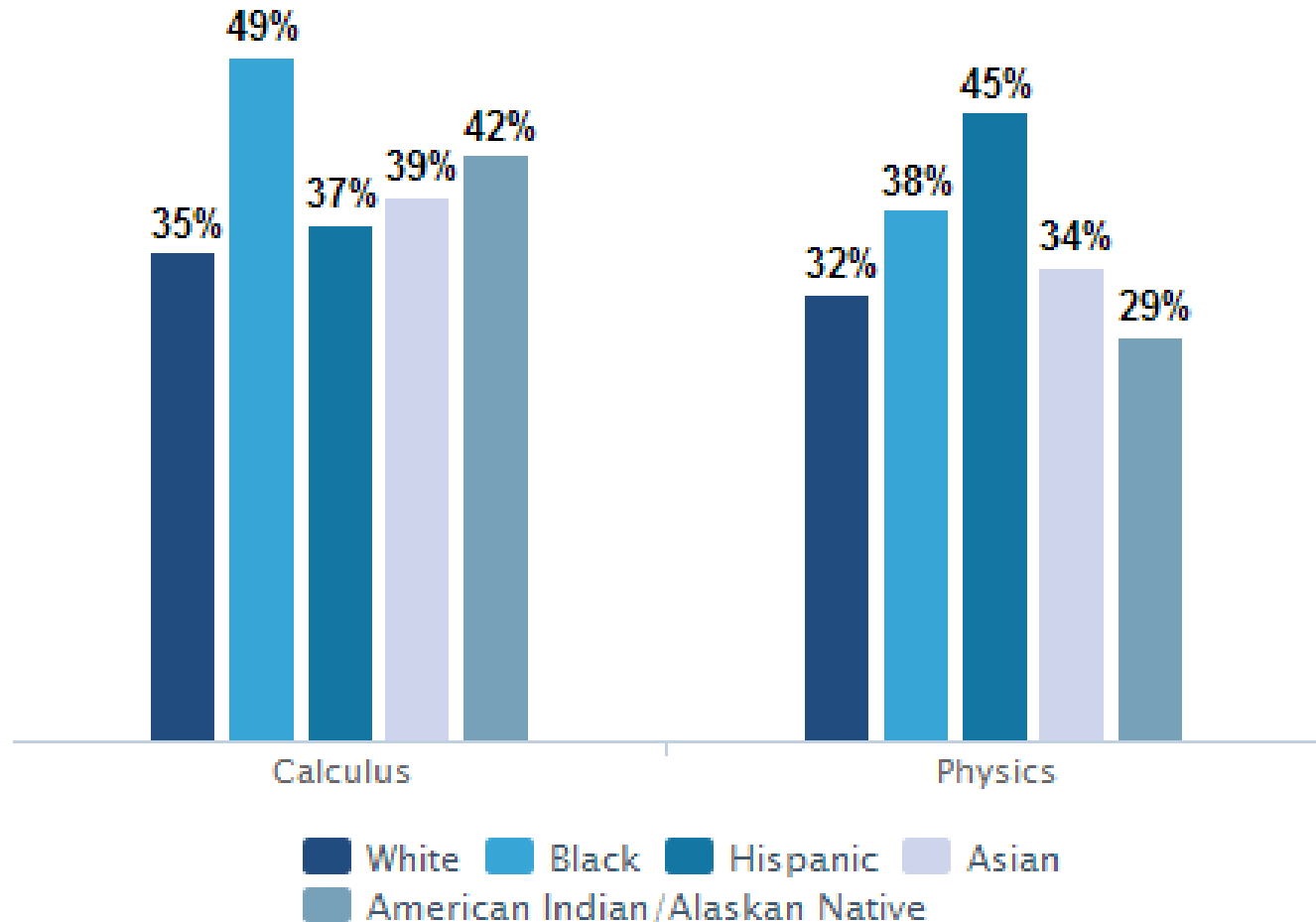


Lack of Parental Support

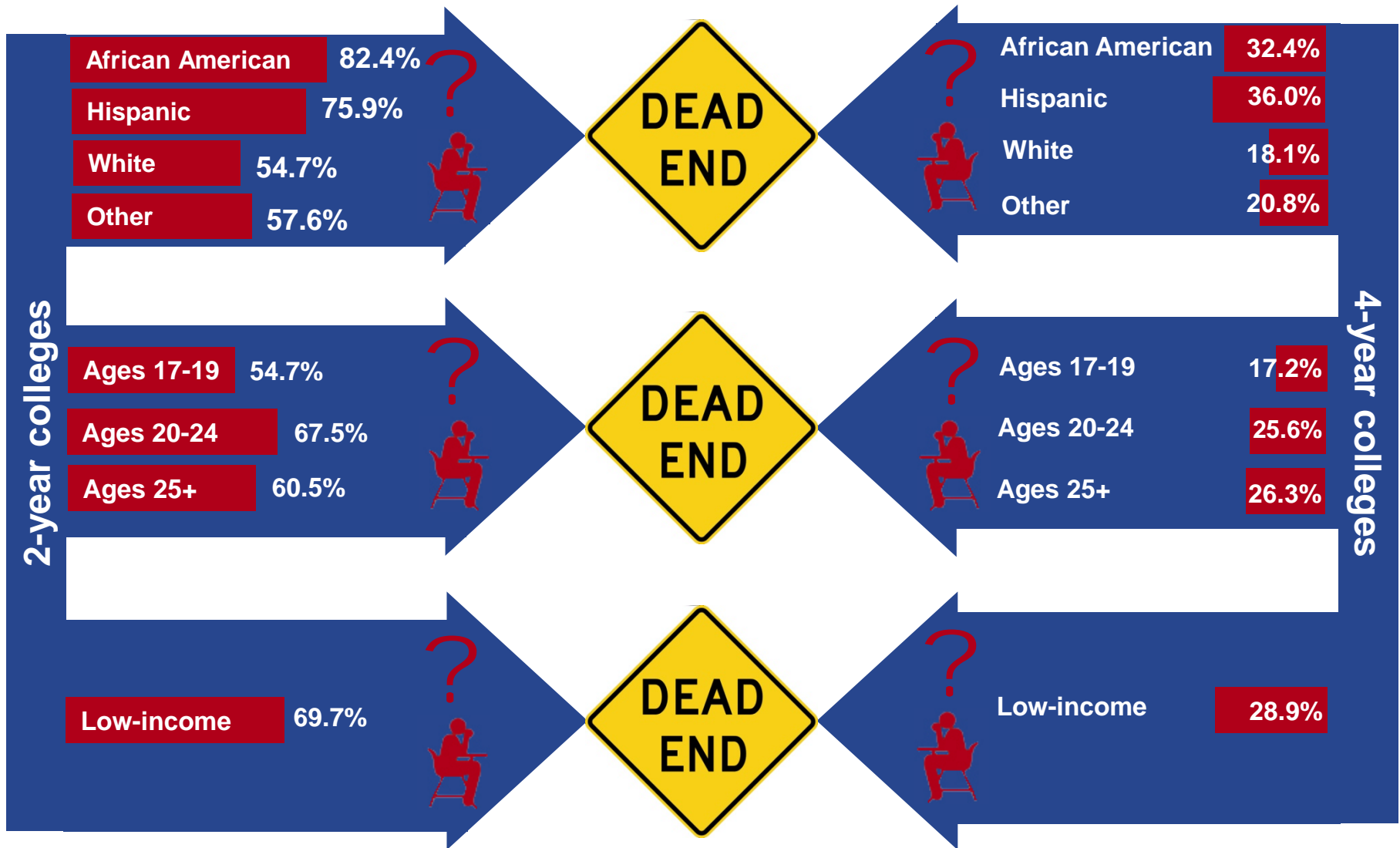
8th Grade Science Teachers



Challenging Content Unavailable



ID Freshmen Need Remediation



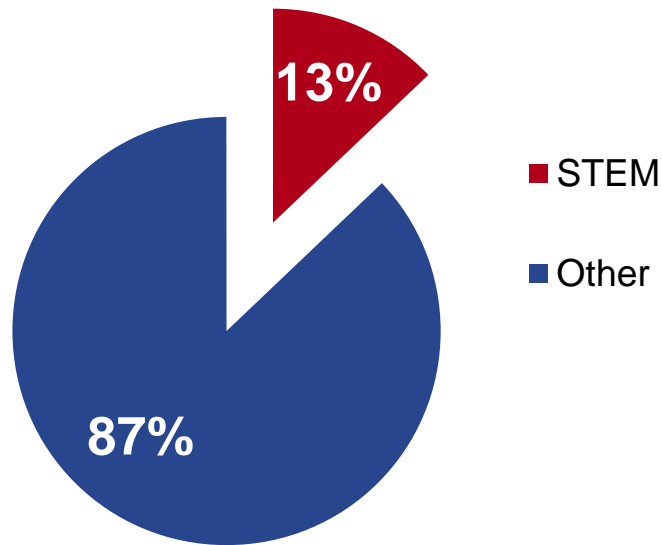
Source: Remediation, Higher Education's Bridge to Nowhere; Complete College America; 2012..

On Time Graduation Rates

Public Two Year IHEs (in 3 years)	Grad Rate	Public Four Year IHEs (in 6 years)	Grad Rate
Eastern ID Technical College	37%	University of ID	56%
North ID College	23%	Idaho State	34%
College of South ID	18%	Boise State	27%
		Lewis-Clark State College	22%

