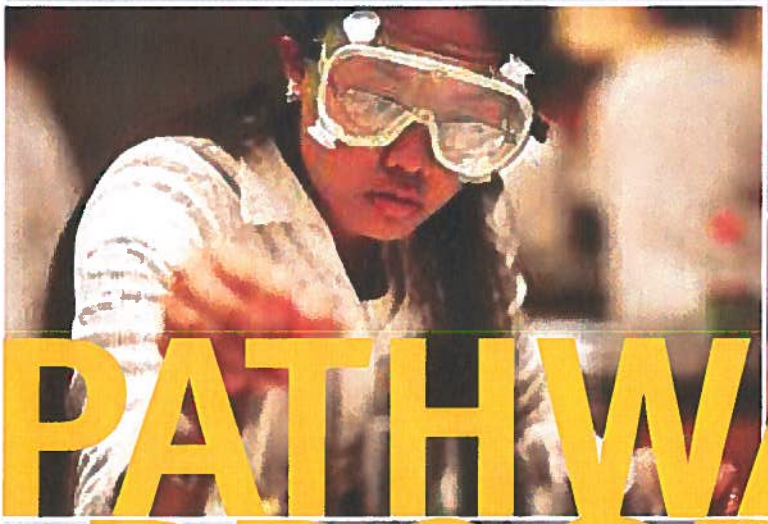
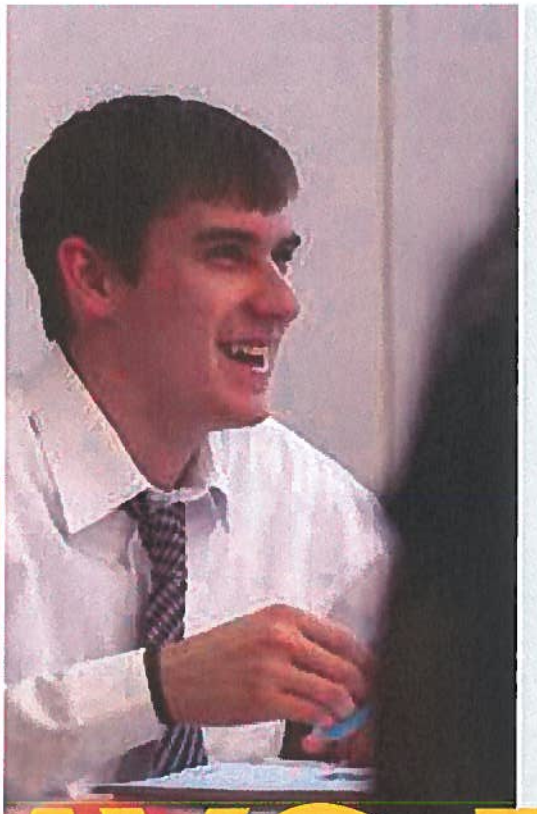
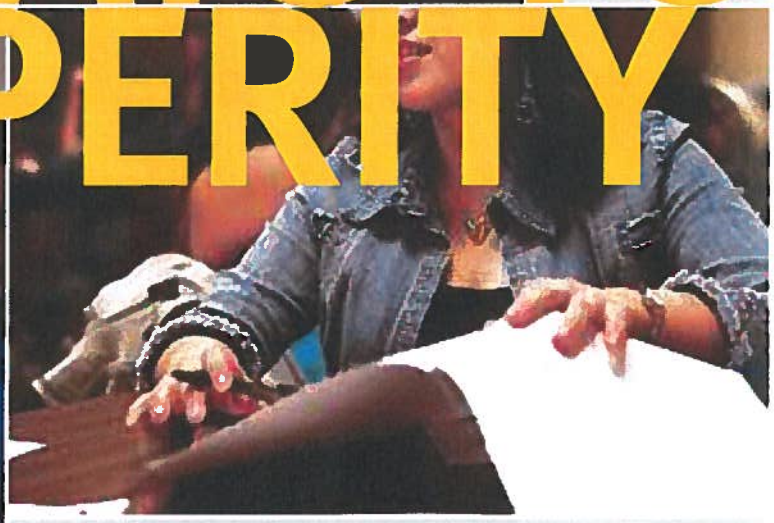
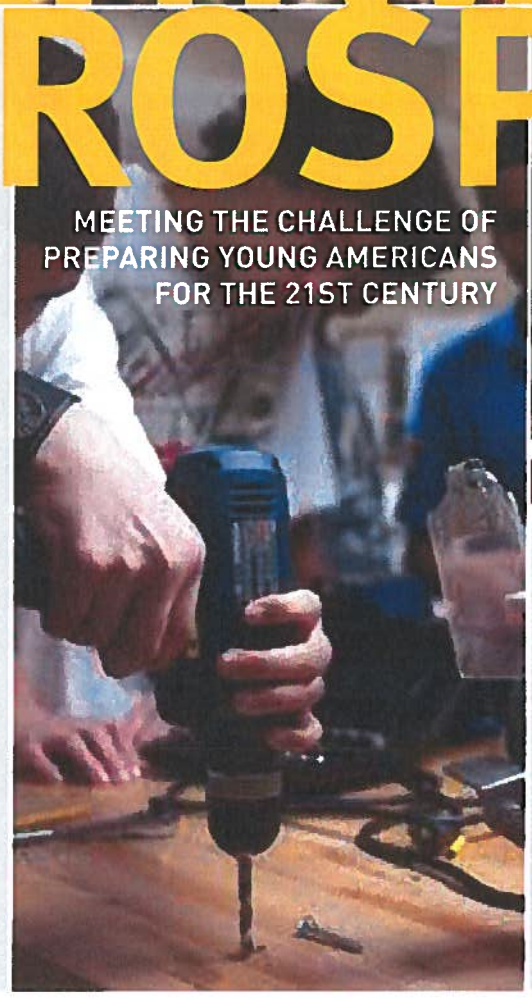




PATHWAYS TO PROSPERITY

MEETING THE CHALLENGE OF PREPARING YOUNG AMERICANS FOR THE 21ST CENTURY





PATHWAYS TO PROSPERITY PROJECT

HARVARD GRADUATE SCHOOL OF EDUCATION

FEBRUARY 2011

ADVANCE PRAISE FOR PATHWAYS TO PROSPERITY: MEETING THE CHALLENGE OF PREPARING YOUNG AMERICANS FOR THE 21ST CENTURY

"A must-read paper that focuses on the need to develop meaningful career training as a part of comprehensive school reform. Career training has been ignored for far too long, but is essential if we're going to address the "career-ready" piece of the puzzle that, along with the "college-ready" piece, is now all the buzz."

Joel I. Klein, Chancellor, New York City Public Schools (2002-2010)

"This thoughtful paper makes a strong case for the development of multiple pathways leading from high school to post-secondary education or career training. Those of us who support a single-track system through high school need to carefully consider the questions raised in this provocative report."

Phil Bredesen, Governor of Tennessee (2003-2011)

"Preparing tomorrow's future leaders is a responsibility we all share. *Pathways to Prosperity* provides a clear way forward that demands the attention and participation of every sector working together to ensure our future success."

Sanford I. Weill, Chairman Emeritus, Citigroup and Chairman, National Academy Foundation

"*Pathways to Prosperity* opens the door to new strategies that can help a broader range of Americans, including the rapidly growing Latino population, gain the meaningful work and educational experiences they need to earn degrees and higher salaries, helping to create better jobs and a stronger workforce. The report reminds us that in order to close achievement gaps, we must develop a more effective and holistic strategy to develop human capital."

Sarita E. Brown, President, Excelencia in Education

"Anyone who cares about the future of America should read this report. Our nation's adolescents and young adults must be better prepared for today's and tomorrow's more technical jobs. We cannot afford to leave anyone behind."

George R. Boggs, President and CEO, American Association of Community Colleges

"America will not be able to resolve the crisis of unemployment, or the problem of losing the international race for more college graduates, by ignoring the large proportion of learners who achieve at high levels in applied learning settings. This report's clear-eyed examination of what the country needs and how those needs can be met is a welcome dose of realism. Following its lead could lead to more, not fewer, students earning degrees and career credentials."

Dr. Gail Mellow, President, LaGuardia Community College

"Massachusetts has demonstrated that high-quality career and vocational education programs can engage a wide range of students while providing them with both academic proficiency and the technical skills necessary for advanced training in high-demand fields. This thoughtful report points the way toward providing many more of our young people with the knowledge and skills that will expand their opportunity to fully participate in the jobs of our increasingly knowledge-based economy."

Mitchell D. Chester, Massachusetts Commissioner of Elementary and Secondary Education

"This important and timely report offers a compelling assessment of a growing skills gap threatening young people's ability to achieve the American Dream. It stands as a sobering call to action, offering effective ideas for making American education an engine for opportunity once again."

Paul Grogan, President and CEO, The Boston Foundation

"Employment rates for the nation's teens and young adults are at post-World War II lows—a true labor market depression. Based on experiences both here and abroad, *Pathways to Prosperity* points to the need for expanded employment and work-based learning opportunities for young people, closer ties between post-secondary education/training and the workplace, and expanded youth apprenticeships. The need has never been greater, and the report provides a clarion call for action now."

