


ISSUE BRIEF: Q1 2020

HIGH SCHOOL & THE FUTURE OF WORK

 **BUSINESSFORWARD**
FOUNDATION

TWO PROBLEMS: RELATED, DEPENDENT, AND REINFORCING



**WE CANNOT FIX
HIGH SCHOOL
WITHOUT PREPARING
GRADUATES FOR THE
FUTURE OF WORK.**

**WE CANNOT PRODUCE
A FUTURE-READY
WORKFORCE IF WE
WAIT UNTIL YOUNG
AMERICANS ARE IN
COLLEGE OR AT WORK.**

FOUR KEY POINTS

THE CHALLENGE

- 1 Our schools are failing
- 2 Poor schools hurt our economy
- 3 As work evolves, the gap between today's workforce and good jobs grows

THE OPPORTUNITY

- 4 The future of work is a road map for education reform
-
- Automation can create more jobs here than it destroys
 - We know what students need: basic technical skills, the ability to learn continuously, teamwork and good judgment, and self-reliance
 - Internships and apprenticeships work
 - More college isn't always necessary

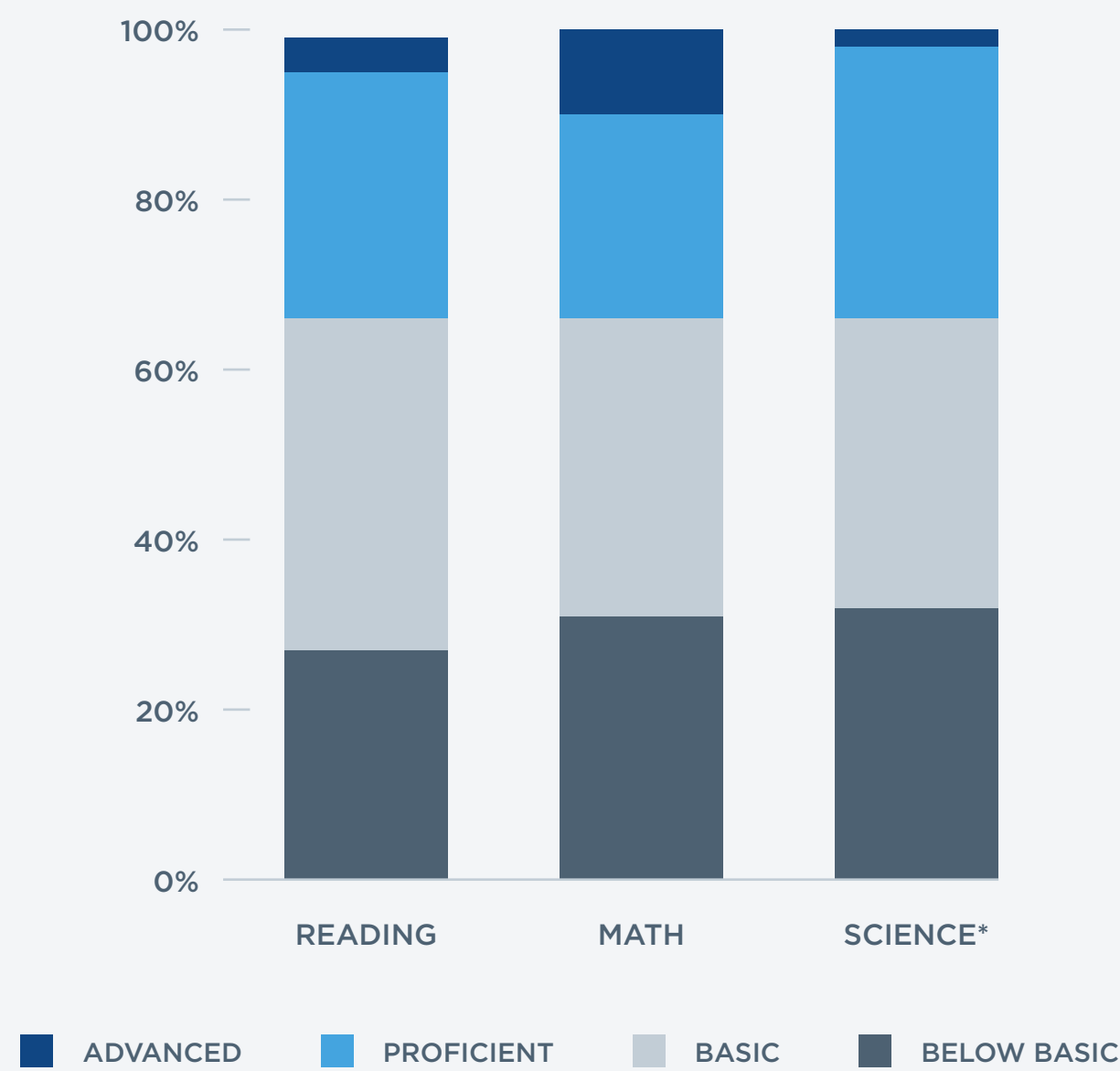
OUR SCHOOLS ARE FAILING

WE ARE FAILING OUR KIDS

LACKING THE BASICS

Only one in three 8th graders is proficient or above in math, science, or reading.

PERCENTAGE DISTRIBUTION OF 8TH GRADE STUDENTS, BY NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS (NAEP) READING ACHIEVEMENT LEVEL (2019)¹

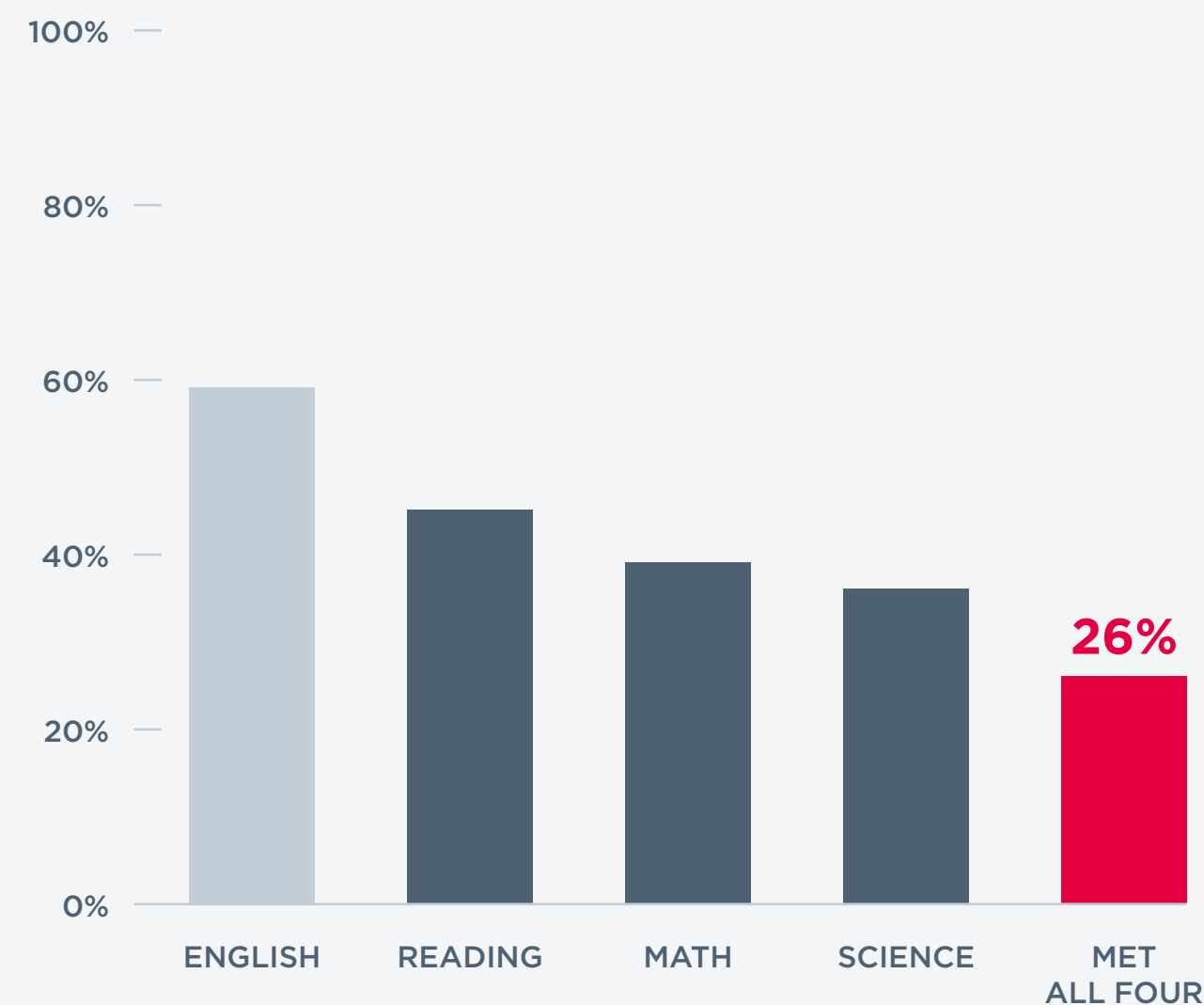


*2015 DATA

AN INCOMPLETE EDUCATION

Only one in four high school seniors is “college ready” in math, science, English, and reading.

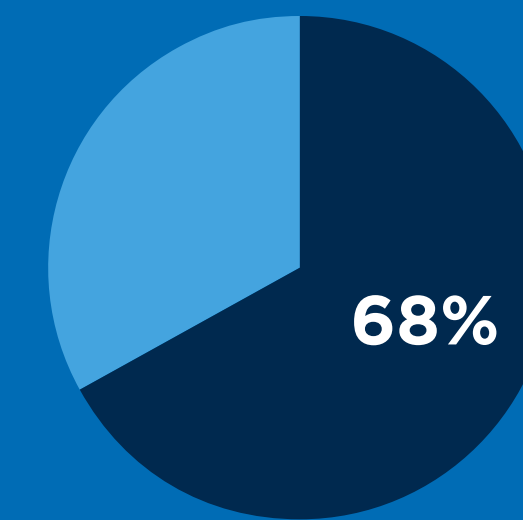
PERCENTAGE OF STUDENTS ACHIEVING BENCHMARK SCORE ON ACT (2019)²



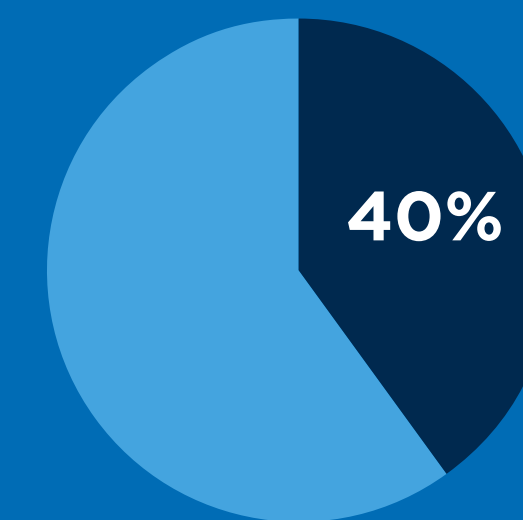
THE COST OF REMEDIAL EDUCATION

More than four in 10 first-year college students require remedial education. These additional classes cost students \$1 billion/year. They also make it harder for students to graduate on time.³