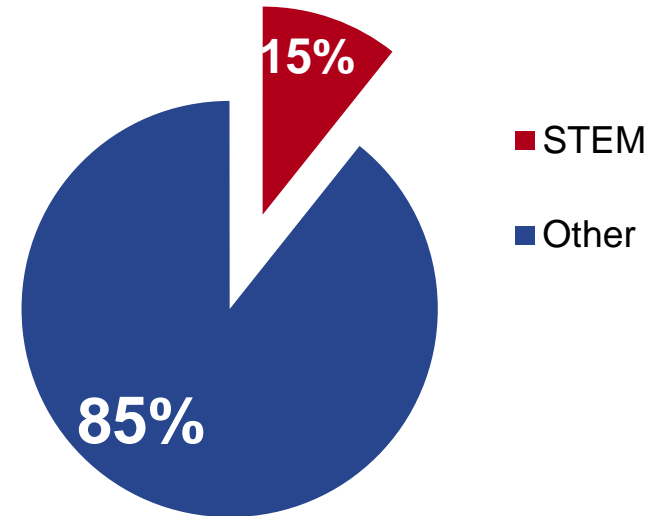
STEM Degrees in Idaho

2000-01 Awards Conferred



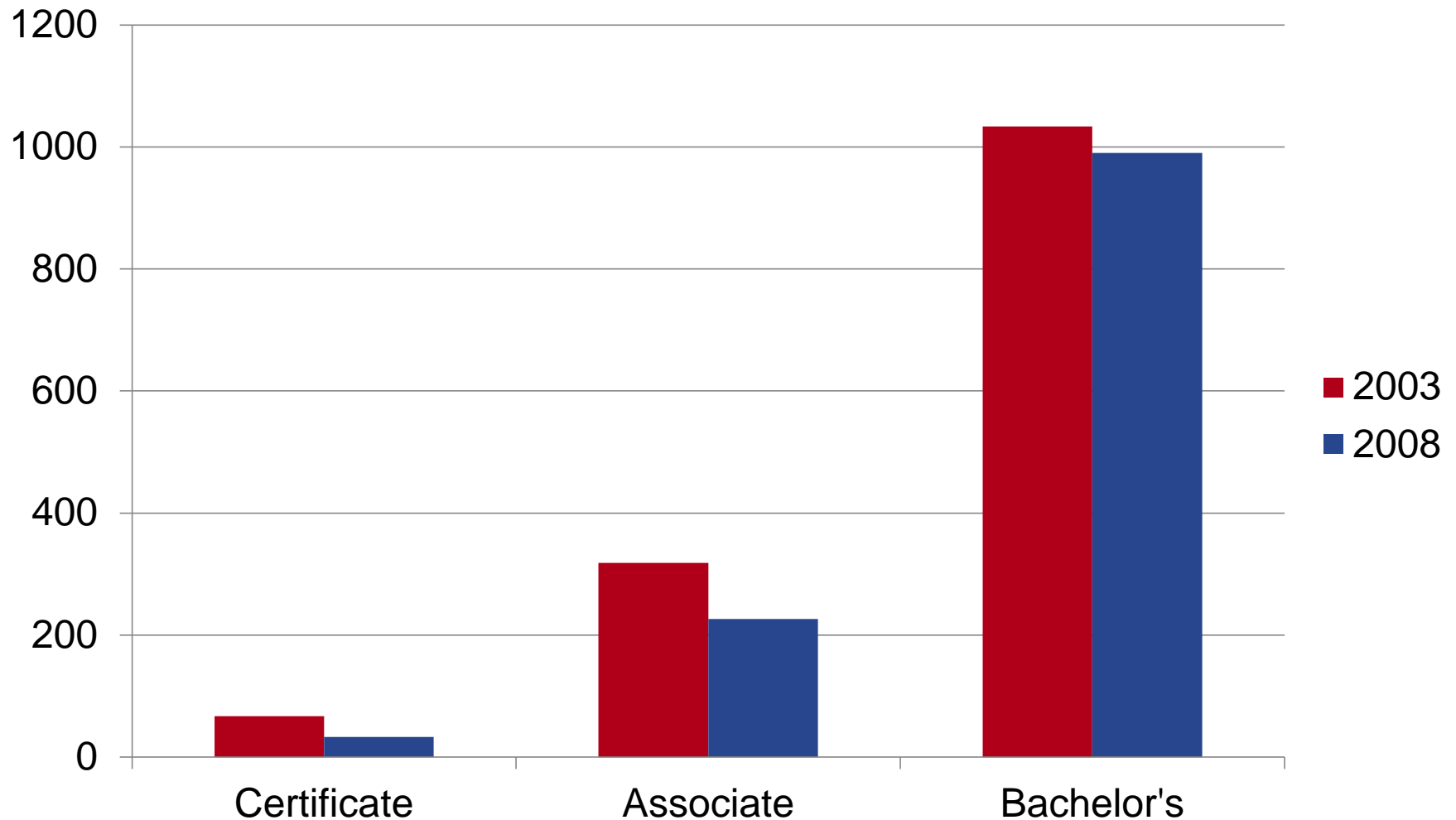
12,850 Total degrees
1670 STEM degrees

2011-2012 Awards Conferred



20,080 Total Degrees
2988 STEM Degrees