Andrew Sum, Director, Center for Labor Market Studies, Northeastern University

TABLE OF CONTENTS

1 **I. THE CHALLENGE**

1 The Persistence of "The Forgotten Half"

2 A More Demanding Labor Market

4 Widening Skills and Opportunity Gaps

6 Setting the Right Target

9 **II. WHY OUR CURRENT SYSTEM FAILS SO MANY YOUTH, AND WHAT CAN BE DONE TO FIX IT**

15 **III. LESSONS FROM ABROAD**

15 Vocational Education in Northern and Central Europe

19 Two OECD Reports: "Learning for Jobs" and "Jobs for Youth"

23 **IV. THE ROAD TO AN AMERICAN SOLUTION**

24 Multiple Pathways: A Broader Vision for School Reform

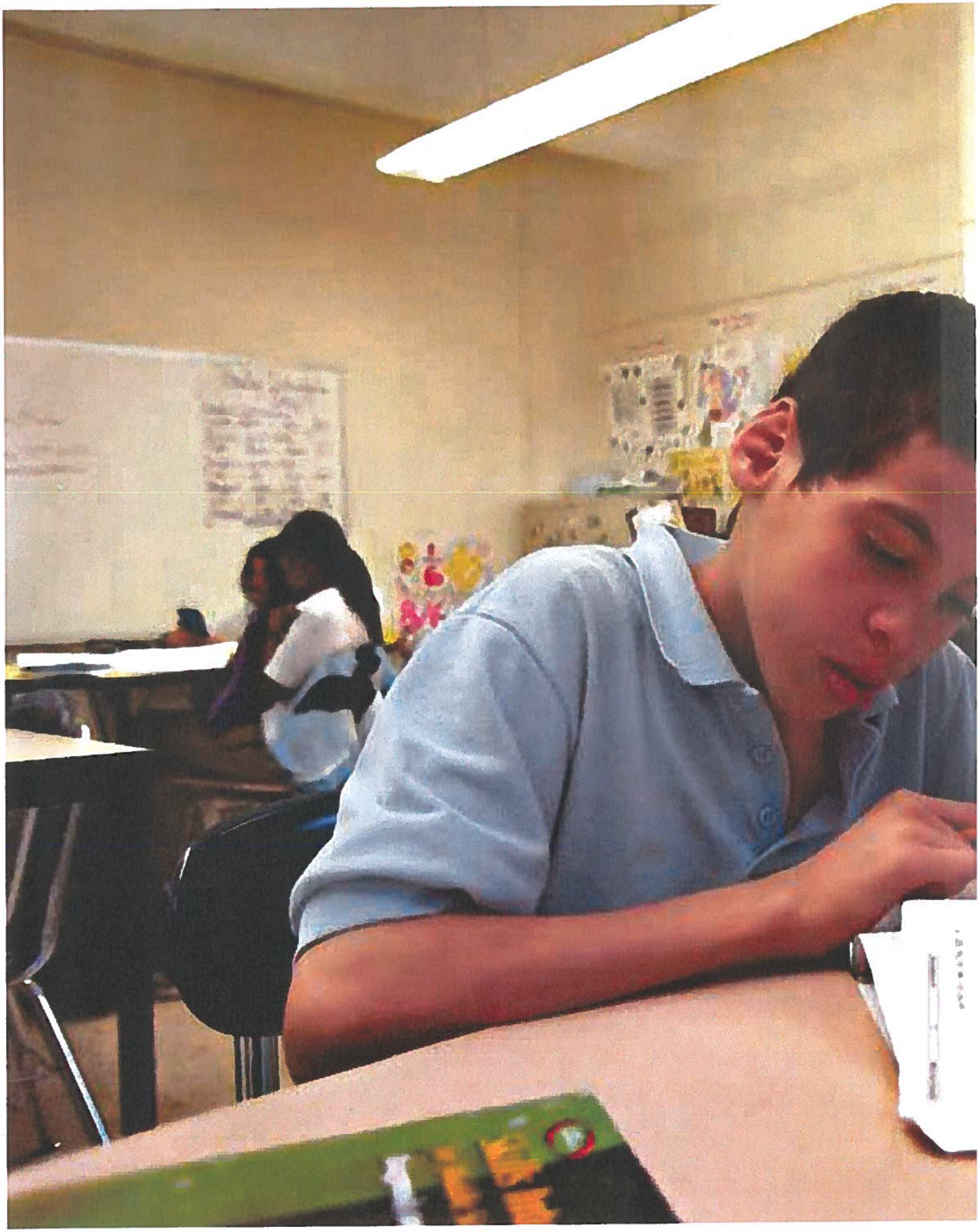
29 An Expanded Role for Employers

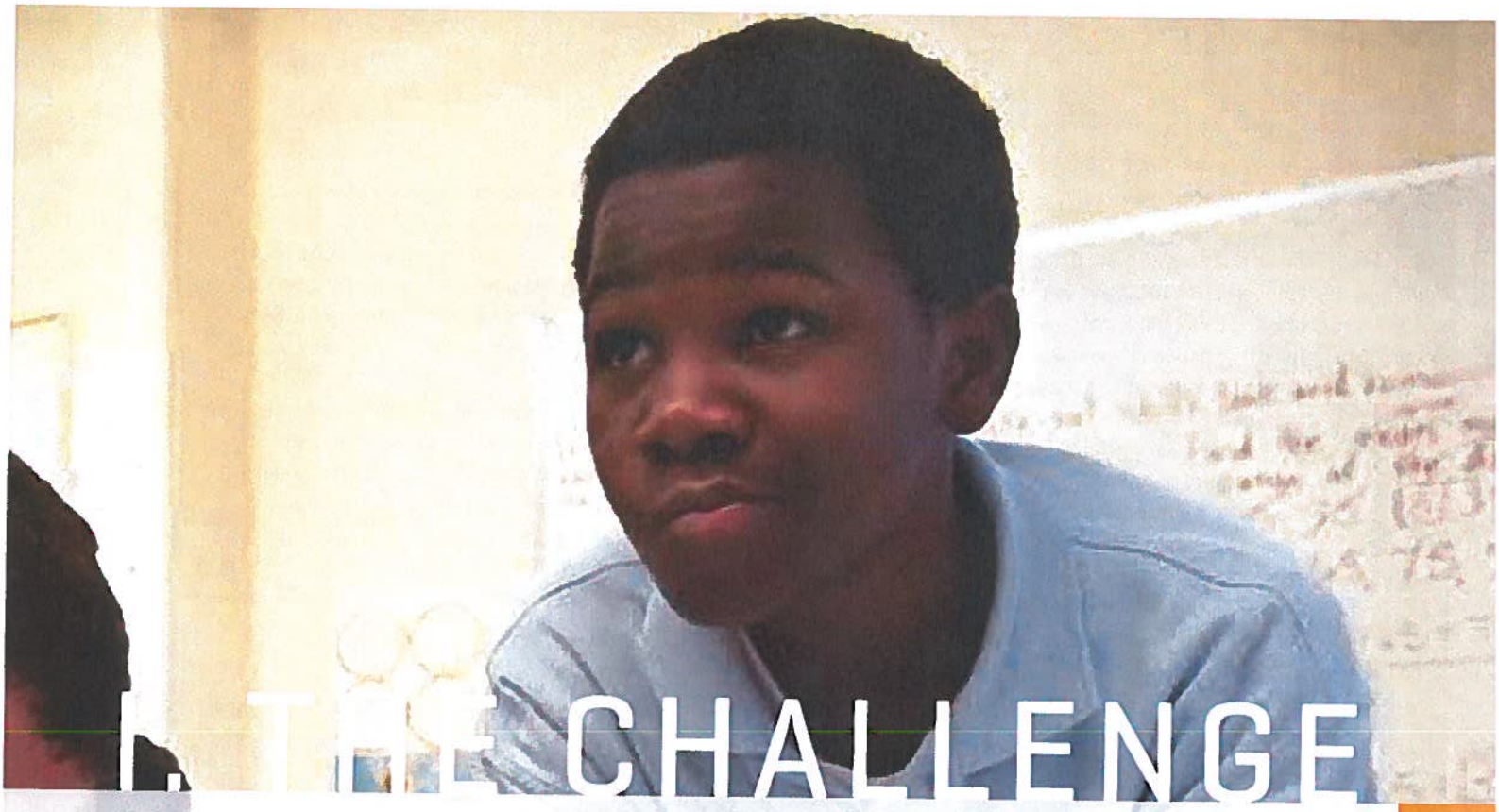
34 A New Social Compact with Youth

38 **V. CONCLUSION**

39 **ACKNOWLEDGEMENTS**

42 **ENDNOTES**





THE CHALLENGE

THE PERSISTENCE OF "THE FORGOTTEN HALF"

One of the most fundamental obligations of any society is to prepare its adolescents and young adults to lead productive and prosperous lives as adults. This means preparing all young people with a solid enough foundation of literacy, numeracy, and thinking skills for responsible citizenship, career development, and lifelong learning. For over a century, the United States led the world in equipping its young people with the education they would need to succeed. By the middle of the 19th century, as Claudia Goldin and Lawrence Katz write in their book, *The Race between Education and Technology*, "the U.S. already had the most educated youth in the world." At the turn of the 20th century, just as Europe was catching up, the rapid spread of the "high school movement" helped the U.S. vault ahead again.

By 1940, the typical 18-year-old had a high school diploma, up from just 9 percent who had achieved this milestone in 1910. After World War II, the GI Bill helped usher in a huge expansion in higher education. As a result, members of the U.S. Baby Boom generation far surpassed their counterparts in other countries in educational attainment.

This surge in educational attainment laid the foundation for the staggering increase in American wealth and power that came to be known as the American Century. By 2000, per capita income, adjusted for inflation, was five to six times as large as it had been in 1900.[1]

Yet as we end the first decade of the 21st century, there are profoundly troubling signs that the U.S. is now failing to meet its obligation to prepare millions of young adults. In an era in which education has never been more important to economic success, the U.S. has fallen behind many other nations in educational attainment and achievement. Within the U.S. economy, there is also growing evidence of a "skills gap" in which many young adults lack the skills and work ethic needed for many jobs that pay a middle-class wage. Simultaneously, there has been a dramatic decline in the ability of adolescents and young adults to find work. Indeed, the percentage of teens and young adults who have jobs is now at the lowest level since World War II.[2]

These problems have been building for years. In 1988, the William T. Grant Foundation published a report that called the then 20 million non-college bound youth "the forgotten half," and warned: "they are in danger of being caught in a massive bind that can deny them full participation in our society."[3] A decade later, the American Youth Policy Forum issued *The Forgotten Half Revisited*, and concluded that these ill-equipped young adults "have lost considerable ground versus their counterparts only a decade earlier." Since then, there have been many other reports—such as the National Academies' study, *Rising above the Gathering Storm*—that have sounded similar alarms. Yet for all the attention, we have failed to take effective action. Meanwhile, the challenge has become increasingly urgent.

A MORE DEMANDING LABOR MARKET

The "forgotten half" challenge has deepened with the growing importance of post-secondary education to success in the labor market. In 1973, nearly a third of the nation's 91 million workers were high-school dropouts, while another 40 percent had not progressed beyond a high school degree. Thus, people with a high-school education or less made up 72 percent of the nation's workforce. In an economy in which manufacturing was still dominant, it was possible for those with less education but a strong work ethic to earn a middle-class wage, as 60 percent of high school graduates did. In effect, a high school diploma was a passport to the American Dream for millions of Americans.[4]

By 2007, this picture had changed beyond recognition. While the workforce had exploded nearly 70 percent to 154 million workers, those with a high school education or less had shrunk to just 41 percent of the workforce. Put another way, while the total number of jobs in America had grown by 63 million, the number of jobs held by people with no post-secondary education had actually fallen by some 2 million jobs. Thus, over the past third of a century, all of the net job growth in America has been generated by positions that require at least some post-secondary education.

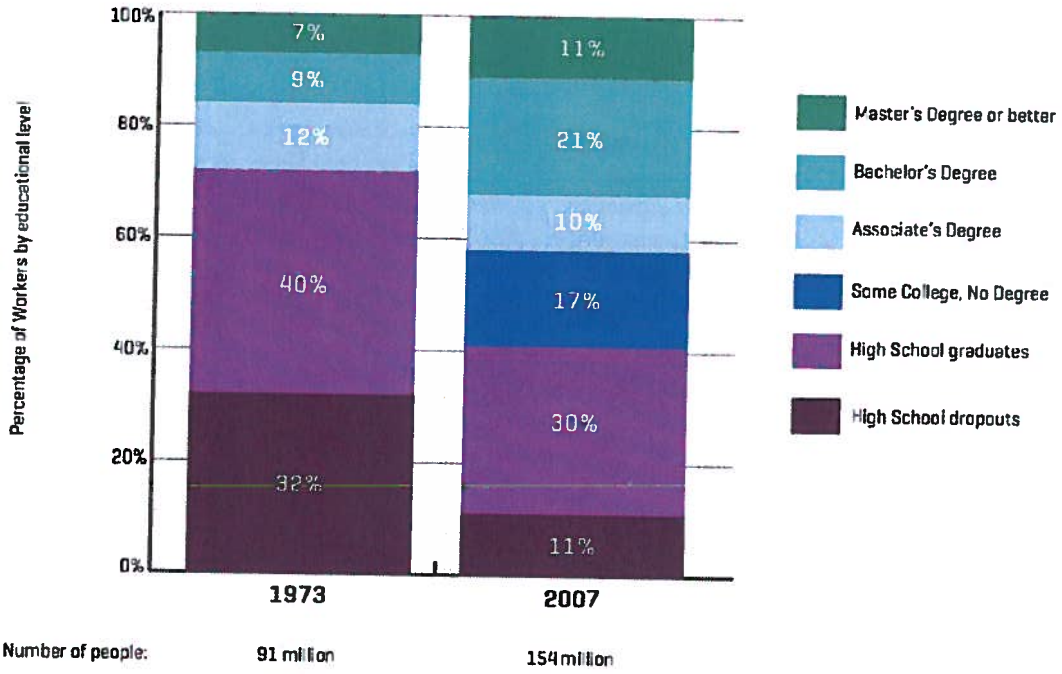
Workers with at least some college have ballooned to 59 percent of the workforce, from just 28 percent in 1973. Over the same period, many high-school dropouts and those with no more than a high-school degree have fallen out of the middle class, even as those who have been to college, and especially those with bachelor's and advanced degrees, have moved up.[5] The lifetime earnings gap between those with a high school education and those with a college degree is now estimated to be nearly $1 million. And the differential has been widening. In 2008, median earnings of workers with bachelor's degrees were 65 percent higher than those of high school graduates ($55,700 vs. $33,800). Similarly, workers with associate's degrees earned 73 percent more than those who had not completed high school ($42,000 vs. $24,300).[6]

Going forward, these trends will only intensify. Although labor market projections, like all economic forecasts, are inherently uncertain, we are struck by the work of the Center on Education and the Workforce at Georgetown University. The Center projects that the U.S. economy will create some 47 million job openings over the 10-year period ending in 2018. Nearly two-thirds of these jobs, in the Center's estimation, will require that workers have at least some post-secondary education. This means, of course, that even in the second decade of the 21st century, there will still be job openings for people with just a high school degree, and even for high school dropouts. But the Center projects that applicants with no more than a high school degree will fill just 36 percent of the job openings, or just half the percentage of jobs they held in the early 1970s. Even if the Center has over-estimated demand for post-secondary credentials, the long-term trend is undeniable.

The message is clear: in 21st century America, education beyond high school is the passport to the American Dream. But how much and what kind of post-secondary is really needed to prosper in the new American economy?

The Georgetown Center projects that 14 million job openings—nearly half of those that will be filled by workers with post-secondary education—will go to people with an associate's degree or occupational certificate. Many of these will be in "middle-skill" occupations such as electrician, and construction manager, dental

FIGURE 1 Since 1973, jobs that require at least some college have exploded while opportunities for those with just a high school education have shrunk dramatically



Source: March CPS data, various years; Center on Education and the Workforce.

hygienist, paralegal and police officer. While these jobs may not be as prestigious as those filled by B.A. holders, they pay a significant premium over many jobs open to those with just a high school degree. More surprisingly, they pay more than many of the jobs held by those with a bachelor's degree. In fact, **27 percent of people with post-secondary licenses or certificates–credentials short of an associate's degree–earn more than the average bachelor's degree recipient.**[7]

Demand for middle-skilled professionals is exploding in the nation's hottest industry, healthcare, which has added over half a million jobs during the Great Recession. Openings for registered nurses and health technologists–positions that typically require an associate's degree–are expected to grow by more than 1 million by 2018. There will also be exceptionally rapid growth in such healthcare support jobs as nursing aide, home health aide and attendant. Though such positions are still open to high-school graduates, they are increasingly filled by people with some post-secondary education or a certificate. Similarly, over half of massage therapists and dental assistants now have a post-secondary certificate.

There will also be a huge number of job openings in so-called blue-collar fields like construction, manufacturing, and natural resources, though many will simply replace retiring baby boomers. These fields will provide nearly 8 million job openings, 2.7 million of which will require a post-secondary credential. In commercial construction, manufacturing, mining and installation, and repair, this kind of post-secondary education–as opposed to a B.A.–is often the ticket to a well-paying and rewarding career.[8]

WIDENING SKILLS AND OPPORTUNITY GAPS

Focusing more precisely on future employer demand illuminates part of the challenge, but there's also a problem at the supply end of the equation. Increasingly, U.S. employers complain that today's young adults are not equipped with the skills they need to succeed in the 21st century workforce. In 2006, the Conference Board and three other organizations issued *Are They Ready to Work?* Based on a survey of several hundred employers, the report concluded that "Far too many young people are inadequately prepared to be successful." The authors were especially scathing regarding high school graduates, concluding that more than half were "deficient" in such skills as oral and written communication, critical thinking and professionalism. The Partnership for 21st Century Skills, whose members include such companies as Microsoft, Apple, Cisco and Pearson, has been equally critical of what it sees as obsolete and outmoded approaches to education, and is calling for more focus on the development of such "21st century skills" as critical thinking, problem solving, creativity and communication.[9]

The implication of this work is that a focus on college readiness alone does not equip young people with all of the skills and abilities they will need in the workplace, or to successfully complete the transition from adolescence to adulthood. This was highlighted in a 2008 report published by Child Trends, which compared research on the competencies required for college readiness, workplace readiness and healthy youth development. The report found significant overlaps. High personal expectations, self-management, critical thinking, and academic achievement are viewed as highly important for success in all three areas. But the report also uncovered some striking differences. For instance: while career planning, previous work experience, decision-making, listening skills, integrity, and creativity are all considered vital in the workplace, they hardly figure in college readiness. At the same time, researchers on healthy youth development place far more emphasis on spiritual development (including a sense of purpose), and developing a positive identity and healthy habits, than do those who focus on workforce readiness or college readiness. These findings strongly suggest that a more holistic approach to education—one that aims to equip young adults with a broader range of skills—is more likely to produce youth who will succeed in the 21st century.[10]

Some critics complain that a focus on "soft skills" will only further dilute rigor. In our view, both hard and soft skills are essential for success in this economy. The growing complaints of a skills gap from some of the nation's most prominent companies and business organizations underscore a hard reality: their growing reluctance to hire young people with just a high school degree. Meanwhile, business leaders are warning that once the recession ends, they could face shortages of qualified workers in areas ranging from non-residential construction and energy to information technology, healthcare and the STEM fields. And almost all of these jobs require at least some post-secondary education.[11]

When young adults fail to successfully complete a post-secondary degree or credential, it is increasingly difficult for them to find an alternative pathway to success through the labor market. This problem began well before the current Great Recession. Economist Andrew Sum calculates that even though total civilian employment surged by over 8 million jobs during the 2003-7 recovery, the total number of employed teens actually fell by 10,000 over this same period.

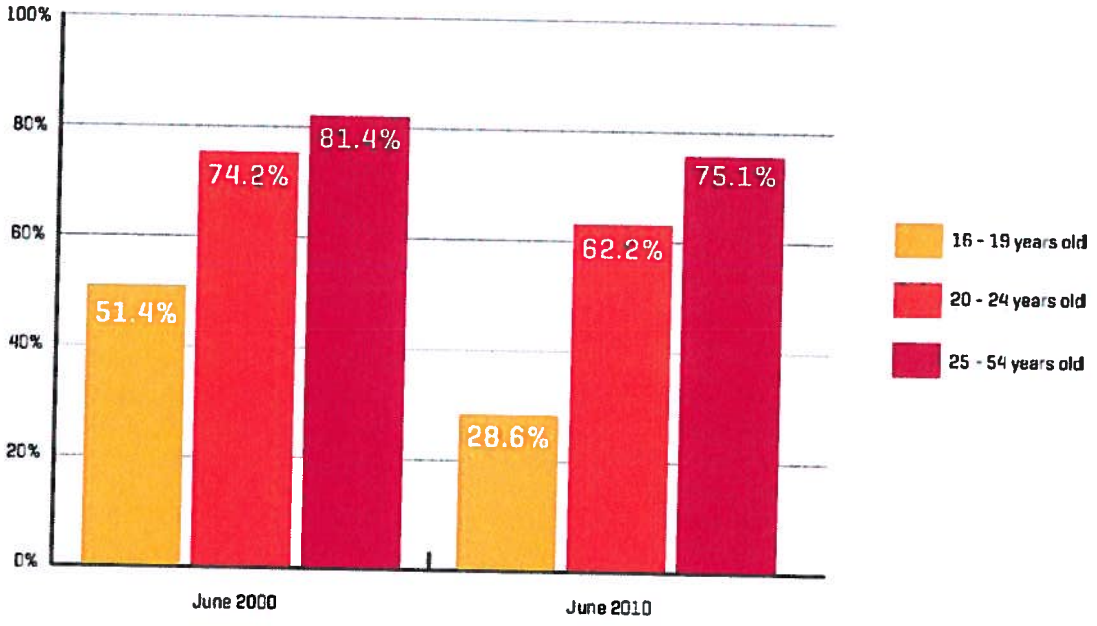
Since the Great Recession began, teens have been hit harder than any other age group by unemployment. As a result, the percentage of teens (16-19) who were employed fell from 45.2 percent in 2000 to just 28.6 percent in June 2010. Clearly, teens now face Depression-era employment prospects. Unfortunately, this catastrophe has hit low-income minority teens especially hard, even though they are the very youth who are most likely to struggle in school and who most need the supports that employment provides. Incredibly, just 9 percent of low-income black teens are employed, as are just 15 percent of low-income Hispanic teens. In sharp contrast, the employment rate among upper middle-income white teens (whose families earn $75,000 to $100,000 a year) is 41 percent—four times higher than among low-income black teens.