PERCENTAGE OF STUDENTS REQUIRING REMEDIAL COURSES⁴



OF HIGH SCHOOL STUDENTS WHO GO ON TO COMMUNITY COLLEGE



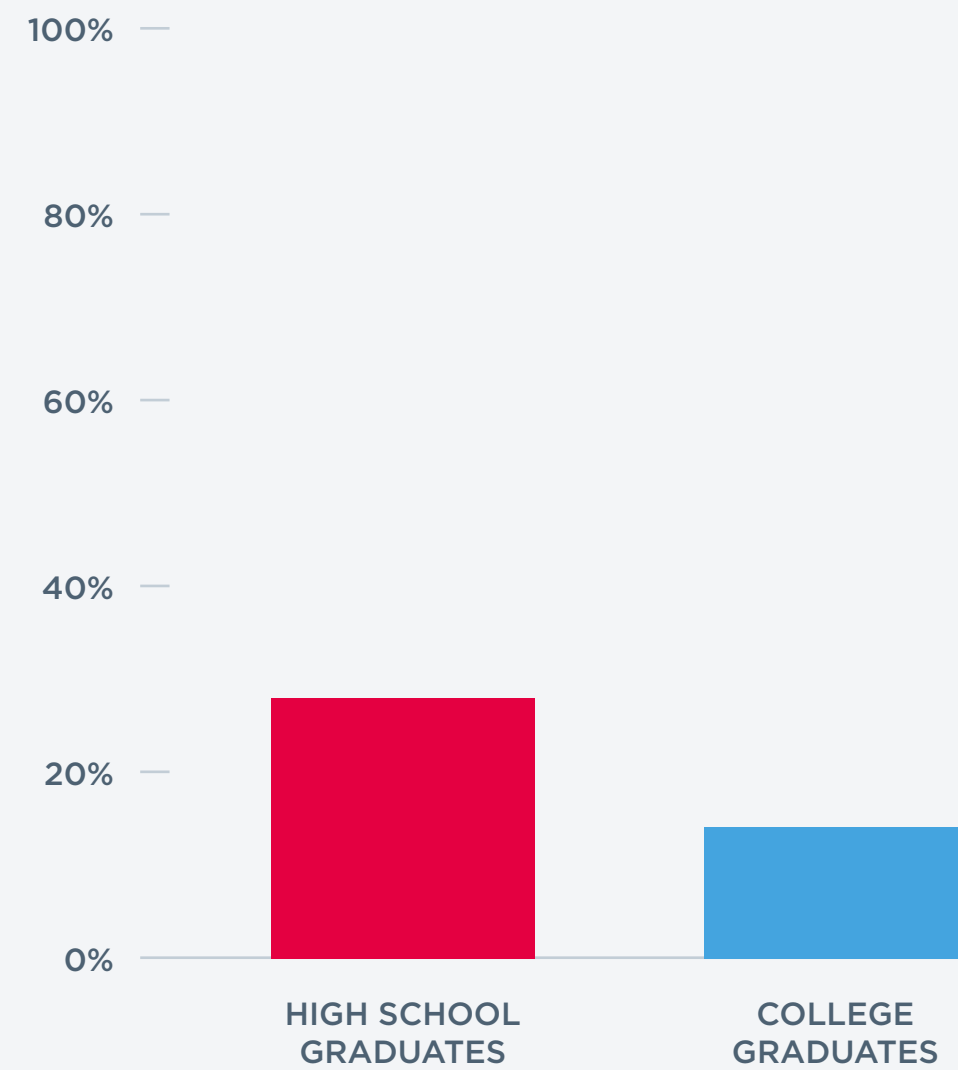
OF UNDERGRADUATES IN 4-YEAR COLLEGES

IT'S HURTING THEIR FUTURES

THE ODDS ARE AGAINST THEM

Students with only a high school degree are twice as likely to be unemployed as college graduates.

UNEMPLOYMENT RATE FOR WORKERS AGES 25-34, BY EDUCATIONAL ATTAINMENT (2017)⁵

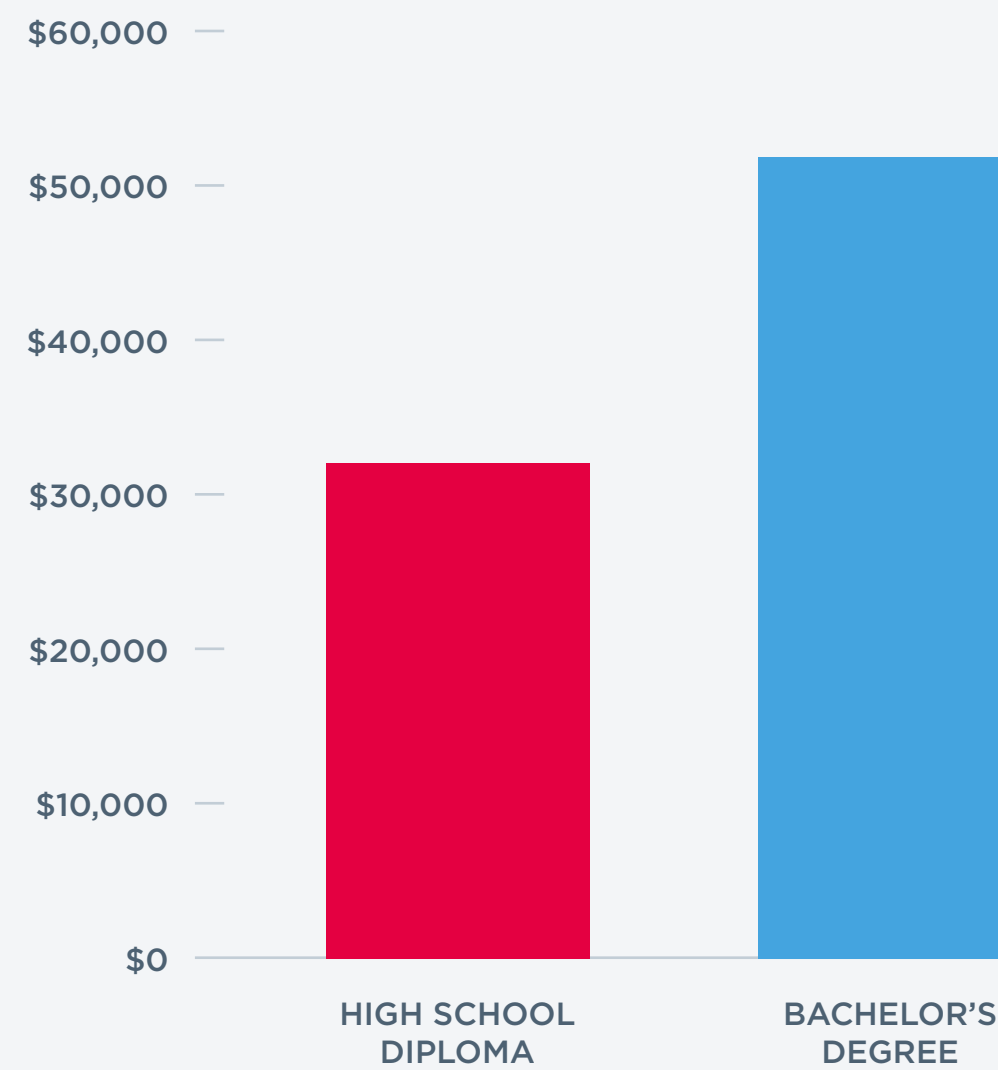


A LACK OF UPWARD MOBILITY

Four-year college graduates earn 62% more per year than high school graduates, on average.

A college degree is worth about \$2.8 million in lifetime income.⁶

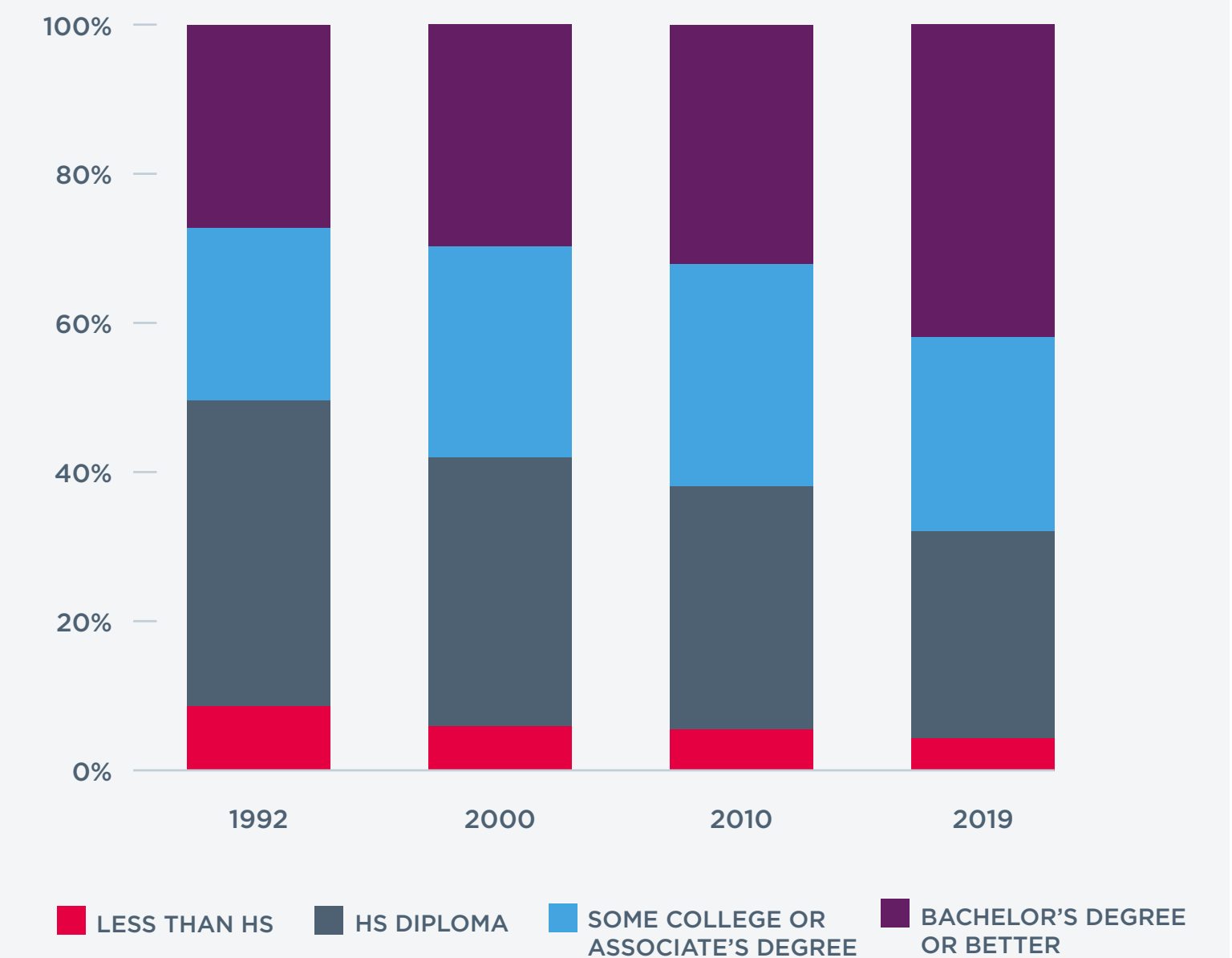
MEDIAN ANNUAL EARNINGS OF FULL-TIME, YEAR-ROUND WORKERS AGES 25-34, BY EDUCATIONAL ATTAINMENT (2017)⁷



CHANGING JOB REQUIREMENTS

67% of all jobs in the economy require post-secondary education and training beyond high school.