ID Awards of STEM Credentials









Females Underrepresented

Women fell farthest in computing

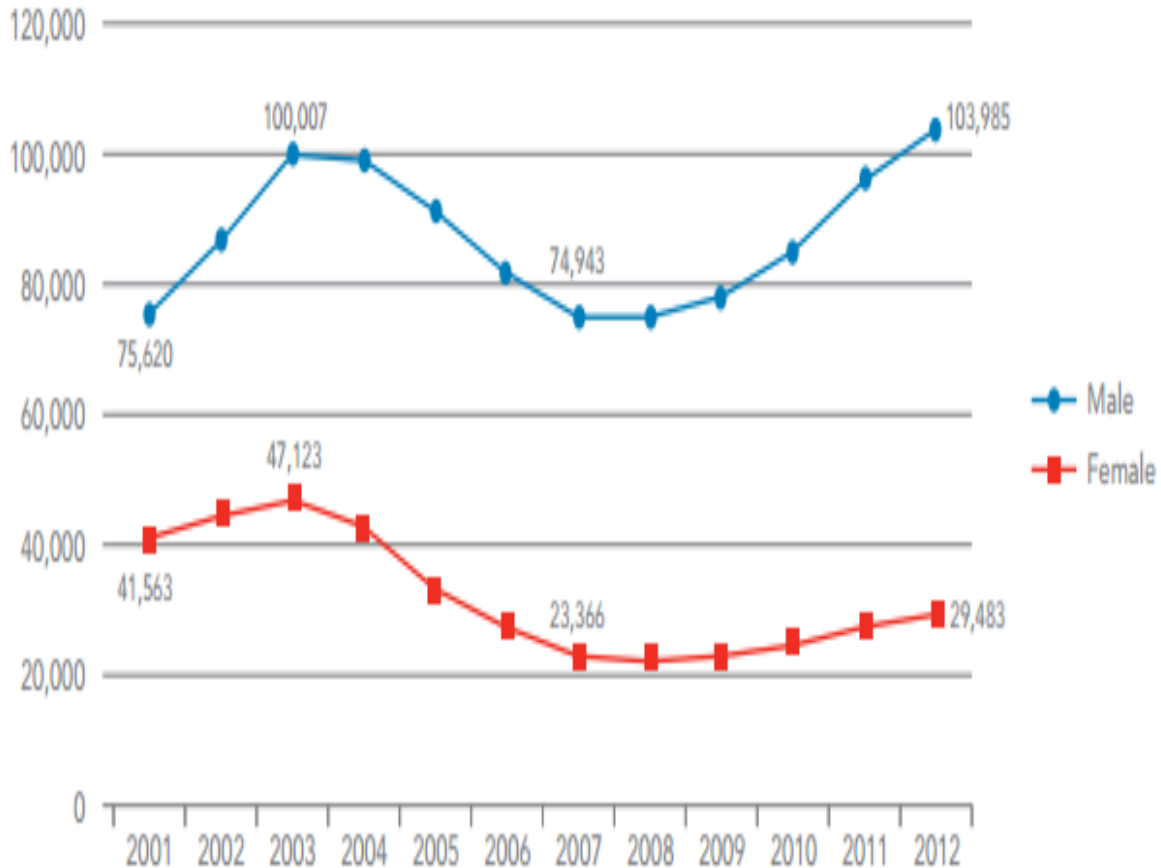


Degrees/
Certificates in:

-  Biological Sciences
-  Mathematics And Statistics
-  Physics