Employment opportunities for young adults (20-24) have also evaporated. As the Great Recession has caused the U.S. unemployment rate to more than double—a rate of increase that far surpasses that seen in the other 10 leading OECD nations—young adults have been clobbered. Their employment to population ratio plunged to just 62.2 percent in June, 2010, down from nearly 75 percent in 2000. This amounts to a 17 percent drop in employment, which far surpasses the pain suffered by older workers. In contrast, workers aged 25 to 54 suffered an 8 percent drop in employment, or just half as much.[12]

All of this has dire implications for youth development. Employment in the teen and young-adult years can have a very positive impact on future prospects for employment and earnings. Teens who have good high school work experiences are more likely to be inspired to stay in school, graduate, and adopt ambitious goals. Conversely, low-income teenaged males who cannot find work may more likely get into trouble with the law, while their female counterparts may be more likely to become single mothers.

The percentages of teens and young adults who are working are now at the lowest levels recorded since the end of the 1930s Depression. In this unforgiving economy, successfully completing a post-secondary degree offers young adults the best insurance that they will find work. Among all groups, young adults—aged 25 to 30—who have earned at least an associate's degree, are significantly more likely to be employed than those who have a high school degree or less.[13] Still, because the majority of young adults do not earn even an associate's degree, we face an ever-rising population of less educated teens and young adults who are persistently disconnected from both education and employment.

FIGURE 2 Shrinking employment opportunities: Teens and Young Adults have been hit the hardest by the Great Recession



Source: Center for Labor Market Studies; U.S. Bureau of Labor Statistics, "CPS Labor Force Statistics".

FIGURE 3 The Teen employment gap: low income Black and Hispanic Teens have a much harder time finding jobs than affluent White Teens

Family Income (in 100s)	Black	Hispanic	White
< 20	**9.2**	15.4	30.3
20 - 40	14.7	**20.5**	33.8
40 - 60	23.2	24.9	37.4
60 - 75	29.6	24.1	37.2
75 - 100	25.0	33.6	**40.7**
100 - 150	32.8	35.5	37.8
> 150	4.6	19.7	35.1

Source: Data is for June, 2010 and taken from, "Vanishing Work Among U.S. Teens 2000-2010," and "How the U.S. Economic Output Recession of 2007-2009 led to the Great Recession in Labor Markets." Both published in July, 2010, by the Center for Labor Market Studies, Northeastern Univ.

SETTING THE RIGHT TARGET

So what's the solution?

In 2009, President Barack Obama laid out a path to restoring America's international leadership in post-secondary attainment:

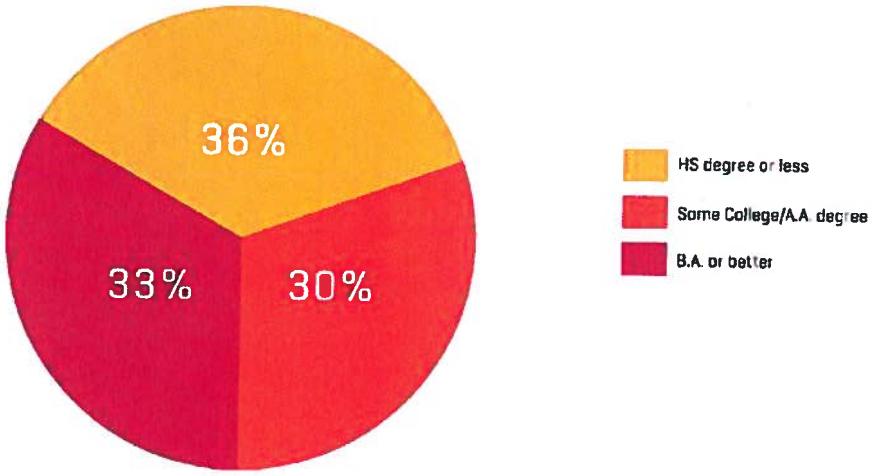
> **"...tonight I ask every American to commit to at least one year or more of higher education or career training. This can be community college, a four-year school, vocational training, or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma."[14]**

What is most noteworthy about the President's statement is the implicit recognition that if the U.S. is going to make dramatic progress in reclaiming its historic leadership position in post-secondary attainment, it is going to have to focus much more attention and resources on programs and pathways that do not require a bachelor's degree but do prepare young people for the kinds of middle-skill jobs outlined above. By calling attention to the central role that community colleges, vocational training programs and apprenticeships can play in moving us toward the goal of greater post-secondary attainment, the President is acknowledging that the "college for all" rhetoric that has been so much a part of the current education reform movement needs to be significantly broadened to become a "post high-school credential for all."

As a phrase, there would be nothing wrong with "college for all" if merely uttering the phrase magically provided the "all" the means to actually finish college. Nearly 70 percent of high school graduates now go to college within two years of graduating. But as seen in Figure 5, **only about 4 in 10 Americans have obtained either an associate's or bachelor's degree by their mid-twenties.** Roughly another 10 percent have earned a certificate. Still, this is a sobering situation. Only 56 percent of those enrolling in a four-year college attain a bachelor's degree after six years, and less than 30 percent of those who enroll in community college succeed in obtaining an associate's degree within three years.[15]

These outcomes are even more dismal for young people of color: only 30 percent of African-Americans and fewer than 20 percent of Latinos in their mid-20s have an associate's degree or higher.[16] The impending retirement of the Baby Boom generation will only exacerbate this problem. Today's young adults are far more diverse than previous generations of Americans. By 2030 citizens

FIGURE 4 College for All does not mean everyone needs a B.A. Even in this decade most jobs do not require a B.A.



Source: March CPS data, various years; Center on Education and the Workforce forecast of educational demand to 2018.

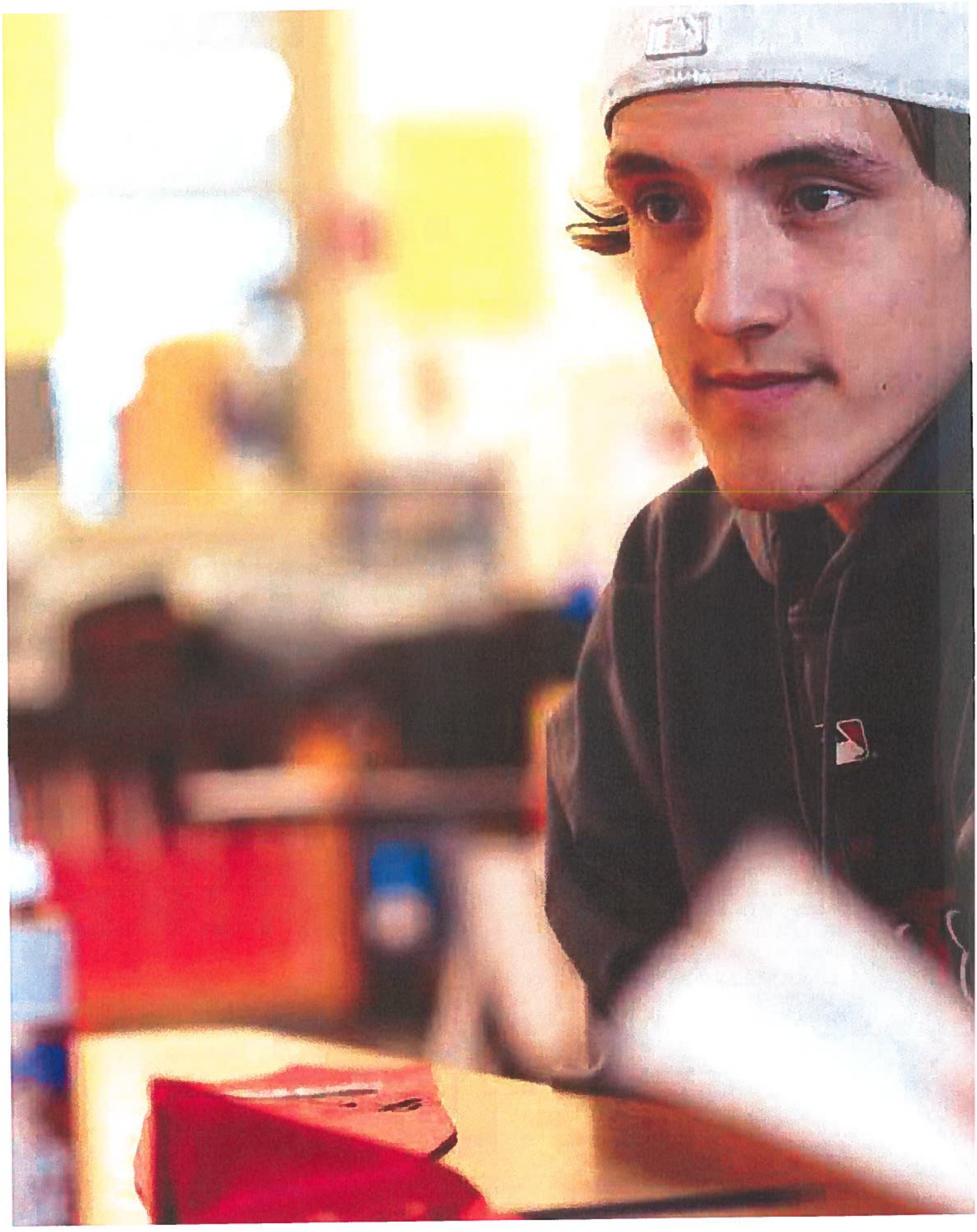
of color will make up 45 percent of the working-age population, up from just 18 percent in 1980. This will accentuate the impact of persistent racial gaps, including huge discrepancies in attainment.

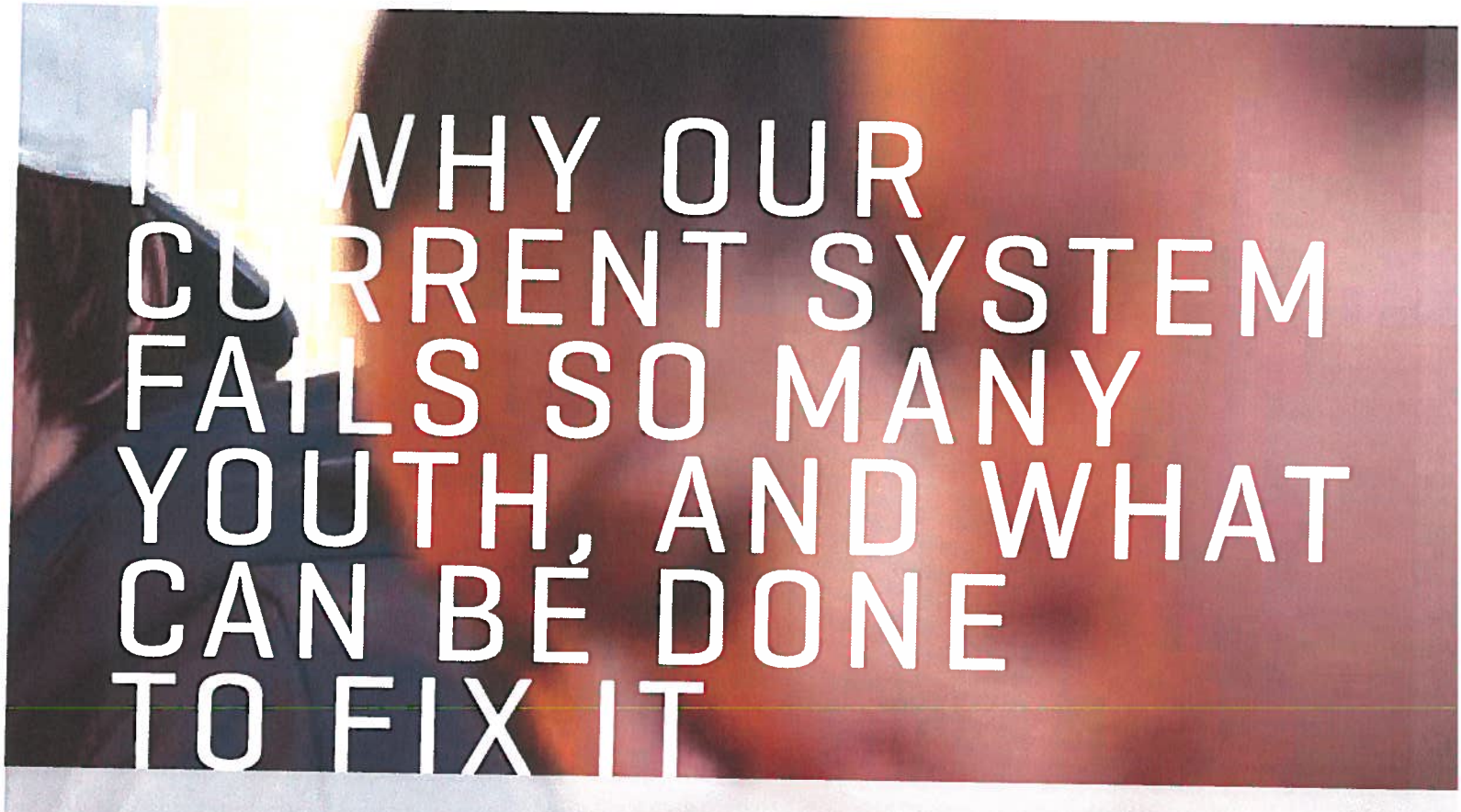
Indeed, if current trends persist, the percentage of young adults with a post-secondary degree may actually drop, reversing a long history in which children have generally been better educated than their parents. This would be a stunning setback for a nation that led the entire world in educating its young for over a century.[17]

Given these dismal attainment numbers, a narrowly defined "college for all" goal–one that does not include a much stronger focus on career-oriented programs that lead to occupational credentials–seems doomed to fail. The College Board has set a goal of raising our college completion rate to 55 percent by 2025. This would require an annual increase of 1 percent for the next 15 years, a much faster rate of progress than our experience over the last 15 years would suggest is possible.[18]

But even if this campaign were to succeed–something we should all be rooting for–it would still leave us with a very troubling question: **what about the other 45 percent of young Americans?** These are the same 45 percent of students who say they were bored in high school, who dropped out or never got past remedial courses in community college, and might say wistfully a few years after high school that they wished they had applied themselves more. They are the young people most likely to hit the wall after high school, running smack into the harsh realities of unemployment or dead-end, sub-living wage jobs. What is our strategy for equipping them with the credentials they need to be full participants in American society?