POST-SECONDARY EDUCATION AND TRAINING REQUIREMENTS⁸

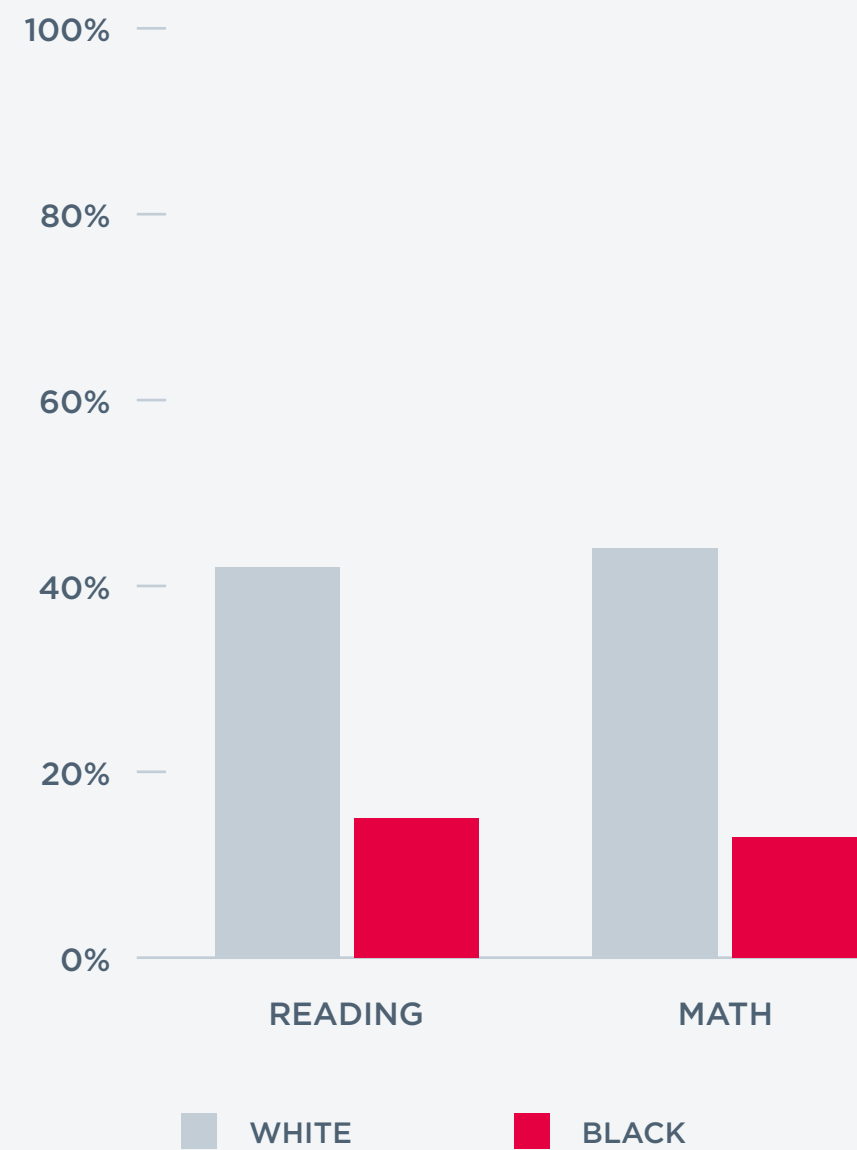


IT'S WORSE FOR POOR AND MINORITY STUDENTS

AN UNNECESSARY DIFFERENCE

African-American 8th grade students are three times less likely to be proficient in reading or math as white students.

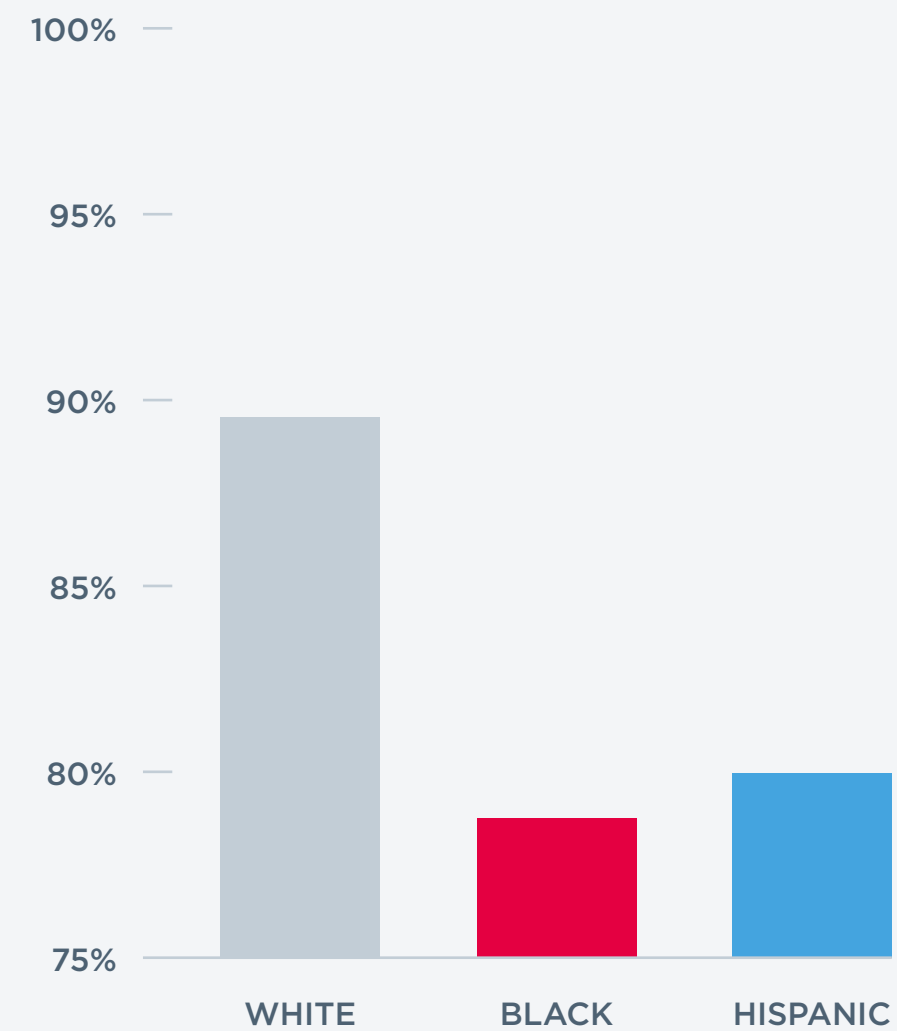
PERCENTAGE 8TH GRADERS PROFICIENT IN READING AND MATH, BY RACE (2019)⁹



DROPPING OUT

Students of color are twice as likely to drop out of high school than white students.

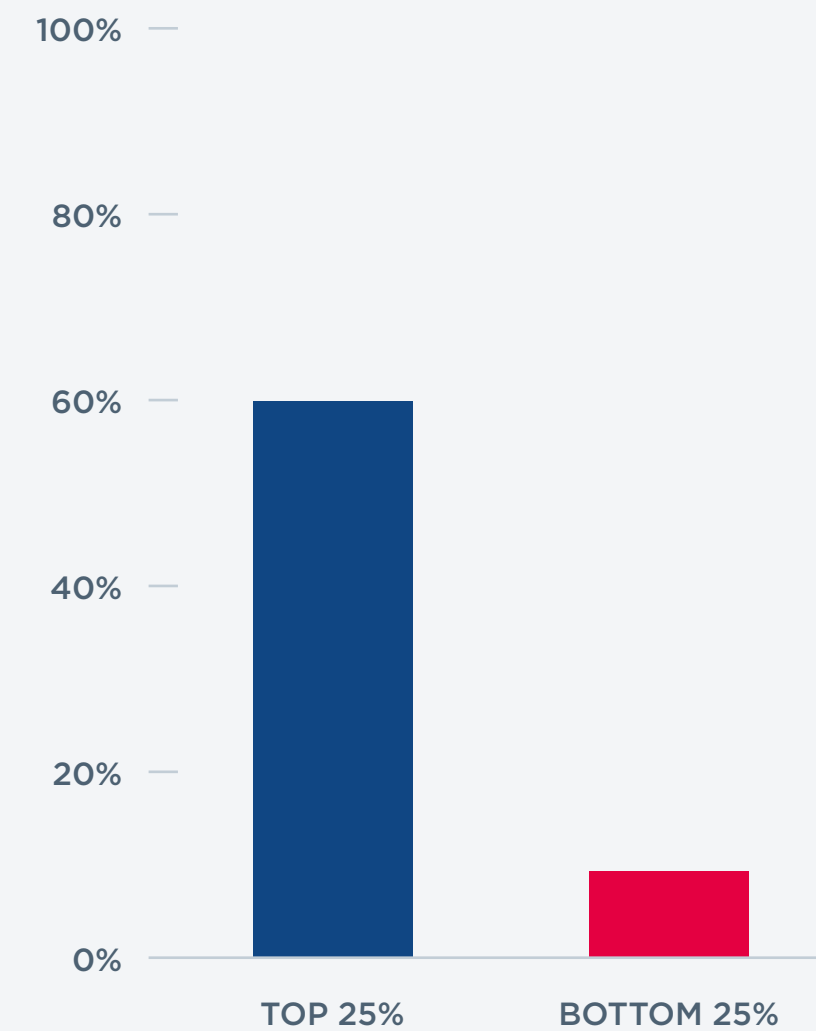
ADJUSTED COHORT GRADUATION RATE FOR PUBLIC HIGH SCHOOL STUDENTS, BY RACE (2016-17)¹⁰



THE GAP BETWEEN RICH AND POOR

Students from affluent families are four times more likely to earn a 4-year degree than students from poor families.

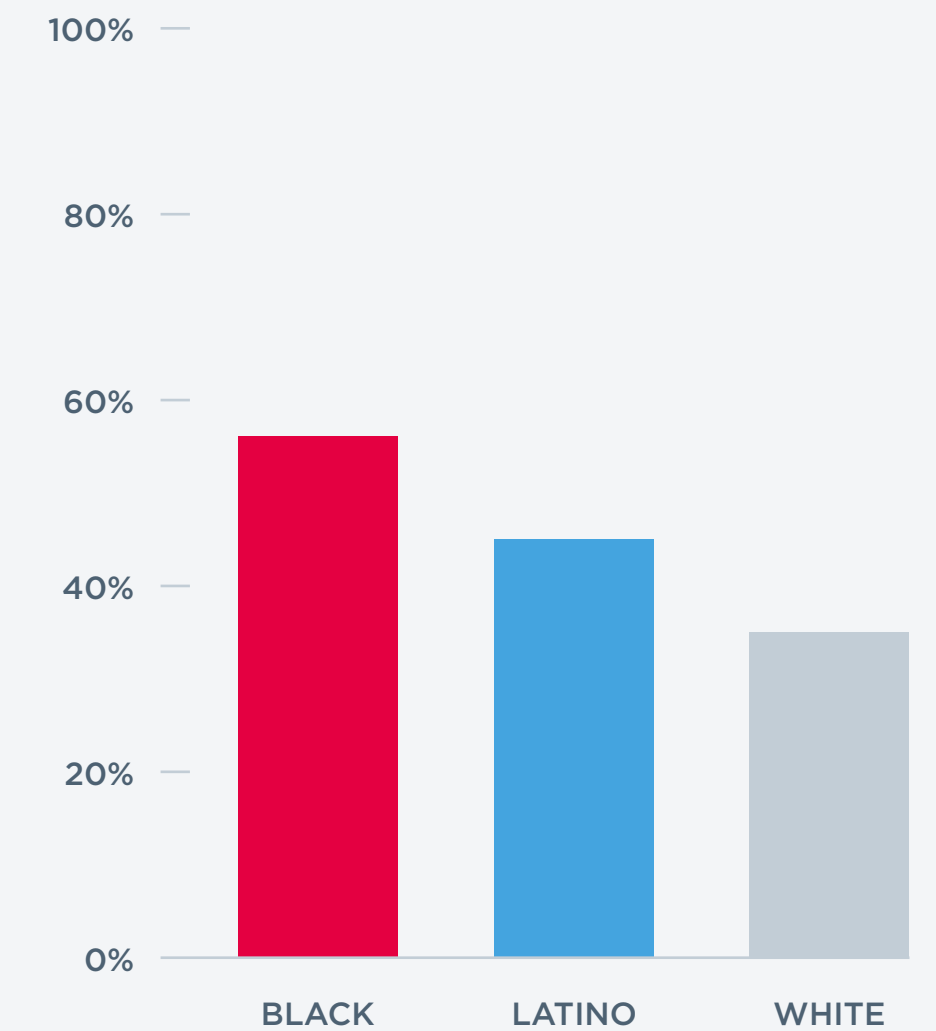
LIKELIHOOD OF GRADUATING FROM 4-YEAR COLLEGE, BY FAMILY INCOME¹¹



REMEDIAL EDUCATION

Black students are 21% more likely to require remedial education than their white peers.