-  Computer/Information Technology
-  Engineering
-  Engineering Technology

Source: Change the Equation, 2013

Computing Jobs to Grow > 20%



Men:

+38% since 2001

75% of all degrees/
certificates

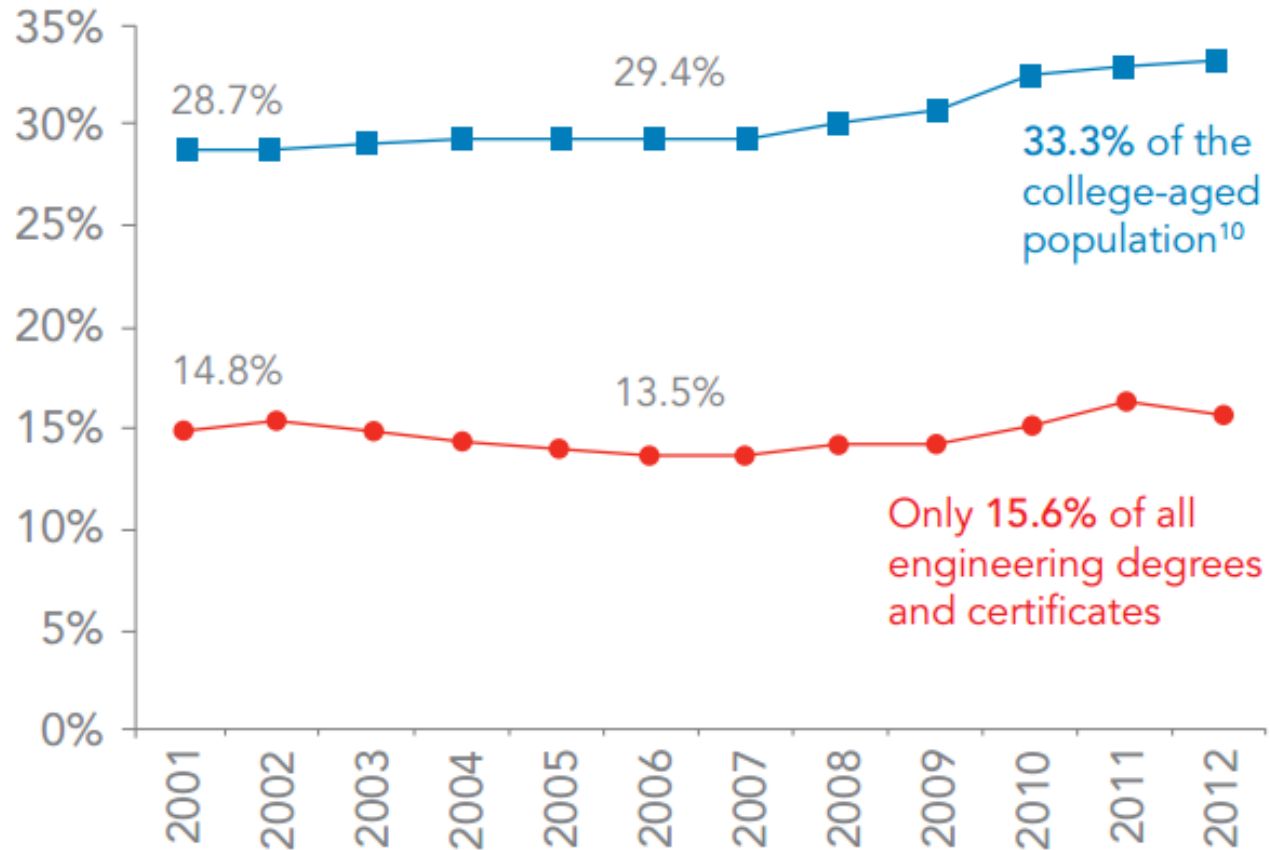
Women:

-29% since 2001

25% of all degrees/
certificates

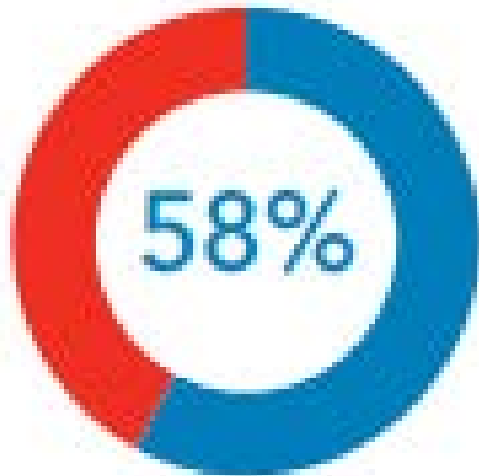
Flat Degree Production

African Americans and Hispanics



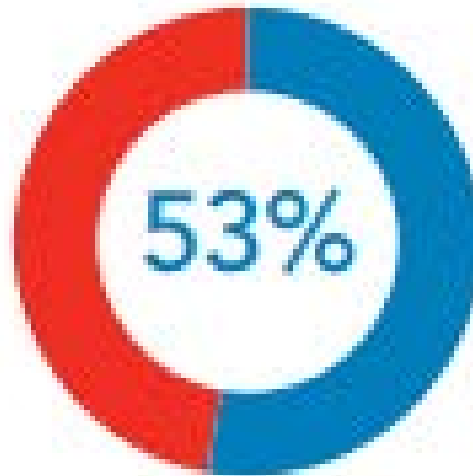
Demographic Disparities

African American
Engineering
credentials



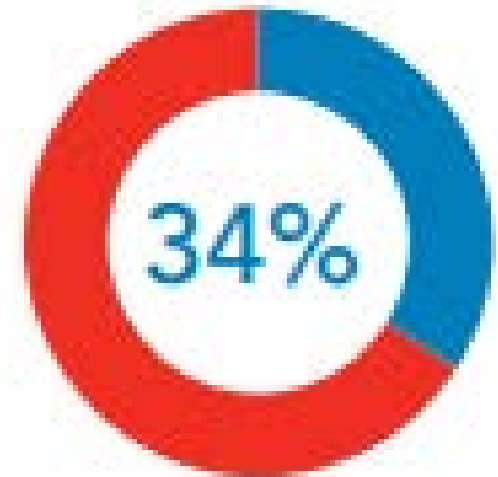
are less
than bachelor's

Hispanic
Engineering
credentials



are less
than bachelor's

White
Engineering
credentials



are less
than bachelor's

We Know We Can



I think I can—I think I can—I think I can—I think I can.”
Up, up, up. Faster and faster and faster and faster the little

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