To answer this question, we must first ask why so many young people fall by the wayside, some as early as 9th grade, along the path to a college degree. We must also consider the breadth of this problem. Not all dropouts are from low-income families, nor do all attend so-called "dropout factories." In fact, many are middle-achievers from middle-income families. If we are serious about designing a strategy to radically increase the proportion of young people who obtain a meaningful post-secondary credential, we must analyze root causes of the problem and search for models of success.





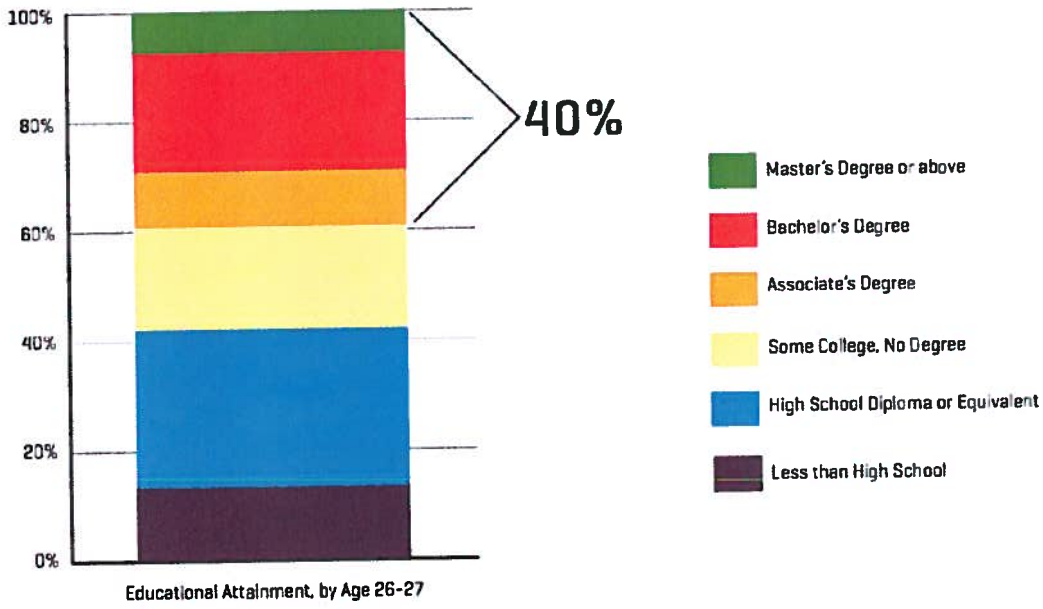
II. WHY OUR CURRENT SYSTEM FAILS SO MANY YOUTH, AND WHAT CAN BE DONE TO FIX IT

By now, the vast majority of American young people and their families have gotten the very clear message that a high school diploma alone is no longer a sufficient passport to the middle class. Surveys show that middle school students overwhelming aspire to go to college. And college enrollment has continued to escalate. So our national failure to better prepare our young people cannot be explained by poor communications or low aspirations. Rather, the paradox is that even though young people understand they need post-secondary education to make it in 21st century America, huge percentages continue to drop out of high school and college.

Most of the blame for this "dropout nation" state of affairs has been placed on our education system. In response, education reformers have mounted a sustained effort over the past two decades to raise standards, improve test-score performance, and promote "college for all" as the primary pathway to success. The long-overdue effort has had many ameliorative effects. The standards movement has helped forge a much clearer national consensus on what children need to learn. The accompanying accountability revolution has cast a harsh spotlight on our continuing failure to equip many students with even basic math and reading skills, as well as persistent racial achievement gaps. And all of this has given school reform a renewed sense of urgency.

But after 20 years of effort, and billions of dollars of expenditures, the time has come for an honest assessment. The underlying assumption has been that an academic, classroom-based approach is capable of preparing nearly all adolescents and young adults for success in the 21st century. While there have been marginal gains, the bottom line measure of success is college completion. And on that score, we have still been unable to get more than 30 percent of young adults to earn a bachelor's degree by their mid-20s. **"College for all" might be the mantra, but the hard reality is that fewer than one in three young people achieve the dream.**

FIGURE 5 The current US reality: only 40% of 27-year olds have earned an A.A. degree or higher



Note: Represents data collected in surveys between 2006-2008; GED is approximation based on data from GED Testing Program.
Source: Current Population Survey Annual Social and Economic Supplement.

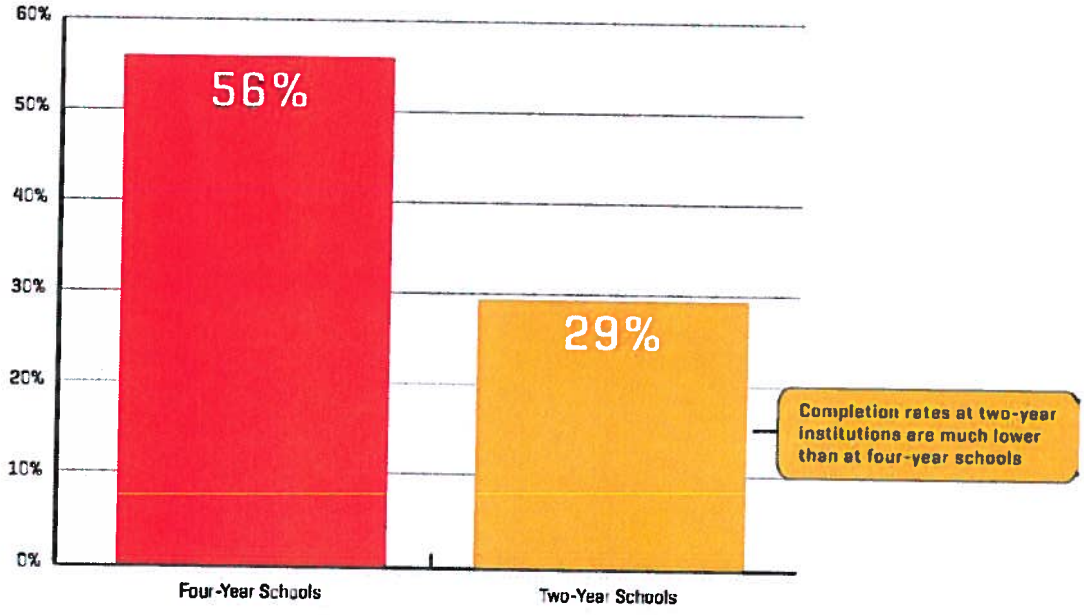
The problem is most visible in our high schools, which are plagued by extraordinarily high dropout rates. Every year, some one million students leave before earning a high school degree. Many drop out because they struggle academically. But large numbers say they dropped out because they felt their classes were not interesting, and that high school was unrelentingly boring. In other words, they didn't believe high school was relevant, or providing a pathway to achieving their dreams. This crisis has been likened to a "silent epidemic" that is undermining the very future of America.[19]

Failure rates are even more pronounced at the post-secondary level. The percentage of students who graduate from college "on time" varies widely by the selectivity of the institution. Among the nation's most elite colleges and universities, the graduation rate easily exceeds 90 percent. Among "very selective" four-year colleges, 75 percent of the students earn a B.A. within 6 years. But among all four-year colleges, just 56 percent of students meet this goal. And at community colleges–the nation's largest post-secondary system–fewer than 30 percent of students manage to earn an A.A. degree "on time" (meaning within three years).[20] In short, the majority of students who go on to college fail to earn a degree on time, and many of those never successfully complete their degree. As a result, according to the Organization for Economic Cooperation and Development, **the United States now has the highest college dropout rate in the industrialized world.**[21]

The question is, why?

Students drop out of high school and college for many reasons, of course: under-preparation for the required academic work; financial pressures; competing claims of family and jobs–the list of causes is long and varied. But certainly a major reason is that **too many can't see a**

FIGURE 6 U.S. "on time" college completion rates are alarmingly low



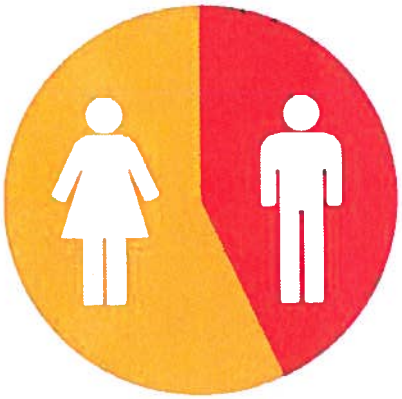
Note: Two-year schools have a three year graduation window. Four-year schools have a six-year window
Source: Higher Ed Info-NCES/IPEDS Graduation Survey.

clear, transparent connection between their program of study and tangible opportunities in the labor market.

We fail these young people not because we are indifferent, but because we have focused too exclusively on a few narrow pathways to success. It is time to widen our lens and to build a more finely articulated pathways system—one that is richly diversified to align with the needs and interests of today's young people and better designed to meet the needs of a 21st century economy. A pathways system might be compared to a roadmap that provides young people with clearly articulated routes to successful lives as adults. Of course, this roadmap need not be formally printed; it might just be generally understood as part of the architecture of a society. In the post-World War II years, the transition from adolescence to adulthood was typically quick and almost seamless. Thanks to a booming economy, high-school graduates had little trouble obtaining well-paying jobs. And the average young woman was married by 21 and a mother by 23. Thus, by the age of 25, the vast majority of men and women were recognized as full-fledged adults.

Today, the journey from adolescence to adulthood is far more daunting. It takes much longer, and the roadway is filled with far more potholes, one-way streets, and dead ends. Radical changes in the nation's job market—including growing demand for post-secondary graduates, sharply diminished opportunities for high-school graduates, and a relative decline in the earnings of many young people—mean that it is now far more difficult for young adults to become economically self-sufficient. In turn, that's contributed to a sharp rise in the average age at which men and women marry and have children. Indeed, by the age of 30, only half as many young adults have now achieved all of the traditional markers of adulthood (including marriage and having children) as in 1960.[22]

THE GROWING GENDER GAP IN OUR NATION'S COLLEGES: WHAT ARE THE IMPLICATIONS?



WOMEN NOW ACCOUNT FOR **57%** OF COLLEGE STUDENTS

WOMEN EARN **57%** OF COLLEGE DEGREES

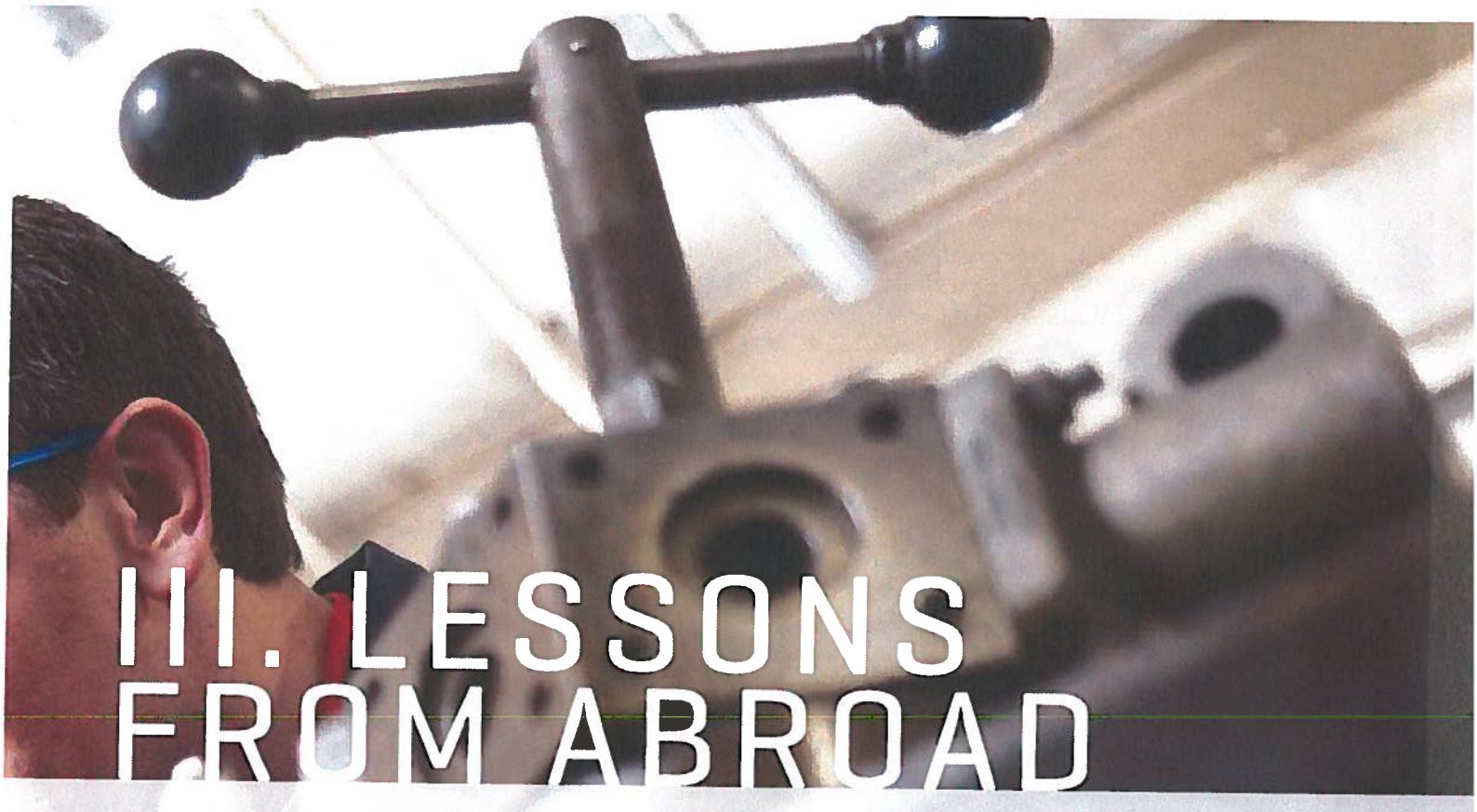
MEN EARN JUST **43%** OF COLLEGE DEGREES

WOMEN NOW ACCOUNT FOR **60%** OF GRADUATE STUDENTS

Our fundamental problem is that our system has not evolved to serve young adults in this radically different world. Behaving as though four-year college is the only acceptable route to success clearly still works well for many young adults, especially students fortunate enough to attend highly selective colleges and universities. It also works well for affluent students, who can often draw on family and social connections to find their way in the adult world. But it clearly does not work well for many, especially young men. In recent years, a yawning gender gap has opened up in American higher education. Men now account for just 43 percent of enrollment in our nation's colleges, and earn only 43 percent of bachelor's degrees. Not surprisingly, women also account for 60 percent of the nation's graduate students.[23] Similarly, among the low-income and young people of color who will make up an increasing portion of the workforce of the future, this single route does not work well either. Many of these students are frustrated by an education they often find irrelevant and removed from the world of work. And given the barriers—including weak or nonexistent career counseling, rising college costs, inadequate financial aid, and the frequent need to balance their courses with jobs that are often totally disconnected from their programs of study—it is a minor miracle that so many still manage to complete a degree.

As a nation, we currently spend over $400 billion annually on post-secondary education, but the returns on this investment are inconsistent. Efforts to hold colleges accountable for their graduation rates are finally gaining some traction. Complete College America, established in 2009 with support from the Bill and Melinda Gates Foundation and others, is working to dramatically increase the nation's college completion rate through state policy changes. And at least three states—Indiana, Ohio, and Tennessee—have changed their funding formulas to reward completion, not just enrollment.