NATIONAL RATES OF REMEDIAL EDUCATION ENROLLMENT, BY STUDENT GROUPS¹²



POOR SCHOOLS HURT OUR ECONOMY

WE'RE FALLING BEHIND AS A NATION

WE NEED TO SPEND SMARTER

Despite ranking 2nd in per pupil spending for K-12, the U.S. ranks 13th in reading, 37th in math, and 18th in science.¹³

The U.S.'s per pupil spending on K-12 is 35% higher than the average for OECD countries.¹⁴

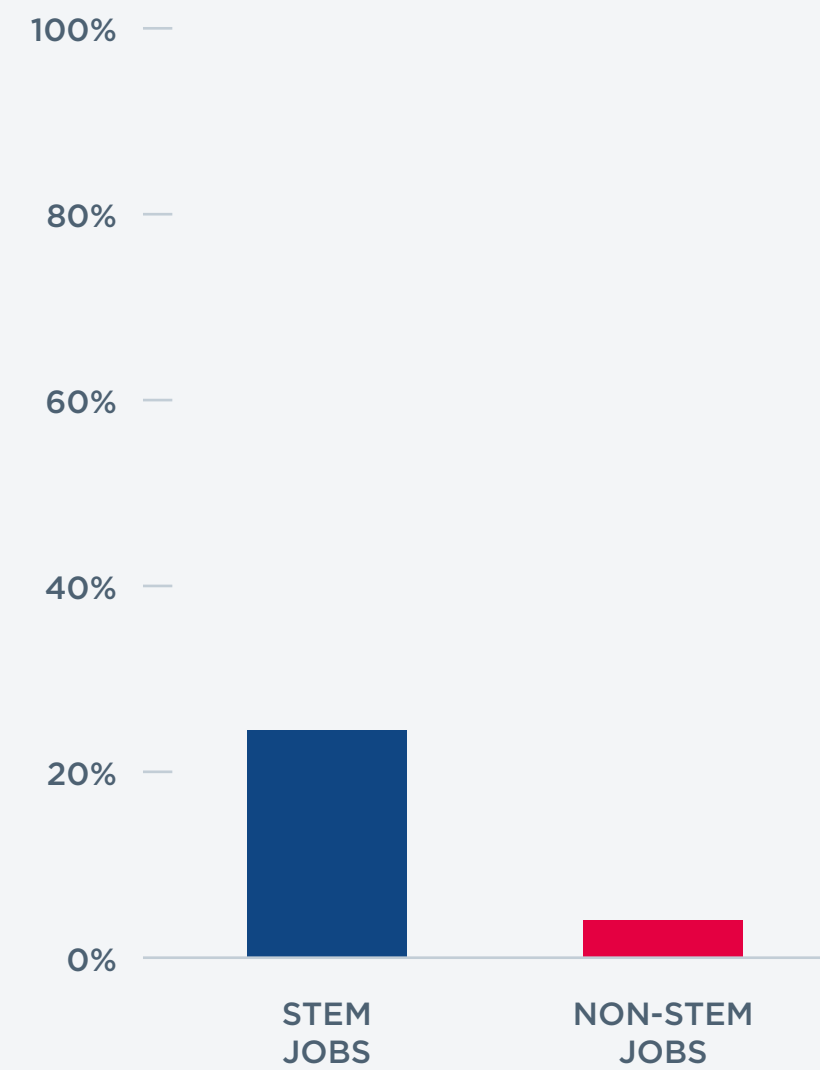
RANK	READING	MATH	SCIENCE
1	B-S-J-Z (CHINA)	B-S-J-Z (CHINA)	B-S-J-Z (CHINA)
2	SINGAPORE	SINGAPORE	SINGAPORE
3	MACAO (CHINA)	MACAO (CHINA)	MACAO (CHINA)
4	HONG KONG (CHINA)	HONG KONG (CHINA)	ESTONIA
5	ESTONIA	TAIWAN	JAPAN
6	CANADA	JAPAN	FINLAND
7	FINLAND	KOREA	KOREA
8	IRELAND	ESTONIA	CANADA
9	KOREA	NETHERLANDS	HONG KONG (CHINA)
10	POLAND	POLAND	TAIWAN
11	SWEDEN	SWITZERLAND	POLAND
12	NEW ZEALAND	CANADA	NEW ZEALAND
13	UNITED STATES	DENMARK	SLOVENIA
14	UNITED KINGDOM	SLOVENIA	UNITED KINGDOM
15	JAPAN	BELGIUM	NETHERLANDS
16	AUSTRALIA	FINLAND	GERMANY
17	TAIWAN	SWEDEN	AUSTRALIA
18	DENMARK	UNITED KINGDOM	UNITED STATES
19	NORWAY	NORWAY	SWEDEN
20	GERMANY	GERMANY	BELGIUM
21	SLOVENIA	IRELAND	CZECH REPUBLIC
22	BELGIUM	CZECH REPUBLIC	IRELAND
23	FRANCE	AUSTRIA	SWITZERLAND
24	PORTUGAL	LATVIA	FRANCE
25	CZECH REPUBLIC	FRANCE	DENMARK
26	NETHERLANDS	ICELAND	PORTUGAL
27	AUSTRIA	NEW ZEALAND	NORWAY
28	SWITZERLAND	PORTUGAL	AUSTRIA
29	CROATIA	AUSTRALIA	LATVIA
30	LATVIA	RUSSIA	SPAIN
31	RUSSIA	ITALY	LITHUANIA
32	ITALY	SLOVAK REPUBLIC	HUNGARY
33	HUNGARY	LUXEMBOURG	RUSSIA
34	LITHUANIA	SPAIN	LUXEMBOURG
35	ICELAND	LITHUANIA	ICELAND
36	BELARUS	HUNGARY	CROATIA
37	ISRAEL	UNITED STATES	BELARUS

IF WE CAN'T FILL JOBS HERE, THEY'LL MOVE OVERSEAS

VACANT POSITIONS

STEM jobs are growing six times faster than non-STEM jobs. Today, employers have 3 million STEM jobs they cannot fill.¹⁵

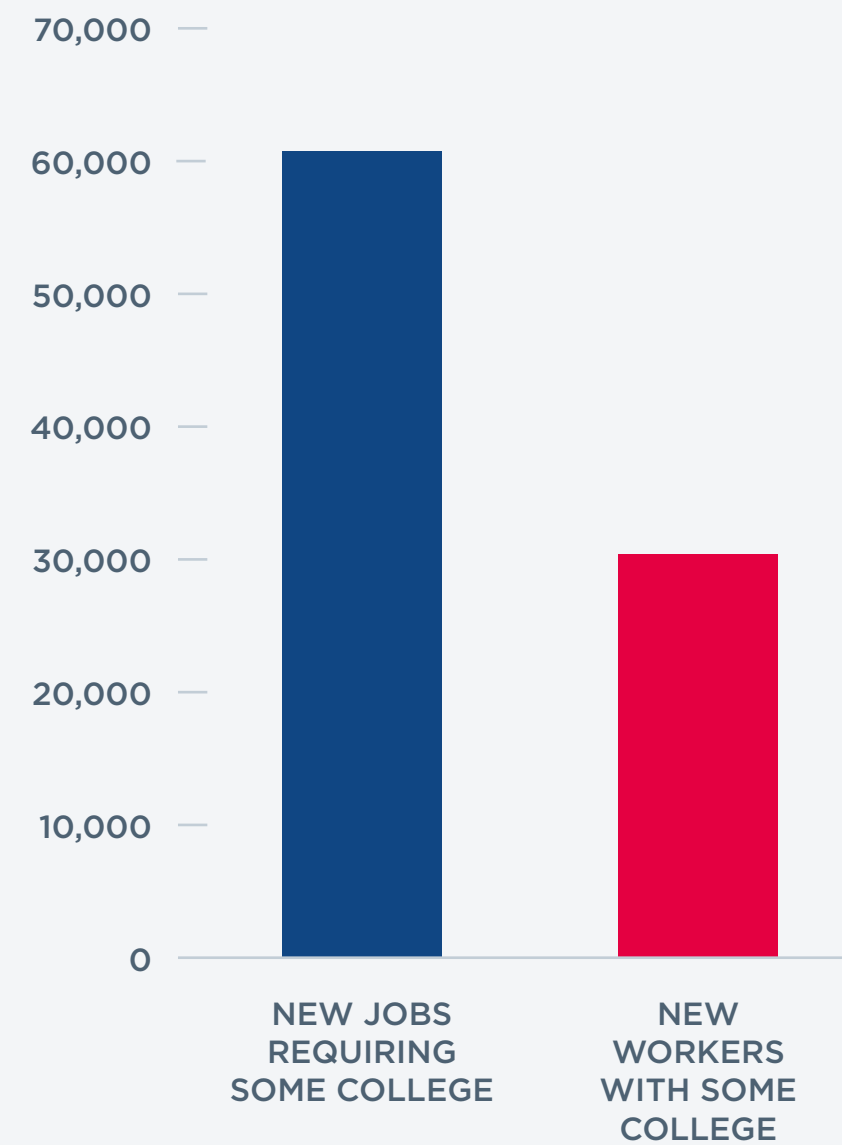
PERCENT JOB GROWTH, 2007 TO 2017¹⁶



LACK OF AGILITY

In fast-growing economies, local schools cannot keep up with skilled-job growth.

COLORADO'S ANNUAL GROWTH IN SKILLED JOB DEMAND AND SKILLED WORKERS¹⁷

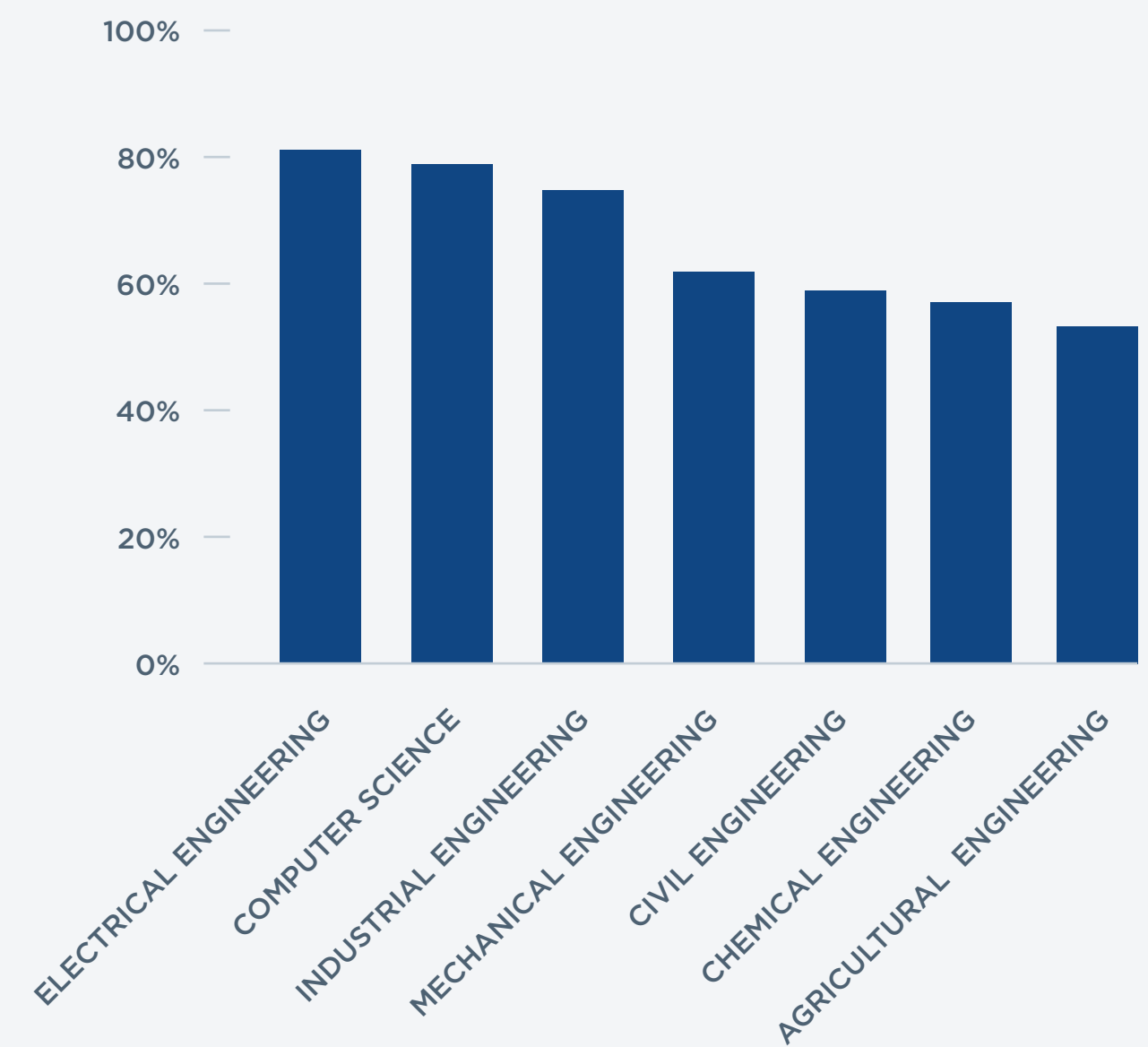


IMPORTING TALENT

As a result, employers in high-growth markets import workers from other states, leaving low-skilled workers underemployed.

Meanwhile, their universities import talent to fill STEM classrooms.

FOREIGN STUDENTS AS A PERCENTAGE OF GRADUATE STEM PROGRAMS (2015)¹⁸



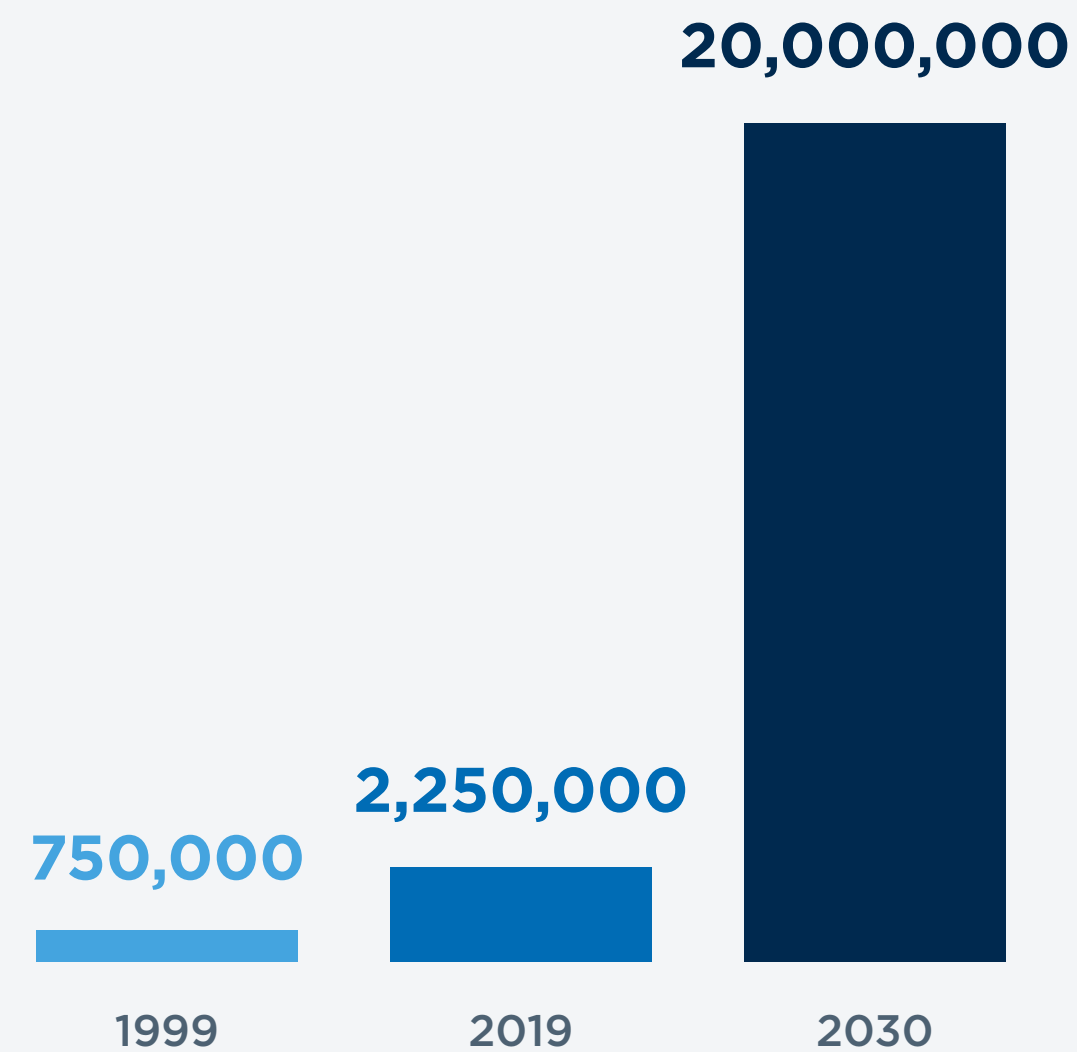
AS WORK EVOLVES, THE GAP BETWEEN TODAY'S WORKFORCE AND GOOD JOBS GROWS

“WORK” IN THE U.S. IS CHANGING

MORE ROBOTS

There are 3X more robots now than there were 20 years ago. There will be 9X more in 2030 than today. Workers will need to work alongside these robots moving forward.

NUMBER OF ROBOTS IN THE U.S.¹⁹



And MIT Economist Daron Acemoglu estimates that every new robot reduces employment by 5.6 workers²⁰

MORE JOB CHANGES

The average American will have at least 12 different jobs between the ages of 18-50.²¹



DIFFERENT KINDS OF JOBS

Jobs are quickly becoming more technology-intensive. Workers will need higher proficiency in science, engineering, and math than they have before.

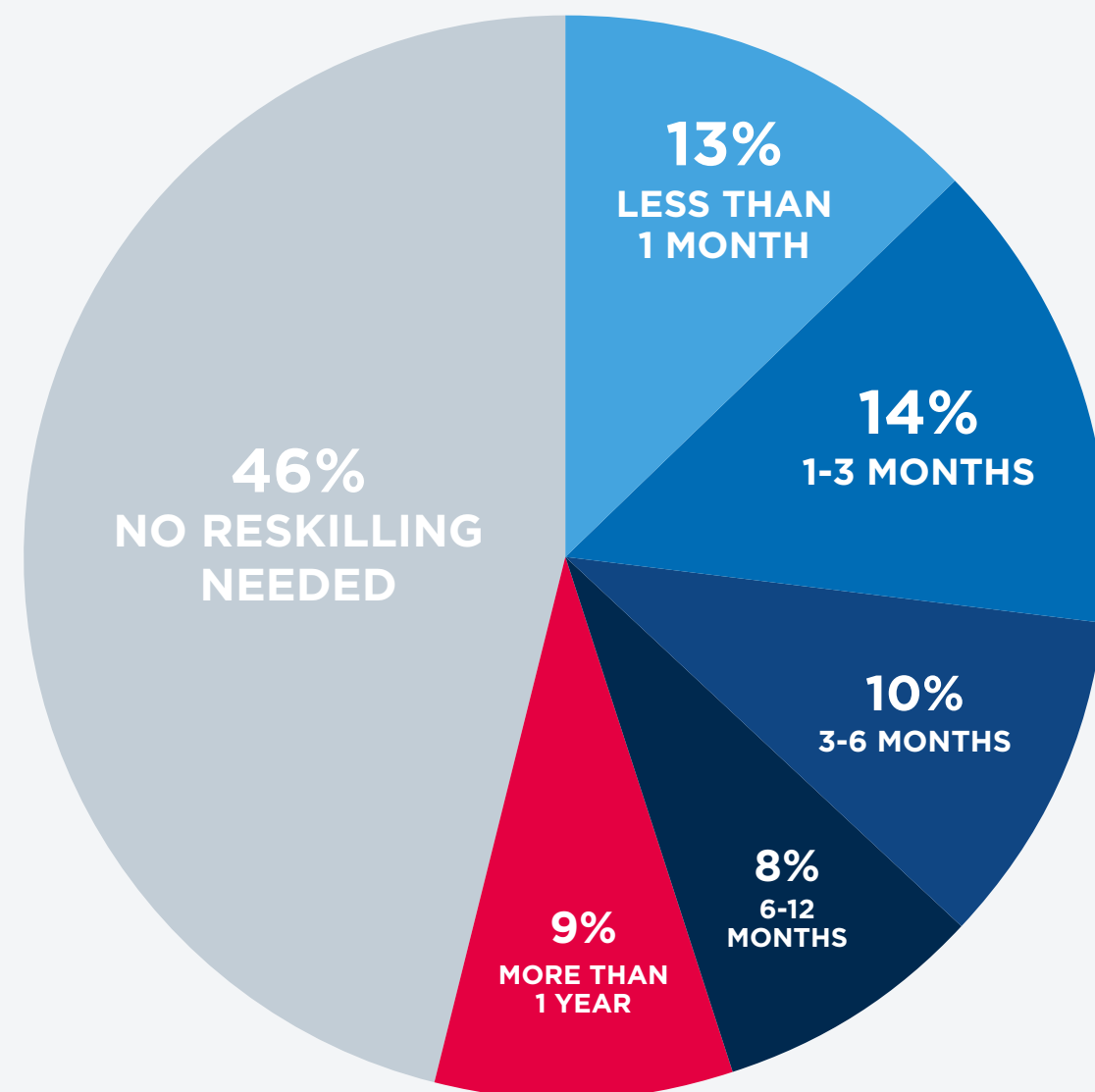


NEW JOBS REQUIRE NEW SKILLS

RESKILLING

40% of Americans are in occupational categories that could shrink by 2030.²³
54% of U.S. workers need reskilling. The length of training ranges from a few weeks to more than one year.

AVERAGE LENGTH OF TRAINING REQUIRED TO RESKILL (SHARE OF WORKFORCE)²⁴



POSTSECONDARY EDUCATION IS KEY

A high school diploma is no longer enough training to secure a job. Four-year, two-year, and certificate-granting programs provide a pathway to new jobs.



99%

OF JOBS CREATED DURING THE ECONOMIC RECOVERY WENT TO WORKERS WITH POSTSECONDARY EDUCATION OR TRAINING²⁵

“HUMAN” SKILLS GROW MORE VALUABLE

Workers will need to develop the skills that cannot be automated — and the skills that allow them to work with new technologies.