While these initiatives are encouraging, we clearly need a more comprehensive effort to develop a robust pathways system. If high school career-focused pathways were firmly linked to community college and four-year career majors, for example, we believe more students would be likely to stay the course. Indeed, we are convinced that this is an exceptionally promising strategy for increasing post-secondary attainment. To achieve this promise, we also need to provide high school students with far better guidance. Many adults over the age of 25 have discovered that community colleges offer programs leading to well-paying jobs in healthcare, technology, and other fields, but recent high school graduates are often poorly represented in such programs due in part to lack of information.



III. LESSONS FROM ABROAD

What reason is there to think that a robust pathways network as described above is the best way forward? There's a continent full of empirical evidence demonstrating the efficacy of a system that connects work and learning beginning in high school.

VOCATIONAL EDUCATION IN NORTHERN AND CENTRAL EUROPE

If you look at the U.S. secondary education system through a comparative lens, one big difference becomes immediately apparent: most advanced nations place far more emphasis on vocational education than we do. Throughout northern and central Europe especially, vocational education and training is a mainstream system, the pathway helping most young people make the transition from adolescence to productive adulthood. In Austria, Denmark, Finland, Germany, the Netherlands, Norway, and Switzerland, after grade 9 or 10 between 40 and 70 percent of young people opt for an educational program that typically combines classroom and workplace learning over the next three years. This culminates in a diploma or certificate, a "qualification," as it's called, with real currency in the labor market. In virtually all of these countries, vocational education also provides a pathway into tertiary education for those who choose to take it.

Upper secondary vocational education (or VET, as it is generally known) varies significantly in structure from country to country, but there are two basic models. The first, usually referred to as apprenticeship or the dual system, has students spend three or four days in paid company-organized training at the workplace, with the other day or two in related academic work in the classroom. Germany has the oldest and best-known apprenticeship system, which offers programs leading to recognized qualifications in about 350 different occupations. Switzerland also has a very highly regarded apprenticeship system. A second group of countries have opted for a model in which vocational education is mostly provided in school-based programs, although they all incorporate at least some work-based learning. These countries typically introduce students to a broad cluster of occupations (e.g. health care or IT) before narrowing the focus of training in the third year.[24]

From a U.S. perspective perhaps the most important distinction among these countries is the age at which students are separated into different tracks. Germany and Switzerland have separate middle or lower secondary schools based largely on the school's assessment of a student's academic potential. This is a practice we deplore, and it is no surprise that the students in the bottom track German middle schools fare the least well in the labor market. Finland and Denmark, on the other hand, keep all students in a common, untracked comprehensive school up through grade 9 or 10, at which point students and their families, not the school, decide which kind of upper secondary education they will pursue. We believe this model makes much more sense for the U.S. to consider, but it would mean that we would have to be willing to abandon our reliance on the various forms of tracking, subtle as well as overt, that pervade much of our education system through the elementary and middle school years.

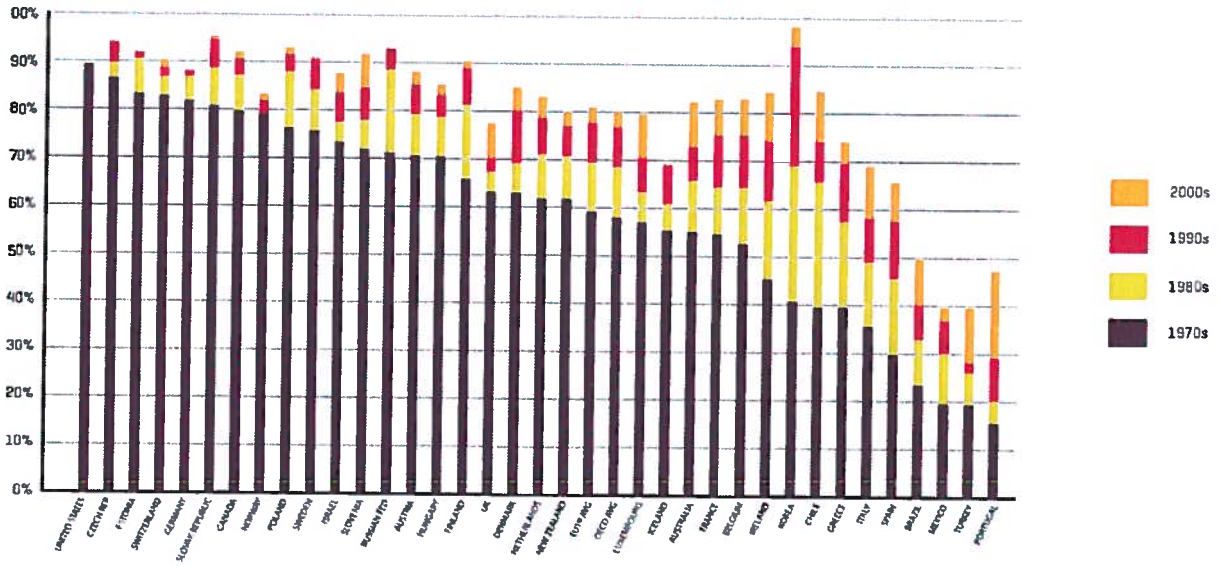
Despite their highly unattractive early tracking practices, there is much to learn from the German and Swiss apprenticeship systems. In many ways, they exemplify the new 3 "R's" of much U.S. secondary school reform: rigor, relevance, and relationships. Thanks to high standards, those who complete a VET program have qualifications roughly equivalent to Americans who have earned a technical degree from a community college. As such, they're prepared for more advanced studies in institutions of higher education, such as polytechnics and universities of applied science. The German federal states, which regulate education, are now working to improve access for such students.

In all of these apprenticeship systems employer organizations play a major role. They take the lead in defining occupational qualifications, providing paid apprenticeships or other work-based learning opportunities and (in collaboration with educators and trade union partners) assessing student performance and awarding certificates. In Germany, for example, they pay about half of the expenses associated with the system, contributing roughly as much as the government. Why are they willing to make such a substantial investment? Simply put, German employers believe that the best way to get a highly qualified workforce is to invest in the development of young workers, participate directly in their training and socialization at the workplace, and then hire those who have proven themselves to be productive at the end of the apprenticeship period. An added incentive is that apprentices can be hired for less than the standard wage, and terminated easily if they don't work out.[25] As a result, some studies suggest that the work and other benefits contributed by apprentices more than offset the costs to employers. No wonder roughly a quarter of German and Swiss employers participate in the dual system.

While there is significant variation among the northern and central European countries in the degree of employer ownership, all are characterized by much clearer linkages between labor market needs and educational programs, all offer programs leading to qualifications in a wide range of occupations (white collar as well as blue collar, high tech as well as trades), and all serve a broad cross-section of students. While they all make special efforts to incorporate at-risk students into their programs, in some cases offering employers special incentives to include such students, employers expect their trainees to have a solid foundation of academic skills and a strong work ethic. Consequently, these programs are not designed to serve those with a history of school failure. Rather, they are designed on the premise that many, perhaps most young people would prefer to learn from late adolescence on in an environment in which work and learning are integrated and in which there is a clear occupational goal in sight. And this approach is paying off in increased attainment rates.

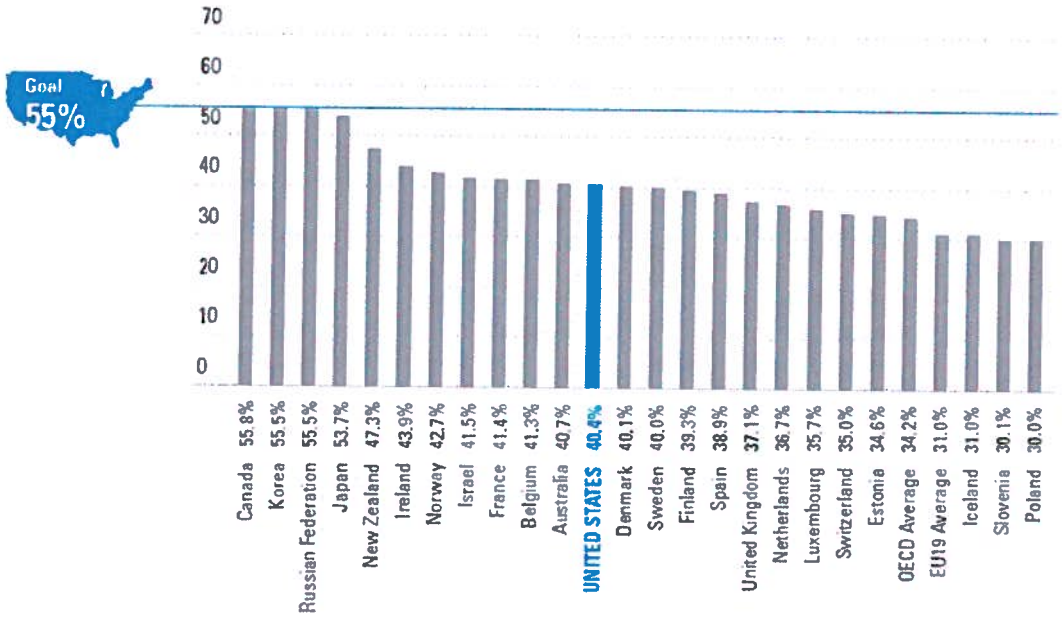
By contrast, look at where the United States is ranked relative to other industrialized nations with regard to school and college completion. As Figures 7 and 8 indicate, we have lost enormous ground over the last 15 years. The problem is that while we have been standing still, other nations have leapfrogged us.

FIGURE 7 The U.S. has fallen from 1st place to 13th in high school graduation



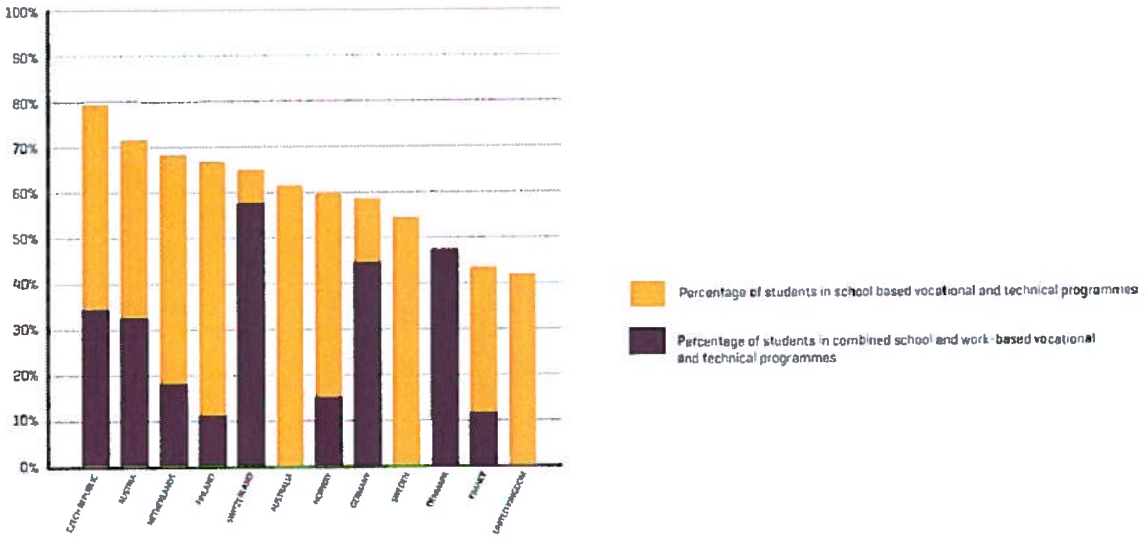
Note: Approximated by percentage of persons with upper secondary or equivalent qualifications in the age groups 55-64, 45-54, 35-44, and 25-34 years.
Source: Organization for Economic Cooperation and Development.

FIGURE 8 College Completion Rank Declining: Percentage of 25- to 34-Year-Olds with an Associate Degree or Higher, 2007



Note: College Board. (2010). *The College Completion Agenda 2010 Progress Report*. Retrieved from http://completionagenda.collegeboard.org.
Source: Organization for Economic Cooperation and Development.

FIGURE 9 In many European countries over half of upper secondary students are in vocational educational and training



Source: OECD (2008), Education at a Glance 2008, OECD Indicators, Table C1.1, OECD, Paris.

Why is the United States falling behind? It is hardly an accident that most nations with superior attainment rates offer more diverse, robust pathways to careers and practical-minded post-secondary options than we do in the U.S.

Equally damning are results from the OECD's PISA assessment, which tests a national sample of 15-year-olds across member countries every three years in literacy, mathematics, and science. What differentiates PISA from other such assessments is that it is deliberately designed to see how well students can apply what they have learned in school to novel problems and situations, not simply how well they have mastered the curriculum they have been taught. In this sense PISA is designed to measure the kind of thinking and problem-solving skills that employers tell us are most valuable on the job.

Unfortunately, U.S. performance on the four rounds of PISA over the past decade has been uniformly mediocre. In 2009, U.S. students overall scored little better than the OECD average, and ranked just 17th in science and 25th in math achievement. PISA does more than measure the overall performance of a country's education system in the subjects being assessed. The results can also tell us which countries have the most consistent performance across schools, regardless of demographics, and in which countries such factors as race and socio-economic status have the strongest impact on performance. Again, while the U.S. is not at the bottom of the pack on this criterion, race and poverty play a more significant role in predicting school outcomes here than they do in most other participating countries.[26]

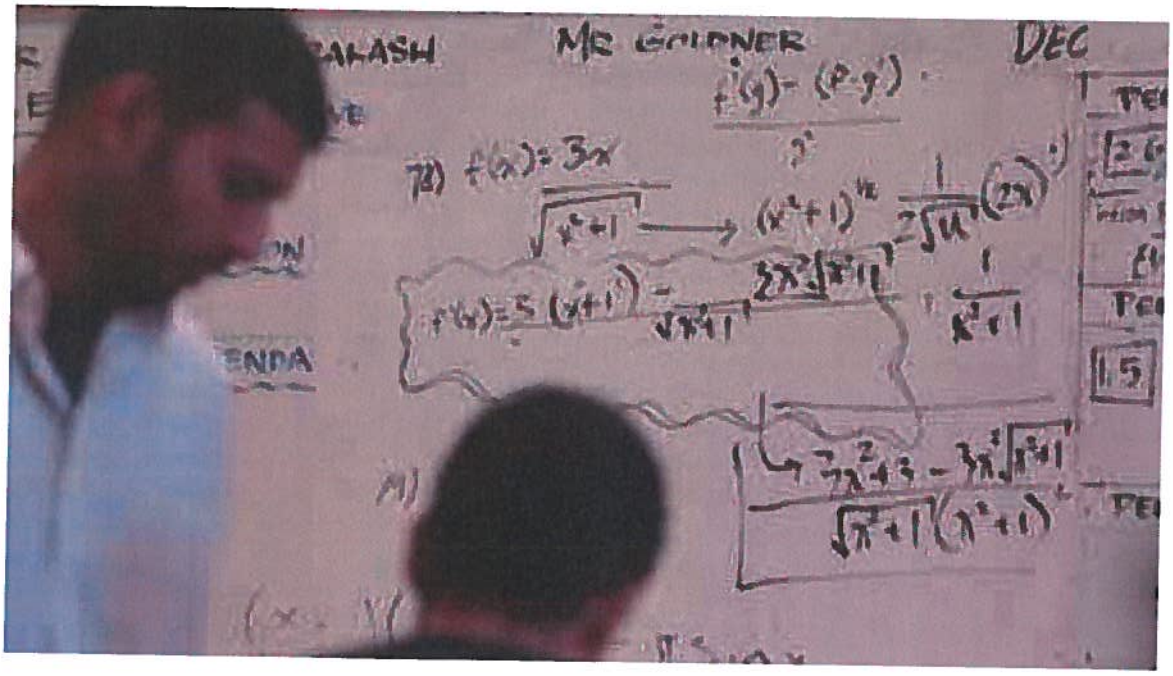
For all these reasons, it is no longer defensible for the U.S. to behave as if it has nothing to learn from other countries. We believe that if the U.S. is serious about increasing the proportion of young people who arrive in their mid-twenties with a post-secondary credential with currency in the labor market, it is imperative that we closely examine the experience of several other OECD countries, especially those with the best developed vocational education systems.

TWO OECD REPORTS: "LEARNING FOR JOBS" AND "JOBS FOR YOUTH"

In 2007, the OECD, at the request of the ministers of education of the 30 OECD nations, launched an ambitious study of vocational education and training called *Learning for Jobs*. The study, just completed in September 2010, included reviews of how VET is provided in 17 countries, including the U.S. (represented by two states, South Carolina and Texas). The simple project title points to a major complexity: that economic prosperity and social cohesion depend on an appropriately skilled and employed workforce. A teaching and learning system—typically school-based and serving adolescents—is the route to get there. Nonetheless, as the study authors note, school learning is abstract, theoretical and organized by disciplines while work is concrete, specific to the task, and organized by problems and projects. If VET is to meet labor market needs, these disparate worlds must connect despite their "different goals, incentives and constraints." And in some countries they actually do.

While the Learning for Jobs team was completing its work, the OECD Directorate for Employment, Labor and Social Affairs released the final volumes of a complementary 16-country study, *Jobs for Youth*. It addresses transitions from school to employment, and was published along with an additional report requested by the OECD ministers in response to the economic crisis. Entitled *Helping Youth to Get a Firm Foothold in the Labor Market*, this report posits that "the current severe economic downturn is posing daunting challenges to young individuals in the OECD labor markets. The transition from school to work is going to be particularly difficult for the new generation of entrants in the labor market... Low-skilled youth who, even before the crisis erupted, already experienced multiple barriers in integrating into the labor market, are now at high risk of inactivity and potentially of exclusion."

These two substantial studies—both of which involved country self-assessments, site visits by experts, and extensive quantitative data collection—make a compelling case for the power of work-based learning. With "learning" rather than employment as its focus, *Learning for Jobs* concludes that, done well, work based learning appears to be the best way for the majority of young people to prepare for the world of work. As the report explains, workplaces "provide a good place to learn both hard skills on modern equipment and soft skills in terms of working with people in a real-world context. Workplaces improve transitions from school to work by



allowing employers and potential employees to get to know one another, trainees contribute useful work, and workplace training within vocational programs provides a lever to link the mix of vocational provision to employer needs."

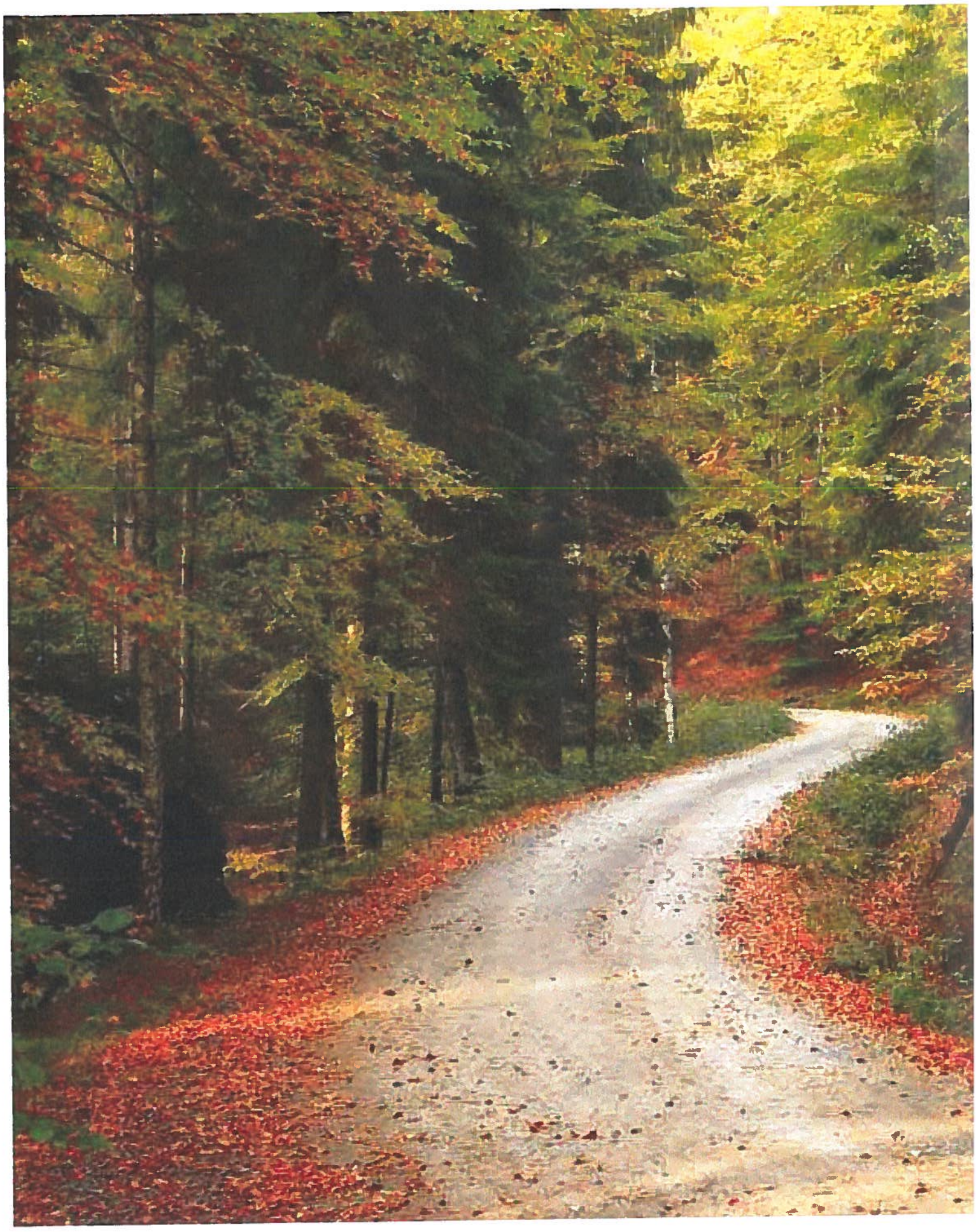
In addition, and perhaps most important for a U.S. audience, the most intensive forms of workplace learning–apprenticeship and sustained internships–are especially effective in meeting the developmental needs of young people. They provide a structure to support the transition from adolescence to adulthood lacking for the majority of young people in the U.S. Apprenticeships provide increasingly demanding responsibilities and challenges in an intergenerational work setting that lends a structure to each day. Adult relationships are built on support and accountability, mentoring and supervision.

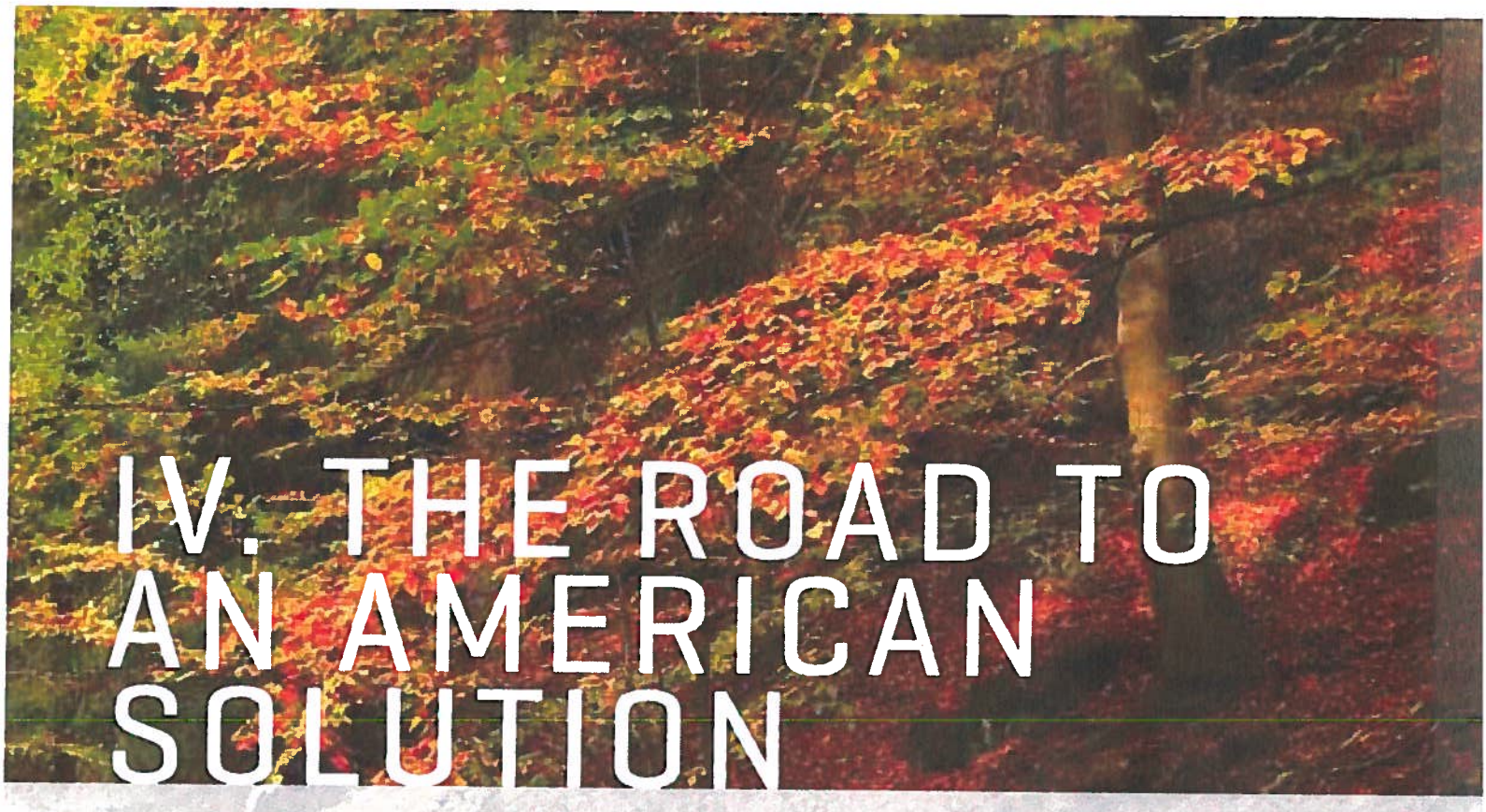
For many young adults, the ultimate bottom line is whether the degree or credential they earn will help them secure a job. *Jobs for Youth* presents limited, but provocative research that suggests young adults in some countries with strong VET systems find it easier than Americans to successfully transition to the labor market. In Germany, for example, over 80 percent of young adults found jobs within six months of completing their education in 2007, versus just 48 percent in the U.S. Similarly, countries with strong apprenticeship systems had fewer "poorly integrated new entrants"–those who are still struggling to settle into a career path five years after leaving school–than the U.S. This is hardly surprising, when you consider that apprenticeship programs give employers ample opportunity to assess whether a young person would make a good long-term employee.

Taken together, the two OECD reports provide compelling evidence that vocational education that integrates work and learning is a superior way to learn. And not surprisingly, young people who have been in programs teaching them about "working life" and giving them soft skills as well as training and experience in a career area do better at finding jobs.

These studies also demonstrate the degree to which the U.S. is an outlier in its approach to preparing young people for success. Indeed, countries that already have strong vocational systems are strengthening them by adding more apprenticeship opportunities, upgrading curriculum to better match labor market needs, and

adopting "youth guarantees" to encourage at-risk young people to engage in integrated work and learning programs. In sharp contrast to the U.S., vocational education is seen as a mainstream, well-respected pathway in these countries, while a university education is reserved for people interested in a narrower band of professions like law, medicine, and research. Even Korea, the country that leaped from 27th to 1st on high school attainment and has made dramatic gains in post-secondary attainment as well, is now rethinking its "college for all" strategy and focusing more attention on apprenticeships that will prepare people for jobs in high-growth fields like IT, health care, and engineering.[27] We believe these lessons are most useful in providing inspiration to Americans, rather than as a call for strict imitation. We now turn to the central question before us: How to design a new American approach to the pathways challenge?





IV. THE ROAD TO AN AMERICAN SOLUTION

The American system for preparing young people to lead productive and prosperous lives as adults is clearly badly broken. Millions of young adults now arrive at their mid-20s without a college degree and/or a route to a viable job. As we have seen, many other advanced nations are achieving markedly better results with pathways systems that take a more holistic approach to youth development. We are not suggesting that America can or should try to import these foreign models. The German dual-apprenticeship system, for instance, has been developed over many generations, and is the product of a very different culture. But the superior results achieved by these systems argue that we must embark on an effort to build a more comprehensive American system of pathways to prosperity—one that is better equipped to meet the widely diverse needs, interests and abilities of all our young people. Continuing on our current course, by placing almost all our bets on classroom-based pedagogy, is likely to produce little more than the marginal gains we've seen over the past two decades. And that rate of progress is simply unacceptable for anyone who cares about the future of America.

In what follows, we have chosen to focus on three essential elements of any long-term strategy to address the challenge outlined in the opening section of this report. The first element is the development of a broader vision of school reform that incorporates multiple pathways to carry young people from high school to adulthood. The second is the development of a much-expanded role for employers in supporting these new pathways. The third is the development of a new social compact between society and its young people.

The ideas outlined below will require changes not just in how we prepare young people, but also in some of our deepest cultural beliefs and biases regarding education. We are under no illusions that this will be easy or uncontroversial. There will be additional investments required, human as well as financial, especially from employers. But from the Revolution and the Civil War to World War II and the Civil Rights Movement, none of the greatest achievements of this nation have been easy and uncontroversial. Building a better network of pathways to adulthood for our young is one of the paramount challenges of our time.