BY 2030, WORKPLACE DEMAND WILL INCREASE BY

60%

FOR TECHNOLOGICAL SKILLS

40%

FOR CREATIVITY

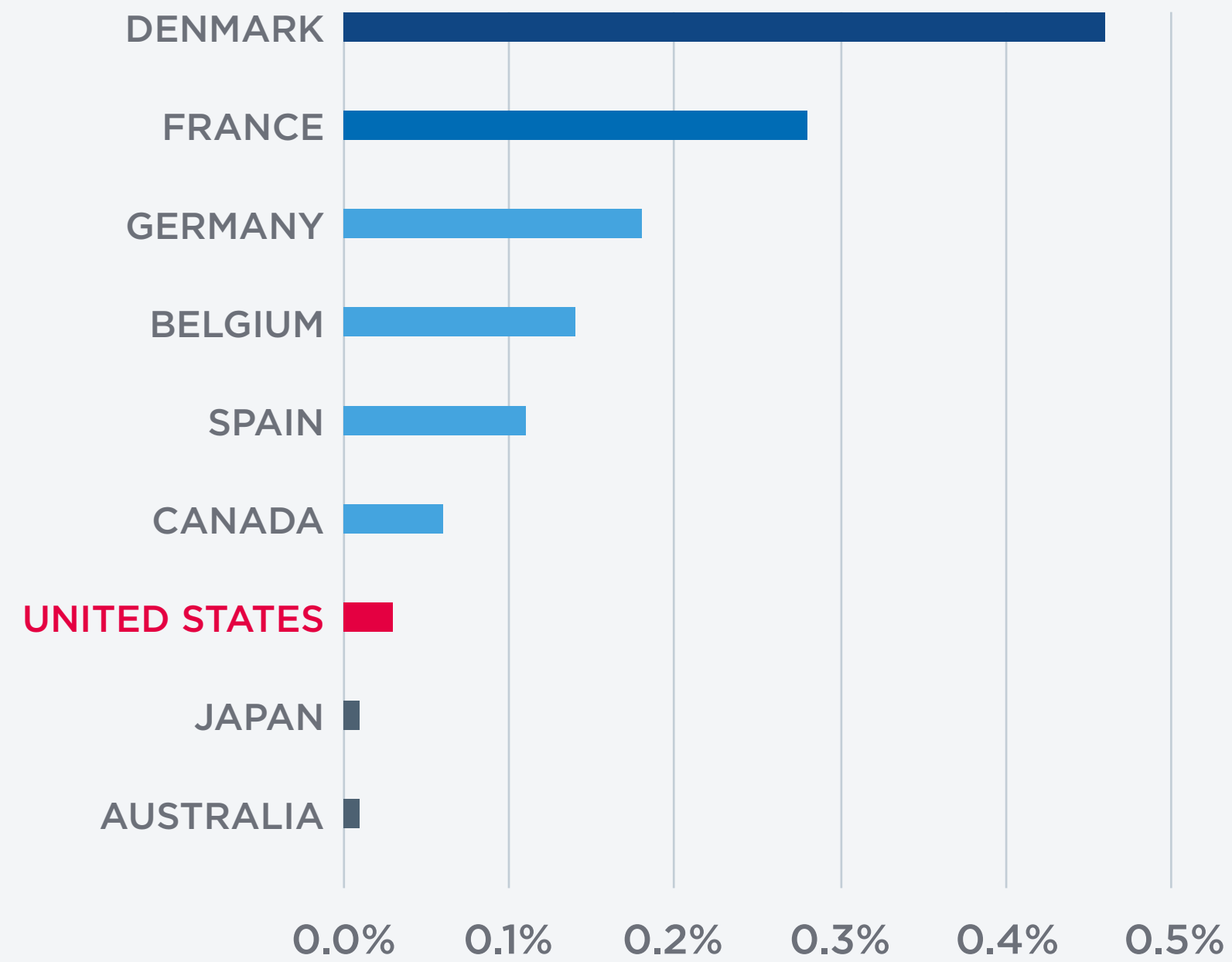
33%

FOR ENTREPRENEURSHIP²⁶

WE'RE BEHIND ON WORKER TRAINING

WE INVEST LESS THAN OUR COMPETITORS

TOTAL PUBLIC SPENDING ON WORKER TRAINING,
AS PERCENTAGE OF GDP (2017)²⁷



WE'RE INVESTING LESS THAN WE DID

SPENDING ON WORKER TRAINING
AS A PERCENTAGE OF GDP²⁸



2.4 MILLION MANUFACTURING JOBS ARE AT STAKE

A DELOITTE STUDY PROJECTS OUR WORKFORCE WILL LACK THE SKILLS NEEDED TO FILL 2.4 MILLION NEW JOBS

2.7M

JOB OPENINGS CREATED BY RETIREMENT



1.9M

JOB OPENINGS CREATED BY NATURAL GROWTH



4.6M

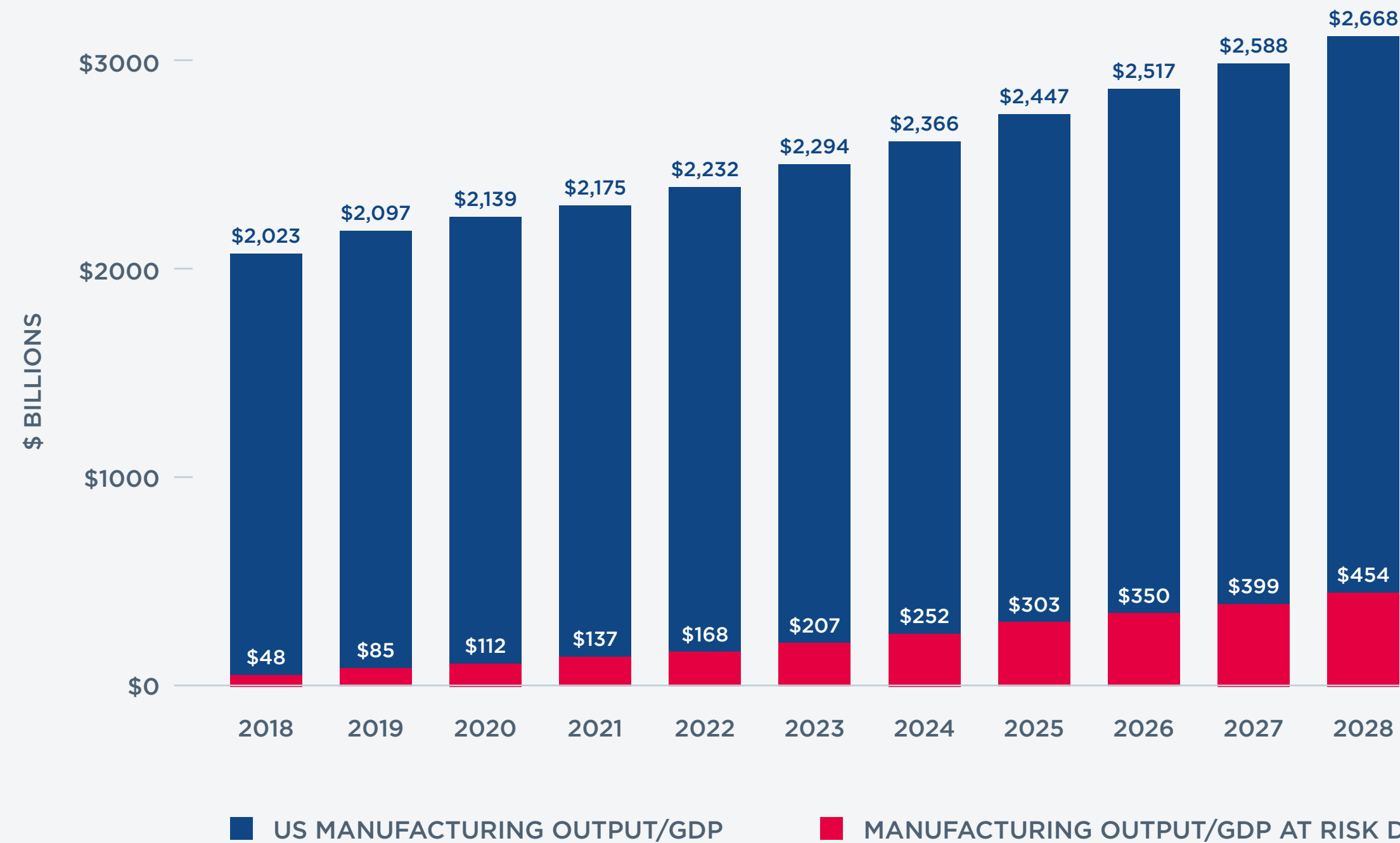
MANUFACTURING JOBS TO FILL BETWEEN 2018-2028

ONLY 2.2 MILLION WORKERS CAPABLE OF FILLING THESE JOBS.



2.4M
JOB GAP

IF WE CAN'T FILL THESE JOBS, OUR ECONOMY COULD LOSE \$2.5 TRILLION IN OUTPUT BY 2028²⁹

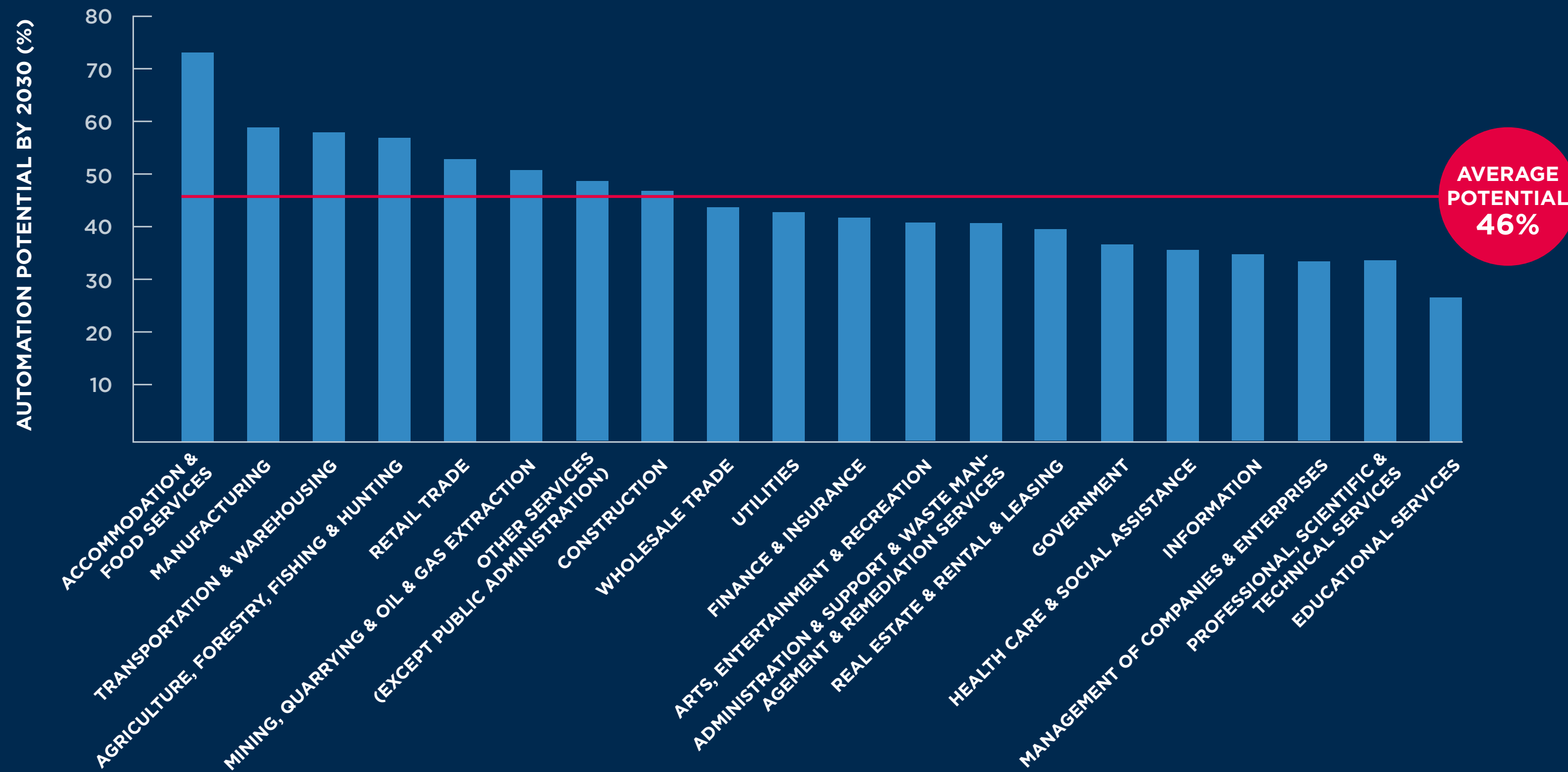


PERSISTENT SKILLS SHORTAGES COULD COST THE U.S. \$85 BILLION THIS YEAR, AND COULD RISK \$2.5 TRILLION IN ECONOMIC OUTPUT OVER THE NEXT DECADE