MULTIPLE PATHWAYS: A BROADER VISION FOR SCHOOL REFORM

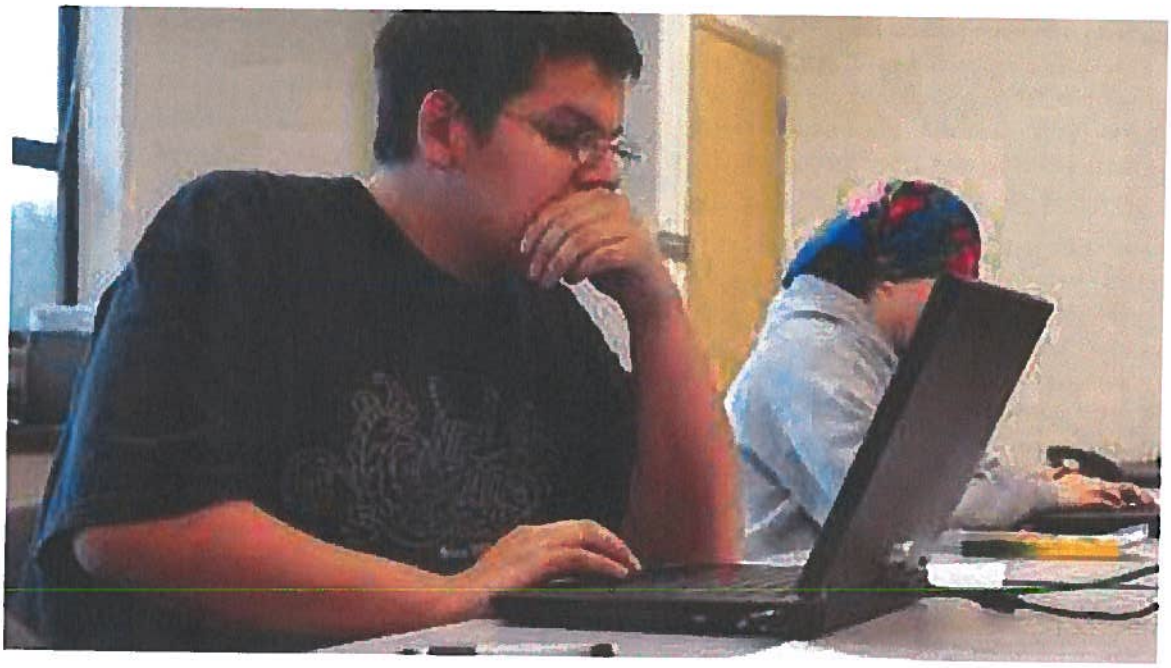
Our current system places far too much emphasis on a single pathway to success: attending and graduating from a four-year college after completing an academic program of study in high school. Yet as we've seen, only 30 percent of young adults successfully complete this preferred pathway, despite decades of efforts to raise the numbers. And too many of them graduate from college without a clear conception of the career they want to pursue, let alone a pathway for getting there.

It is long past time that we broaden the range of high-quality pathways that we offer to our young people, beginning in high school. The lessons from other countries strongly suggest that this might be the single most promising strategy for greatly increasing the percentage of young adults who earn a post-secondary degree or credential that prepares them to embark on a meaningful career.

Every high school graduate should find viable ways of pursuing both a career and a meaningful post-secondary degree or credential. For too many of our youth, we have treated preparing for college versus preparing for career as mutually exclusive options. At the same time, aspiring doctors, lawyers, or architects understand very well that college is in fact education for a career. They know the courses they need to qualify for advanced professional training, because the pathways to an occupational credential are clearly marked. In our view, the U.S. system would be greatly strengthened if the pathways to all major occupations were clearly delineated from the beginning of high school so that young people and their families could clearly see the patterns of course-taking and other experiences that would best position them to gain access to that field. In such a system, students would still retain freedom to change their minds, and embark on different courses. They would not be locked into one career at an early age. We are convinced that this pathways approach would significantly expand the numbers of young adults who earn a post-secondary credential in a timely fashion. In the process, it would expand both their earning potential and employment opportunities.

The recent adoption by most states of the "Common Core" standards represents long-overdue recognition of the need for a more uniform national academic currency. The challenge is to build within the Common Core enough differentiation in grades 11 and 12 that young people opting for occupations that require less formal academic training can take the initial steps toward viable careers. Students who are bored and at risk of dropping out need to be engaged more effectively. They need to know that there are navigable pathways leading to rewarding careers in the mainstream economy. Our hope is that states will recognize the importance of providing such options and not make the mistake of mandating a narrow common college prep curriculum for all. Certainly, it is absolutely essential to ensure that all students leave high school with a solid enough foundation of core literacy and numeracy skills to keep on learning. However, the course-taking requirements for entry into the most demanding four-year colleges should not be imposed on students seeking careers with fewer academic requirements. Indeed, there is evidence that imposing such requirements can be counterproductive. Many of the states that have sharply raised graduation requirements, including math and science requirements, have experienced a decrease in high school completion rates.[28]

We also need to elevate the critical importance of relevant work experience in a successful transition from adolescence to adulthood. The workplace is clearly the place to "try on" or test out a career choice. It's also by far the best venue in which to learn the "21st century skills" so critical to success in today's economy. And work-linked learning can be extraordinarily powerful in engaging students who are bored or turned off by conventional classroom instruction. Yet in comparison to many other advanced countries, America has largely neglected this highly effective learning method. We need to revolutionize our approach. Students should have plentiful opportunities to participate in work-linked learning—ranging from job shadowing to internships—in secondary school. In college, we need to make a far more concerted effort to link the jobs most students hold to their programs of study, so that work and learning will be mutually reinforcing. And for young adults not in college, we need to provide employment opportunities, ideally



through programs that encourage further education. None of these steps will be easy in the current Great Recession. But youth who are deprived of meaningful work experiences often pay a permanent price in reduced employment prospects. Investments in work experiences for young adults will produce strong future returns.

Even as we advocate this multiple pathways approach, we do not mean to downplay efforts to improve academic instruction in our schools, which has been the central focus of much recent school reform. Given the dismal level of literacy and math skills among many high school students, the need for these efforts is undeniable. And there's encouraging evidence that when school leaders focus on improving the quality of instruction—and addressing the learning needs of individual students—they can make impressive progress in closing the achievement gap, and expanding opportunities for low-income and minority students. This work clearly must be part of any comprehensive effort to meet the pathways challenge. [29]

There are already pockets of excellence in career and technical education in many American states and communities. Cutting-edge career and technical education (CTE) bears little relationship to the old vocational education programs that were often little more than dumping grounds for students who couldn't cut it in college-prep. Today's best CTE programs do a better job of preparing many students for college and career than traditional academics-only programs. And as the examples we highlight on page 27 illustrate, there is a growing movement to create high-quality "21st century" CTE programs.

Similarly, graduates of the best community college programs often earn more, and have a far clearer sense of direction, than some of their counterparts with B.A.'s. Indeed, some graduates of four-year colleges return to community college for precisely this reason. And the innovations aren't limited to educational institutions. The nation's registered apprenticeship programs are a well-kept secret that provide an extremely effective pathway to jobs in careers ranging from construction to healthcare. The modern military does an extraordinary job of helping recruits, few of whom are affluent,

successfully transition to adulthood. And in 2009, the Edward M. Kennedy Serve America Act was signed into law. It increases both the number and range of opportunities to serve in AmeriCorps, and includes an increased education award to encourage volunteers to continue their education.

But there are three big barriers that currently prevent these pathways from achieving their potential. First, though career counseling is an essential component of any effective pathways system, America's current system of career guidance and counseling is wholly inadequate, and many adolescents receive virtually no useful guidance. In our middle and high schools, the average ratio of students to counselors is nearly 500 to 1, a load that would strain even the most dedicated professional. Moreover, many counselors are more interested in students' pressing personal, psychological and social problems, and do not have the expertise to provide high-quality career guidance.[30]

The situation is even more dire in post-secondary institutions that serve large numbers of low-income students. It isn't unusual for the student-counselor ratio in community colleges to reach 1,000 to 1, meaning that most students get little or no help.[31] And young adults who have left school have even less access to counseling. The price we pay for this neglect is staggering. Inadequate guidance is a major reason why so many students end up in classes they find boring and irrelevant, sentiments that are often a precursor to dropping out.

MODELS OF 21ST CENTURY CAREER AND TECHNICAL EDUCATION

In recent years, we've witnessed the emergence of a growing number of rigorous, high-quality national models that demonstrate what career and technical education can achieve in the 21st century. Take **PROJECT LEAD THE WAY**, which was developed to introduce high school students to engineering. Since it was launched in 12 New York high schools in 1997, PLTW has expanded to nearly 3,500 high schools in all 50 states, and currently serves more than 300,000 students. PLTW's "Pathway to Engineering" program uses a uniform, rigorous curriculum that is designed as a four-year sequence of courses. Students complete such foundation courses as introduction to engineering design and principles of engineering before moving on to more specialized options as biotechnical engineering and civil engineering and architecture. The program concludes with a capstone course in engineering design and development, in which students work in teams to research and come up with a solution to an open-ended engineering problem. PLTW also offers a biomedical sciences curriculum. This approach is clearly engaging students. Some 80 percent of those who complete the program say they will study engineering, technology or computer science in college, and their retention rate in these courses is higher than that of students who did not complete PLTW.[32]

In contrast to PLTW's uniform approach, **THE CAREER ACADEMY MOVEMENT** is far more diverse. Since the first career academy was launched to introduce students to career themes in Philadelphia in 1969, the number of such academies has mushroomed to some 7,000 serving one million high school students in grades 10-12. These academies often operate as a "school-within-a-school," combine a college-prep curriculum with a career theme, and typically include work-based learning.[33] A longitudinal MDRC study suggests that this combination of career exploration, CTE coursework and work-based learning produces impressive payoffs in the labor market. MDRC found that eight years after graduation, career academy graduates earned an average of 11 percent more than a control group of students who applied to an academy, but ultimately did not enroll. The study also found career academies helped at-risk students improve their performance in high school, even though the overall performance of career academy students on standardized tests was no higher than the control group.[34]

Meanwhile, **HIGH SCHOOLS THAT WORK**, developed by the Southern Regional Education Board, has grown into the nation's largest effort to integrate challenging academics and CTE. SREB has done extensive research on how high-quality career education can boost student success.[35] And it recently launched an effort to work with state partners in developing improved career-focused programs of study.

Several states also have promising initiatives to improve career education. In **MASSACHUSETTS**, the statewide network of regional vocational technical high schools has been dubbed the Cadillac of CTE. There are over two dozen of these regional high schools, each serving students that come from a number of districts, and another eight high schools operating within large districts, like Worcester. Students in these schools spend half their time in career education, and academic instruction is integrated with technical education. The payoff has been enormous. These schools boast a far lower dropout rate than the state average, and have some of the state's highest graduation rates. Well over half of the graduates go on to post-secondary education. Perhaps most remarkably, in 2008, 96% of students at these high schools passed the state's rigorous MCAS high-stakes graduation test, surpassing the average of students at more conventional comprehensive high schools.[36]

CALIFORNIA already has some 500 career academies, known as "partnership academies" in the Golden State. Now the Irvine Foundation is supporting the **LINKED LEARNING INITIATIVE**, which helps students pursue pathways to careers by combining rigorous academics with demanding technical education, work-based learning and such support services as counseling. So far, 11 school districts have developed master plans for expanding linked learning. A recent study estimates a linked learning approach costs around $1,500 per student. But if this comprehensive approach to multiple pathways can raise achievement, reduce the dropout rate, increase post-secondary persistence and career success, the benefits would easily exceed the costs. Meanwhile, the Legislature has required the state to study the feasibility of expanding a multiple pathways approach across the state.

And in 2007, **FLORIDA** passed an act that mandates comprehensive reform of CTE. The law requires that new CTE programs be designed to meet a real workforce need, and that CTE students should earn high-quality industry-recognized certifications, so they are more easily employable. To date over 20,000 young people have graduated with such an industry-recognized certificate. To help raise the prestige of CTE, the law also considers CTE courses equivalent to AP and other advanced academic courses in the state's grading system for high schools. A core aim of Florida's new approach is to raise the graduation rate by offering students more high-quality, relevant programs of study.

Education systems in many other OECD countries assign far more importance to career counseling. OECD research shows that nearly all secondary schools in countries like Japan, the United Kingdom, and Norway formally schedule career guidance into the school day. The Swiss system is especially thorough. Beginning in middle school, students are required to attend career information sessions during which they learn about career options. They are then introduced to independent institutions established to provide more detailed career guidance, the so-called centers for occupational information. Young people in Germany typically spend at least two weeks a year in grades 8 and 9 in company internships designed to expose them more directly to the world of work.[37]

In the U.S., our goal should be to assist every young adult beginning at the end of middle school to develop an individualized pathway plan that would include career objectives; a program of study; degree and/or certificate objectives; and work-linked learning experiences. These pathway plans would be hardly be set in concrete, and young adults would not be forced into tracks. But the merits of this approach are obvious. Young adults simply can't chart a course if they don't have a goal.

The second problem is the highly inconsistent quality of CTE programs, coupled with failure to take the best to scale. At the high-school level, the quality of CTE programs varies enormously, and many of the best new programs serve only a small number of students. There is a similar disparity in both quality and completion among community college programs. These problems are rooted in CTE's troubled history, and compounded by local control of education, which has enabled huge variations in the quality of programs at the high school and community college level. This balkanization has also often made it difficult, if not impossible to align high school and post-secondary programs, and for students to transfer credits from one institution to another—creating huge barriers in what should be a seamless pathways system.

Our community colleges are key to any large-scale strategy to increase post-secondary attainment, but they too are highly variable in quality. They serve multiple purposes and multiple constituencies, and consequently it is difficult to make broad-brush assessments of their effectiveness. Not only are they the largest segment of our post-secondary system, but they serve the majority of African-American and Latino students enrolled in higher education. For this reason it is especially critical to improve their certificate or degree-granting productivity. Fortunately we are beginning to develop some stellar examples of the kind of radical programmatic reforms that will be needed to improve the odds of success for community college students.

Washington State's Integrated Basic Education and Skills Training (I-BEST) program integrates remedial English and math skills training into college-level CTE programs in fields ranging from auto repair to nursing. A recent evaluation found that I-BEST participants earned more credits and certificates, and were more likely to persist with their studies, than regular remedial students.[38] Similarly, Tennessee has created a statewide network of 27 technology centers that provide technical training leading to certificates and diplomas in more than 50 occupational fields. These centers have achieved a graduation rate of 75 percent, more than three times that of the state's separate community college system. One reason is that programs are highly structured. Most courses are prescribed, and classes meet at the same time every day. Complete College America contends similar reforms—including block scheduling and prescribed programs—could help more community college students complete degrees and certificates in a timely fashion.

Community college programs also need to be more closely connected to regional labor market demands, as well as to state and local workforce development systems. While the best community colleges are the most entrepreneurial, market-responsive institutions in higher education, they are the exception rather than the rule. We need a concerted national effort to improve both quality and completion. We must transform these institutions from places where failure is too often the norm to incubators of success and achievement.

The third barrier is cultural. For all its potential, CTE is often demeaned and disparaged, especially among the nation's elites. It isn't uncommon to hear prominent educational leaders—including superintendents of districts serving largely low-income minority populations—dismiss CTE. To be sure, there are still far

too many obsolete CTE programs that are not well-aligned with either workforce needs or post-secondary standards. These prejudices are deeply rooted, and stem from vocational education's history, in which it was often used as a dumping ground for students of color. But these biases don't reflect the realities and potential of high-quality, 21st century CTE. Rather than condone or encourage tracking, it often promotes student choice. Moreover, CTE can be highly effective in promoting student engagement and in educating students who for whatever reason are not motivated by a purely academic program.

Similarly, the argument that CTE is for "other people's kids" ignores the likely direction of the economy. The Georgetown Center on Education and the Workforce has forecast that even in the second decade of the 21st century, most job openings will not require a B.A. or an advanced degree. The Center projects there will be 47 million job openings in the decade ending in 2018, many of which will be replacements for workers who have retired or quit. While they predict that a record 63 percent of these openings will require some college education or better, they say that nearly half of these post-secondary positions will only require an A.A. degree or less. And virtually all of these sub-B.A. jobs will require the kinds of real-world skills students master in career and technical education. These include positions in nursing, health technology, commercial construction, manufacturing, and natural resources.