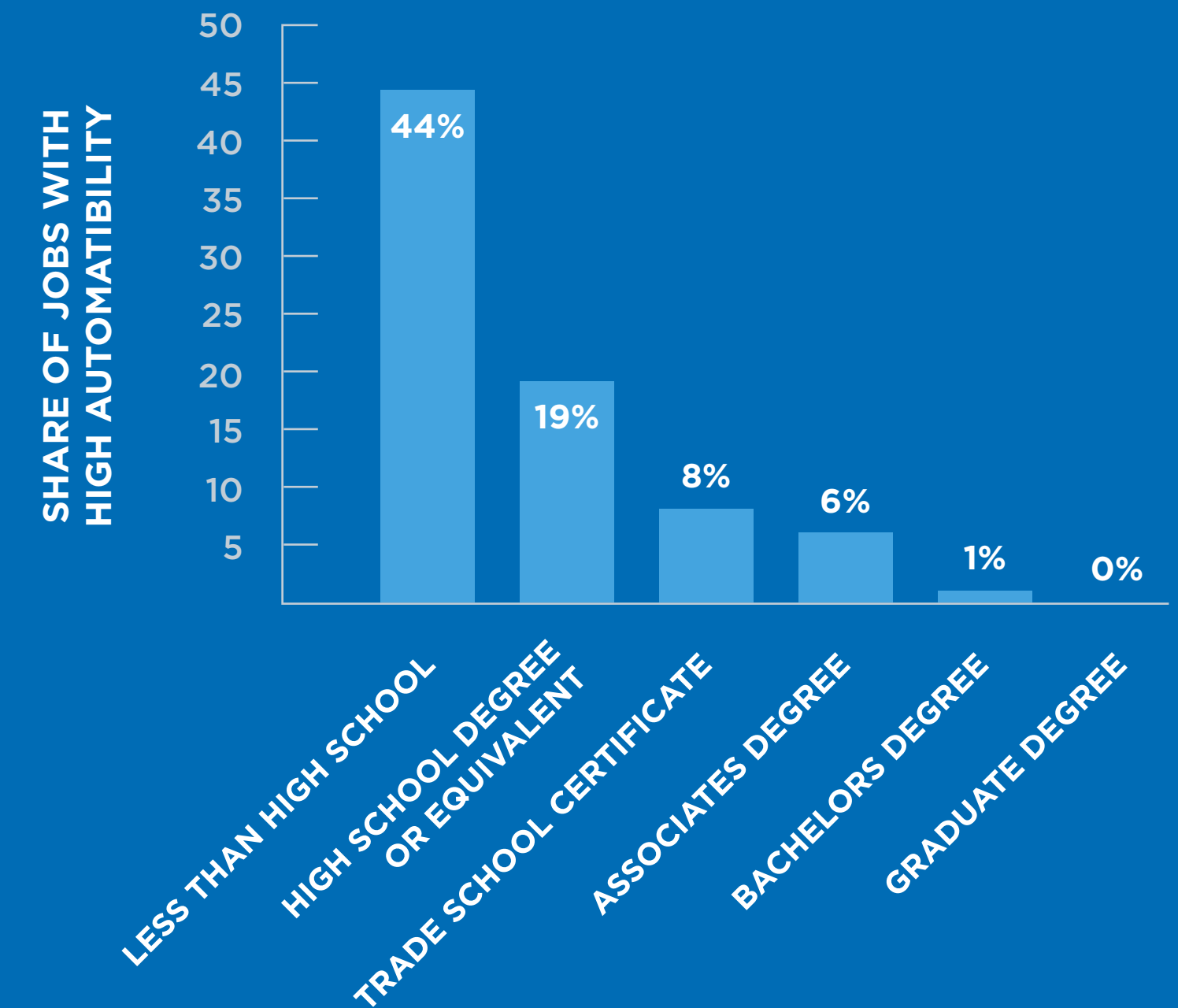
SOURCE: DELOITTE

AUTOMATION IMPACTS WORKERS, REGIONS, AND INDUSTRIES DIFFERENTLY...

AUTOMATION POTENTIAL BY INDUSTRY GROUP³⁰



PERCENT OF WORKERS IN HIGHLY AUTOMATABLE JOBS BY EDUCATION LEVEL

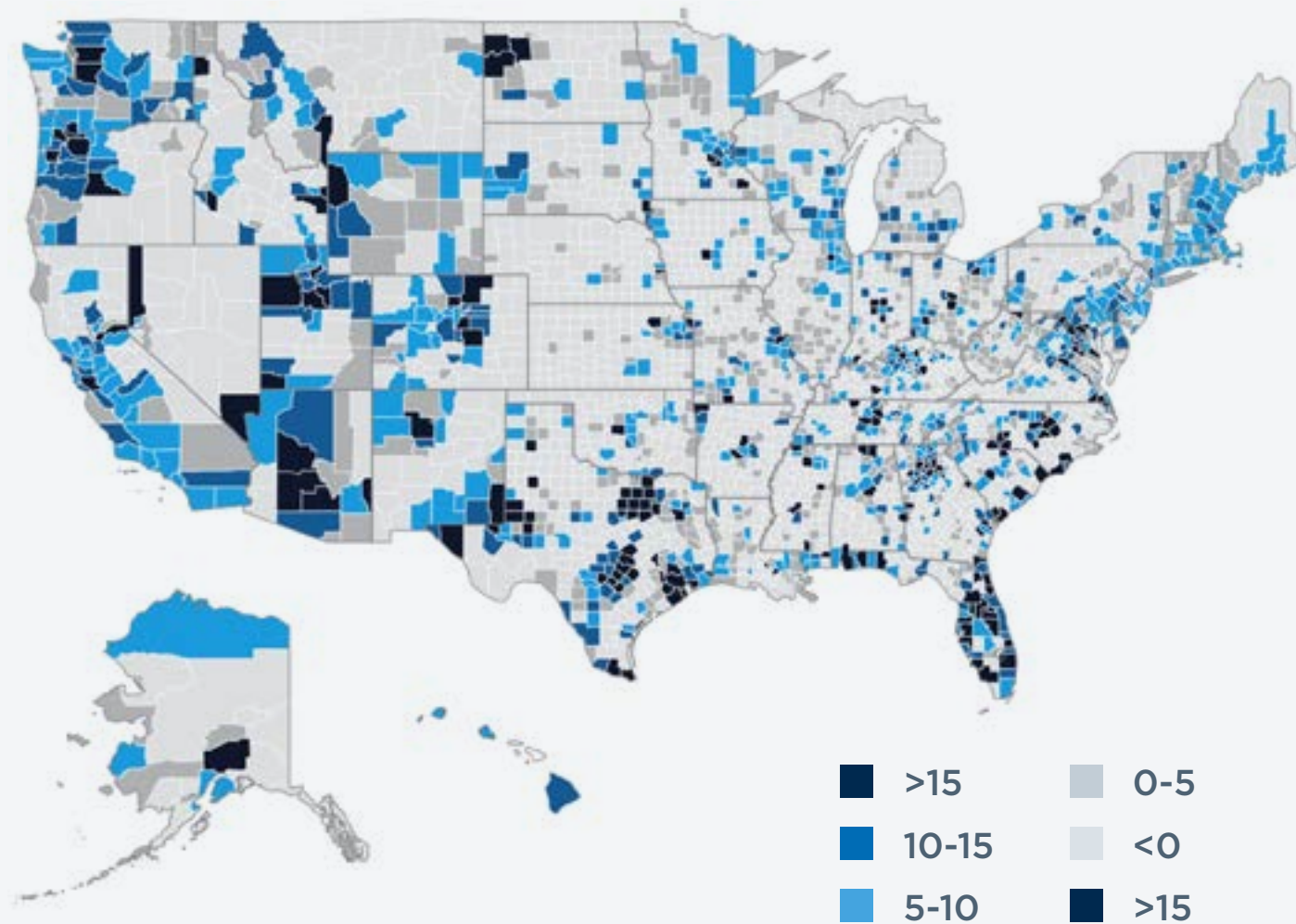


...WHICH INCREASES INEQUALITY

GEOGRAPHY

60% of U.S. job growth through 2030 will likely be concentrated in 25 urban counties, while rural areas lose jobs.

ESTIMATED PERCENTAGE OF NET JOB GROWTH IN MIDPOINT ADOPTION SCENARIO (2017-30)³¹

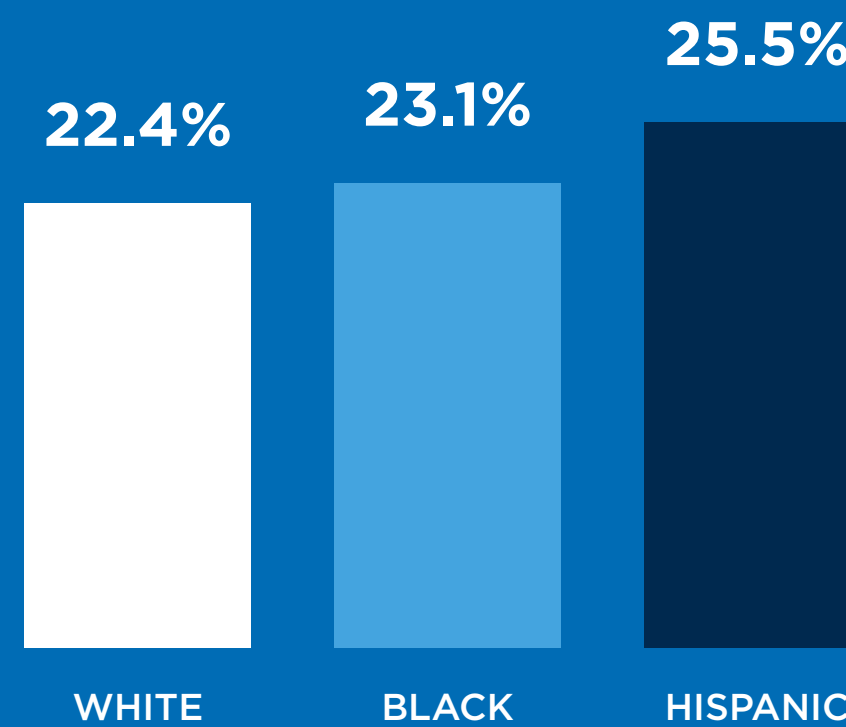


SOURCE: MCKINSEY GLOBAL INSTITUTE ANALYSIS

RACE

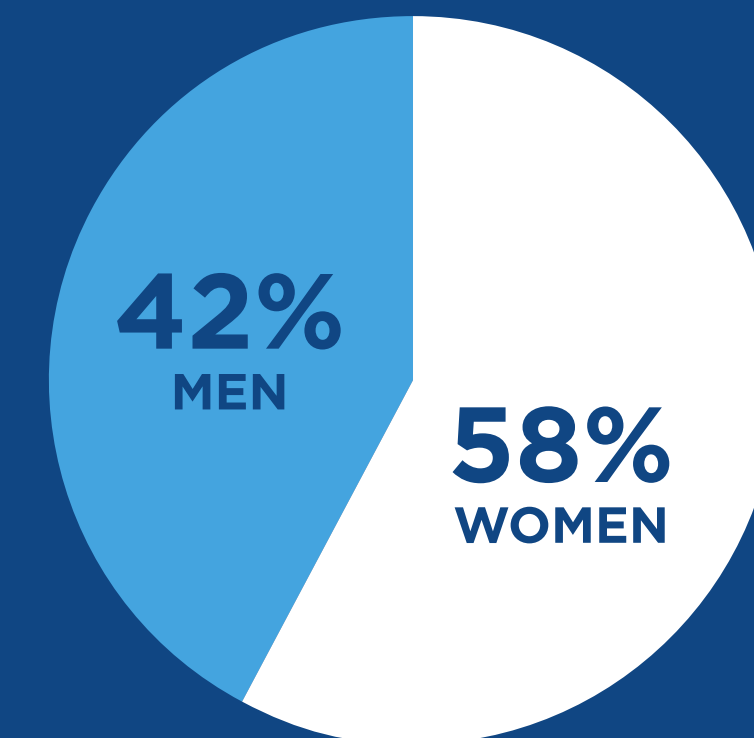
11.9 million Hispanics and African Americans are projected to be displaced by automation by 2030.

PROJECTED DISPLACEMENT RATE BY RACE³²



GENDER

Because women are heavily represented in health professions and personal care work, they are projected to capture 58% of net job growth between 2017-2030. This does not account for the fact that men are more heavily represented in “frontier” jobs involving cutting-edge technologies, which may position them for other jobs that have yet to emerge.³³



THE FUTURE OF WORK IS A ROAD MAP FOR SCHOOL REFORM

STEP ONE: TECHNICAL AND DIGITAL SKILLS

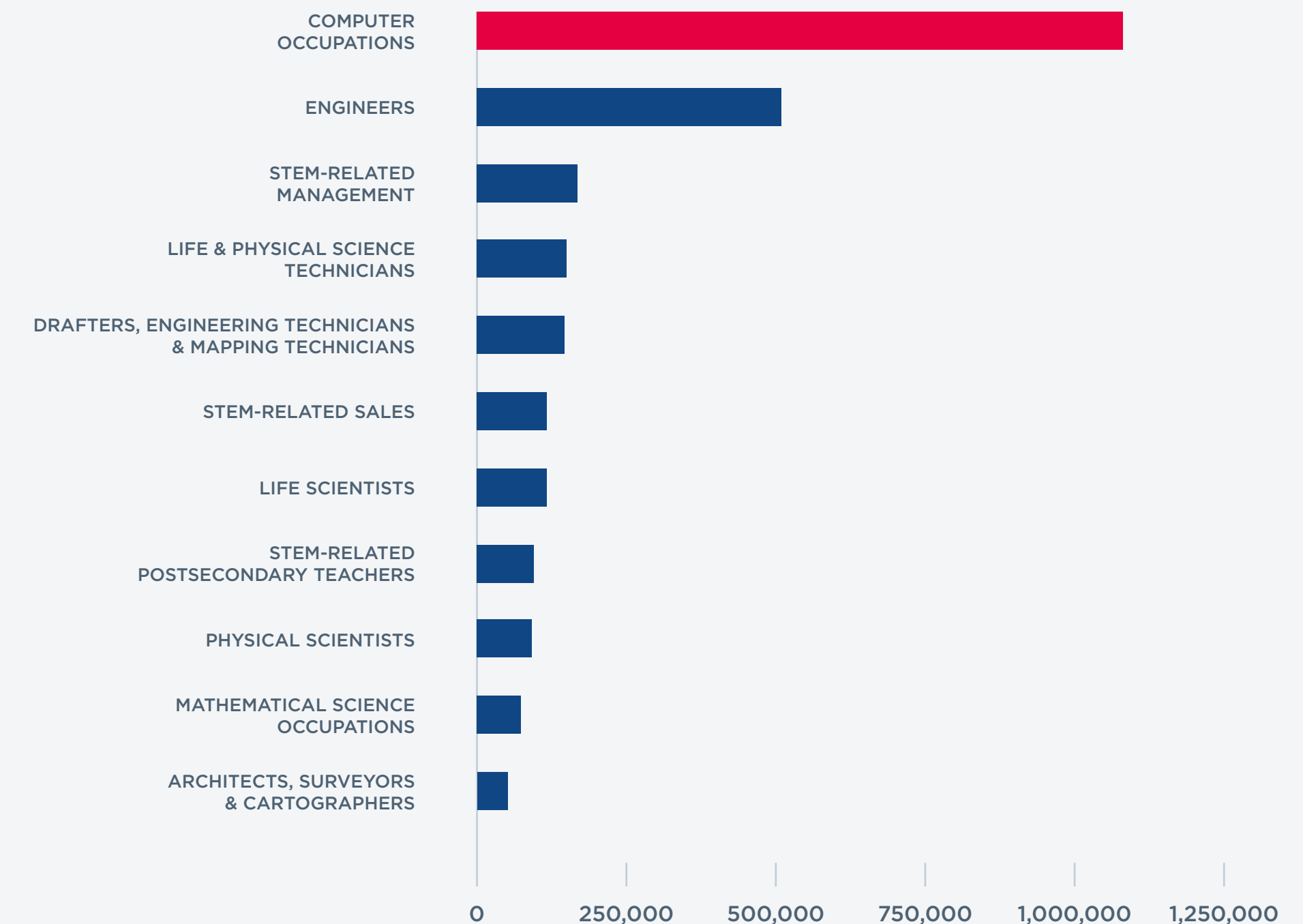


Seven million job openings in 2015 were in occupations that required coding skills.³⁴ But only 35% of U.S. high schools offer computer science classes.³⁵

Programming jobs overall are growing 12% faster than the market average.³⁶

By increasing computer science and other STEM course work, we can help graduates succeed at work — and many of them can do so without college.

PROJECTED JOB OPENINGS FOR TYPES OF STEM OCCUPATIONS, 2014 TO 2024³⁷



SOURCE: U.S. BUREAU OF LABOR STATISTICS

STEP TWO: CONTINUOUS LEARNING



The kinds of technical skills workers need are continuously evolving, so being able to learn quickly is essential.

Most jobs will not be automated out of existence, instead they will integrate new technologies to expedite existing processes, meaning workers need to quickly learn and adapt to new systems, softwares, and machineries.

They also need the ability to understand the engagement, interaction, and collaboration between humans and machines.

THE PRODUCTIVITY REVOLUTION IN STEEL DEMONSTRATES A TREND ACROSS INDUSTRIES

Consolidation and improved processes in the steel industry have increased productivity by more than 6 times since 1980.³⁸

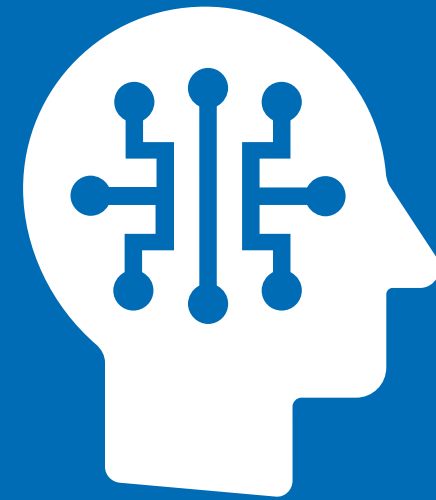
“

As the [steel] industry continues to introduce technological innovations, the profile of the workforce will evolve and require higher levels of education and training than ever before...the demand for engineers, computer scientists, business major, and skilled production workers is expected to remain strong.

”

- WORLD STEEL ASSOCIATION³⁹

STEP THREE: TEAMWORK AND JUDGMENT



As automation eliminates simple tasks, it increases the value of “human” skills that robots and A.I. cannot handle.

CRITICAL THINKING AND PROBLEM SOLVING

CREATIVITY

SOCIAL AND EMOTIONAL SKILLS

EMPATHY

ENTHUSIASM FOR LEARNING

ABILITY TO EMBRACE CHANGE AND UNCERTAINTY

“ At its core, work in the future will be more networked, more devolved, more mobile, more team-based, more project-based, more collaborative, more real-time, and more fluid. ”

- DELOITTE WHITE PAPER ON THE FUTURE OF WORK⁴⁰

“ Interpersonal skills are unlikely to be rendered obsolete by technological innovation or economic disruptions. In a changing workforce, it’s having a strong foundation in these versatile, cross-functional skills that allows people to successfully pivot. ”

- WORLD ECONOMIC FORUM⁴¹

STEP FOUR: SELF-RELIANCE

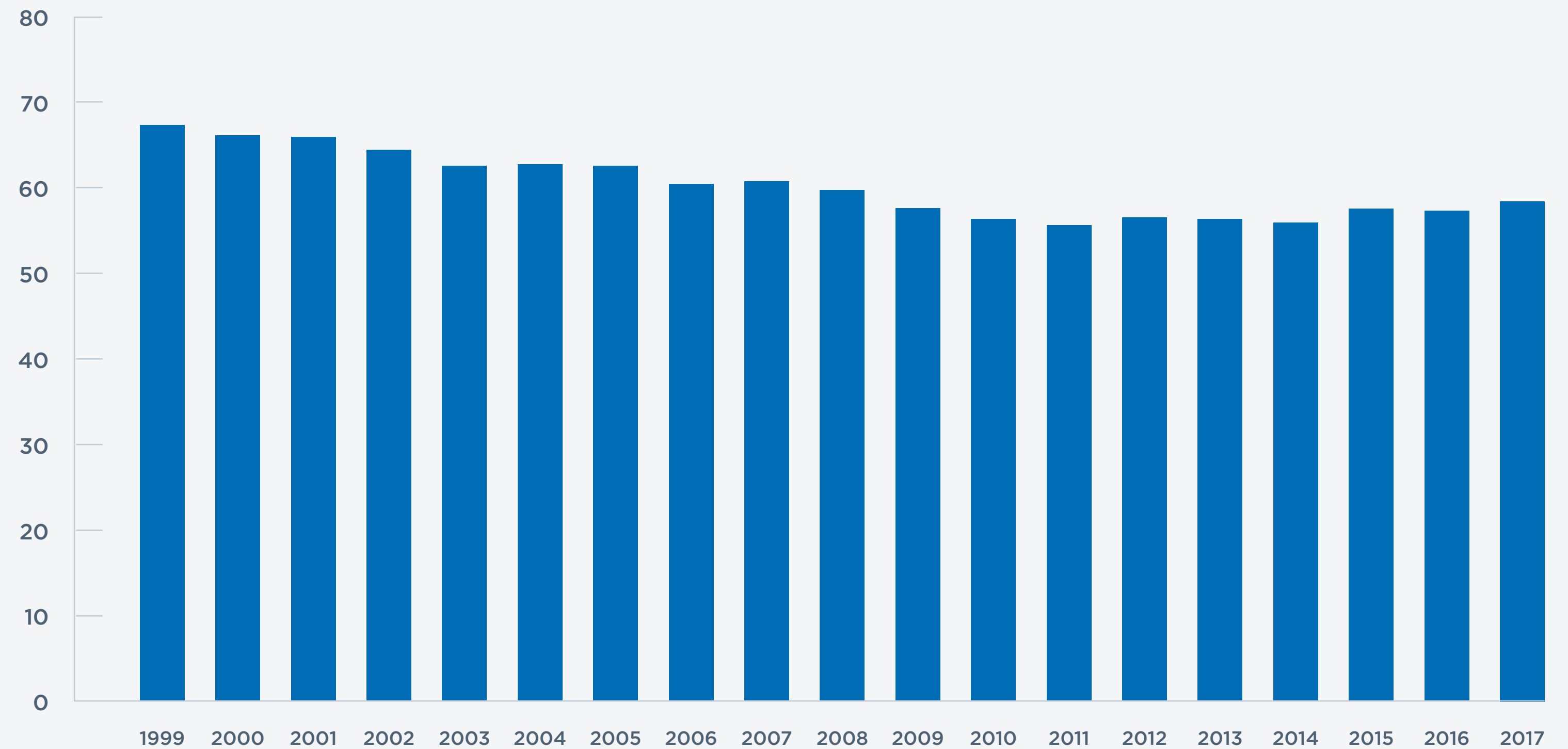


LESS THAN
13%
OF AMERICANS
HAVE PENSIONS

25 years ago, that
figure was 38 percent.⁴²

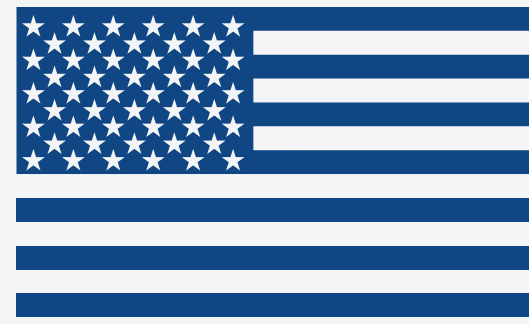
TODAY'S YOUNG WORKERS WILL NEED TO PREPARE FOR THEIR RETIREMENT

The percent of non-elderly Americans with employer-sponsored health insurance has dropped from 67.3% in 1999 to 58.4% in 2017.⁴³



A PLACE TO START: INTERNSHIPS AND APPRENTICESHIPS

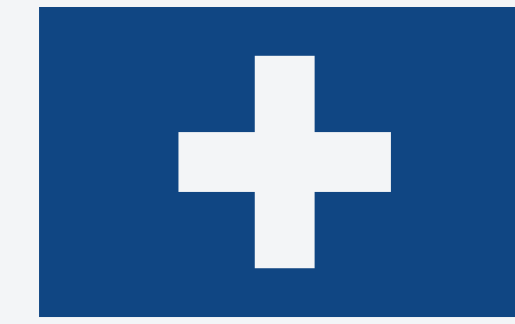
Business leaders understand the demands of the market in which they're operating. No group is better suited to help train the employees of tomorrow before they enter the workforce. Their industry knowledge, when coupled with their ability to offer apprenticeships and internships, makes them the real leaders and experts.



More than 80 percent of U.S. companies that sponsor apprentices say that apprenticeship is an effective strategy for helping them meet their demand for skilled labor.⁴⁴



For every \$1 invested in apprenticeship programs, Canadian employers of all sizes and in every province can expect to receive \$1.47 in return.⁴⁵



In Switzerland, 70 percent of young people enter the workforce through an apprenticeship.⁴⁶

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