In 21st century America, these cultural biases have become an enormous barrier to meeting the pathways challenge. The negative image hasn't extinguished student demand, which has never been higher. There are over 15 million high school and post-secondary students enrolled in at least some CTE courses.[39]

Tragically, this cultural barrier has undermined efforts to elevate CTE to its rightful place in the American system of pathways. The result is that many students must put up with inadequate or inferior programs, which will only compound the challenges we face in increasing high-school and post-secondary completion.

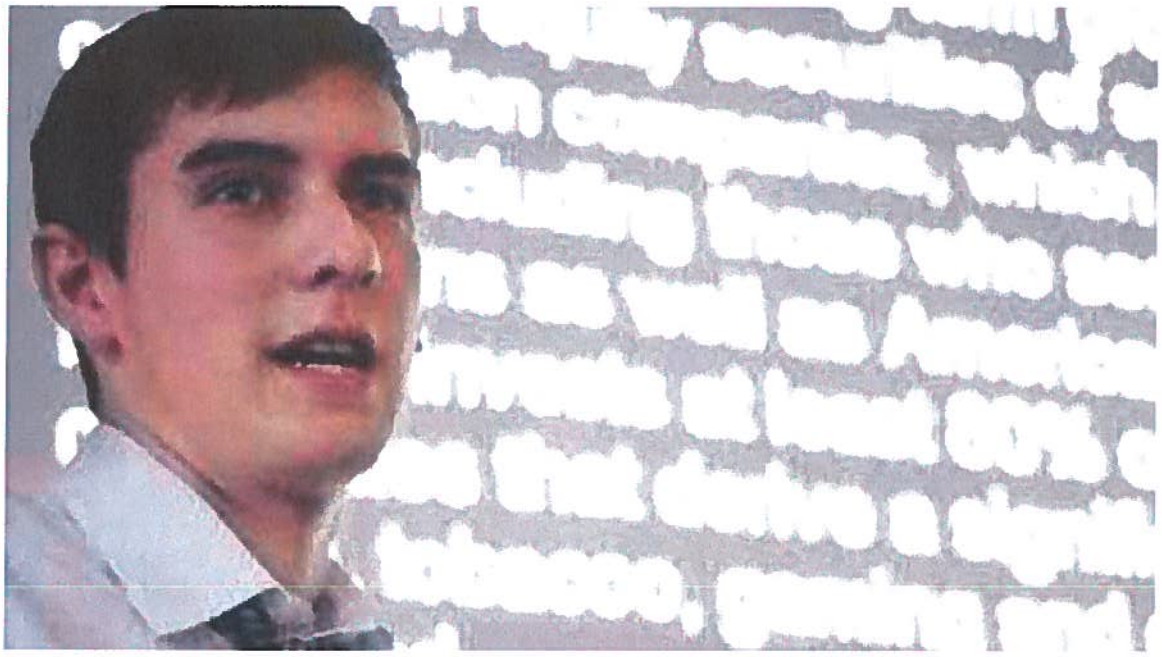
To meet our goals, we need to create a system of career-focused pathways that span the last years of high school and at least one year of post-secondary education or training and lead to an industry-recognized credential.

This is not simply a matter of scaling up the kinds of highly effective CTE programs profiled in this report. Rather, this will require engaging governmental leaders, educators and employers at the regional level in building the organizational infrastructure and political vision needed to support a system in which work-linked learning becomes an essential element in a strategy to increase both high school and post-secondary completion rates.

This vision of what a 21st century pathways system might look like is not just a theoretical construct. In fact, major elements of such a system are already in place in other advanced countries. In today's increasingly global economy, other nations face the same challenge as the U.S. in preparing young people for an increasingly competitive labor market. From Austria to New Zealand, many of the relatively well-paid but low-skilled jobs that helped fuel prosperity a generation ago have disappeared. As a result, educators in these countries are confronted with the imperative to equip young people with the higher skills they will need to prosper in the 21st century economy. Yet if the challenge is the same, many of these countries have adopted approaches to it that are at once strikingly different than the U.S. system, but that are achieving significantly better results. It's not just that many countries are leapfrogging the U.S. in educational attainment and achievement. Some of these systems are also doing a much better job of helping young adults make a successful transition to the labor market.

AN EXPANDED ROLE FOR EMPLOYERS

Any effort to construct a more effective network of pathways to prosperity will require a sea change in the role of business and other employers. Business leaders certainly understand the need to improve our education system. In recent years, they have been at the forefront in championing such reforms as choice and accountability. But for the most part, they have left the job of educating and working with young adults to educators. True, they do provide extensive training to young adults once they have left school and been hired. But the pathways system we envision would require them to become deeply engaged in multiple ways at an earlier stage—in helping to set standards and design programs of study; in advising young people; and most importantly, in



providing greatly expanded opportunities for work-linked learning. In the process, employers would become full partners in the national effort to prepare young adults for success.

As described above, employers already play all of these roles in countries with robust VET systems. Although we can't just clone these systems and drop them into the U.S., they provide models that might inspire American approaches. In addition, there are a growing number of examples of American leadership and innovation in this arena (see exemplars, page 32). The Georgetown Center on Education and the Workforce calculates that employers already spend over $400 billion a year in providing both formal and informal training to employees.[40] But these are typically people who have already completed their schooling, and are now working full-time. The approach we envision would ask employers to dedicate some of this investment to preparing young people. Although not all young people an employer trains would end up working for them, we are convinced this approach would result in higher attainment and a better-prepared workforce.

Our goal should be that beginning no later than middle school, all students should have access to this system of employer involvement and assistance. In middle school, this would include career counseling, job shadowing, and opportunities to work on projects or problems designed by industry partners. In high school, it would include programs of study designed in collaboration with industry leaders, as well as opportunities for more intensive work-based learning such as paid internships. At the post-secondary level, employers and their trade associations need to take a much more active role in collaborating with colleges to specify the knowledge and skills that people need to work in their industry. In addition, they should provide structured part-time employment linked to the student's program of study. This would address one of the most damaging disconnects in our current education system. For while most college students must work, their jobs often bear no relationship to their programs of study. Inevitably, this conflict helps drives many students to drop out. The reform we envision would create a much tighter link between a student's program of study and his or her job. It would also enlist the employer as a partner in both training students, and encouraging them to persist with their studies.

Work-linked learning should play an especially important role in the new American system of pathways to prosperity. There is mounting evidence that this would be an effective strategy for encouraging young adults to complete both high school and post-secondary degrees. Indeed, work-linked learning appears to be a key reason why countries with the strongest VET systems—in which over half of young adults participate in apprenticeships—are surpassing the U.S. in both educational attainment and in employment of young adults aged 20-24.

Work-linked learning should be made widely available beginning at the secondary level, and adapted to accommodate the abilities of each age. Thus, younger students could begin with workplace tours, attending job fairs, and participating in projects designed to expose them to the kind of challenges workers face in fields like engineering. Older students enrolled in a career-focused program of study could work with career mentors and take part in internships.

These goals might seem forbidding to those who recall the history of the School-to-Work Opportunities Act (STWOA) of the 1990s, which fell far short of its goal of extending work-based learning opportunities to a significant fraction of high school students. There are many explanations for the failure of STWOA, not the least of which was the collision with a much more powerful force called the standards movement. But STWOA was a modestly funded federal program, deliberately designed to stimulate activity at the state and local level and to sunset after five years. We are calling for a much larger system-building effort, an effort in which the employer community needs to take a leadership role along with educators and governmental leaders. Much of this work needs to take place at the state and district level. Fortunately, as the examples from California, Florida, and Wisconsin described elsewhere in this report attest, some states are moving aggressively to build key elements of such a system. We also have excellent examples of privately led initiatives that have engaged employers at scale in providing work-linked learning opportunities for young people.

EXEMPLARS OF EMPLOYEE ENGAGEMENT

U.S. employer involvement in the education and training of young adults beginning in high school is still fairly rare, especially in contrast to the extensive engagement of employers in countries like Germany and Switzerland. Even so, in recent years, several programs have emerged that demonstrate not only that it can happen here—but that when it does, the payoff can be enormous. The following four programs illustrate what's possible:

U.S. FIRST was co-founded in 1989 by Dean Kamen, one of America's most prolific inventors, to expose students to the excitement of engineering. FIRST offers four programs, beginning with students in early elementary school, and culminating in its FIRST Robotics Competition for high school students. In the robotics competition, teams of students work with adult mentors to assemble robots, and then take the finished robot to competitions where they compete against rival teams. Kamen launched the competition in a gym in Manchester, N.H. in 1992. Just 28 teams showed up. In 2011, 55,000 high school students are expected to take part. The growth has been fueled by over 3,000 corporate sponsors—including some of America's best-known companies—and 70,000 adult volunteers. It's clearly having an impact in hooking students on engineering. Surveys suggest FIRST participants are three times more likely than non-participants to major in engineering in college.[41]

THE WISCONSIN YOUTH APPRENTICESHIP PROGRAM began in the early 90s, and has since matured into the nation's largest apprenticeship opportunity for high school students. Under the two-year program, high school juniors and seniors complete up to 900 hours of work-based learning and related courses. Many also earn college credits. Apprenticeships are now offered in fields ranging from healthcare and manufacturing to IT, hospitality and agriculture. Apprenticeships are available in nearly half of Wisconsin's school districts, and the program serves about 2,000 students at a time. Over 75 percent of youth apprenticeship graduates enroll in a technical college or university, and over 60 percent complete their degrees, which is far higher than the national average. What's more, over 85 percent of graduates are employed after leaving high school, and a stunning 98 percent of participating employers say they would recommend it to others.[42]

THE NATIONAL ACADEMY FOUNDATION has become a leader in exposing students to career options through its national network of some 500 career academies serving more than 50,000 students in 41 states. NAF academies focus on one of four themes: finance; hospitality and tourism; information technology; and engineering. The capstone of the NAF experience is a paid internship, typically lasting 6 to 10 weeks. The internships are provided by more than 2,500 corporate partners. NAF's track record is truly impressive. Some 90 percent of its students graduate from high school, 23 percent higher than the overall graduation rate in the schools in which they operate. More than 80 percent go on to college, and 52 percent complete their degrees in four years. Perhaps most striking, a long-term study of career academies by MDRC found that students who attended career academies earned 11 percent more per year those who did not attend.[43]

YEAR UP is an excellent example of a small program that engages employers to help prepare students who have already completed high school. It is aimed at young adults aged 18-24 who have a high school degree or GED, but currently aren't in college or a meaningful job. Participants receive 6 months of intensive technical, academic and professional skills training that prepares them for jobs in fields like IT and financial services. They then are placed in a 6-month internship, often with major employers, at salaries averaging about $30,000 a year. The results have been impressive: 83 percent of students complete the program, and over three-fourths have managed to find a full or part-time job within 4 months of graduation. Students also earn credits at colleges that partner with Year Up. Begun in Boston a decade ago, Year Up has now expanded to seven other cities, and serves over 1,000 youths a year, the vast majority of whom are African American or Hispanic. The program is supported by over 100 employers, who contribute over $20,000 for each intern. And virtually all participating employers say they plan to take additional interns, and would recommend the program to other employers.[44]

The challenge is to make opportunities for work-linked learning far more widely available. NAF has recently published a study that lays out standards for high-quality high school internships. And Illinois is now preparing to launch a major new initiative aimed at greatly increasing work-based learning in the Land of Lincoln. The state is proposing to create "learning exchanges" that would offer high-quality programs of study in major career clusters, including health sciences, agriculture, and manufacturing. Each learning exchange would be led by industry employers, professional organizations, and other public and non-profit partners. One of the key functions of the learning exchange would be to promote and facilitate opportunities for work-based learning. Many of Illinois's school districts have already agreed to participate.[45]

At the post-secondary level, we need a concerted effort to link work and learning by providing far more opportunities for work-based learning. Co-operative education is a tested model that provides students with extensive work experience that's carefully monitored by the school or university. But despite its many benefits, co-op is used only sparingly. The lessons from other OECD nations strongly suggest that we would achieve far better outcomes if employers joined in partnership with educators to offer students part-time jobs that are directly relevant to their studies. Thus, students in health science programs might hold a front-line job in a hospital or long-term care facility. As part of this approach, employers could encourage students to continue their studies, and attempt to set their work schedules to accommodate their classroom demands.

We suspect many employers would soon find real value in such an approach. In healthcare, for instance, it could lead to a higher-quality, more motivated entry-level workforce, while providing a pipeline of people prepared to move up the healthcare career ladder. It could also help increase the diversity of the healthcare workforce. Tax incentives might be needed to encourage some employers to participate. But because a well-designed program would likely substantially increase the post-secondary completion rate, the long run benefits would almost surely outweigh the near-term costs.

We also need to greatly expand programs in which most learning occurs on the job, especially apprenticeships. The OECD's work demonstrates the exceptional benefits of the apprenticeship approach. In the U.S., there are currently only about 500,000 apprentices in programs registered with the Department of Labor, and perhaps an equal number in unregistered programs. But a 2009 study by the Urban Institute found that 86 percent of

sponsors would "strongly recommend" the program to others, and 80 percent said it helped them meet their need for skilled, productive workers. Completion rates are high. And another study found that adults who complete apprenticeship programs tend to increase their annual earnings far more than those who just attend community college. Yet the U.S. currently spends just a pittance on efforts to support and promote apprenticeships.[46]

Employers can also play a major role in opening doors for the more than 4 million young adults (aged 18 to 24) who have no more than a high school degree, and are disconnected from both employment and post-secondary education. Because employment is such a key milestone on the journey to adulthood, programs that help such youth to get jobs or participate in service programs seem especially promising. In addition, because this population is so easily discouraged, we should focus on programs that provide early victories for participants.

We recognize that all of this will require a significant cultural change. But as we've seen just over the last 15 years, as new technologies have spawned whole new career fields, and as those fields have remade our culture around the ubiquity of glowing rectangles, culture can change quickly when money is on the line. We are convinced that expanding and emphasizing work-linked learning would help us achieve far more promising results, including raising high school and college completion rates. Employers would also be major beneficiaries. Eventually, they would have access to a pipeline of employees that have already proven themselves on the job, and who are better trained. Surely that is a recipe for economic recovery and prosperity.

A NEW SOCIAL COMPACT WITH YOUTH

Developing a system that provides every young person with high quality pathways to adulthood will require that we make a leap forward in the collective responsibility we assume for the education and training of our young people. While educators will obviously continue to play a central role, meeting the pathways challenge will also require major contributions from the nation's employers and governments. We should begin by articulating a new social compact with America's young people. This compact should spell out what educators, employers and governments will do to provide pathways, and how they will support young people as they navigate them. In addition, it should clarify what we expect from young people.

Here again there are useful lessons from abroad. Several countries, including Great Britain, Australia, and the Netherlands, have developed highly visible national youth policies that in effect create a new social compact between adult society and young people. The message these governments deliver is that the country needs every young person to obtain at least an upper secondary diploma. The government will provide as much support as necessary to help ensure that young people meet this goal, but young people must take responsibility as well. These three countries have all raised the school leaving age to 18 for students who have not completed upper secondary and they require students to participate in education or training until they have obtained a credential. Dropping out puts them or their families at risk of losing social benefits. These policies play out differently in each country, but the underlying philosophy is one of "mutual obligation." There is increasing support for such youth policies across the political spectrum in Europe.

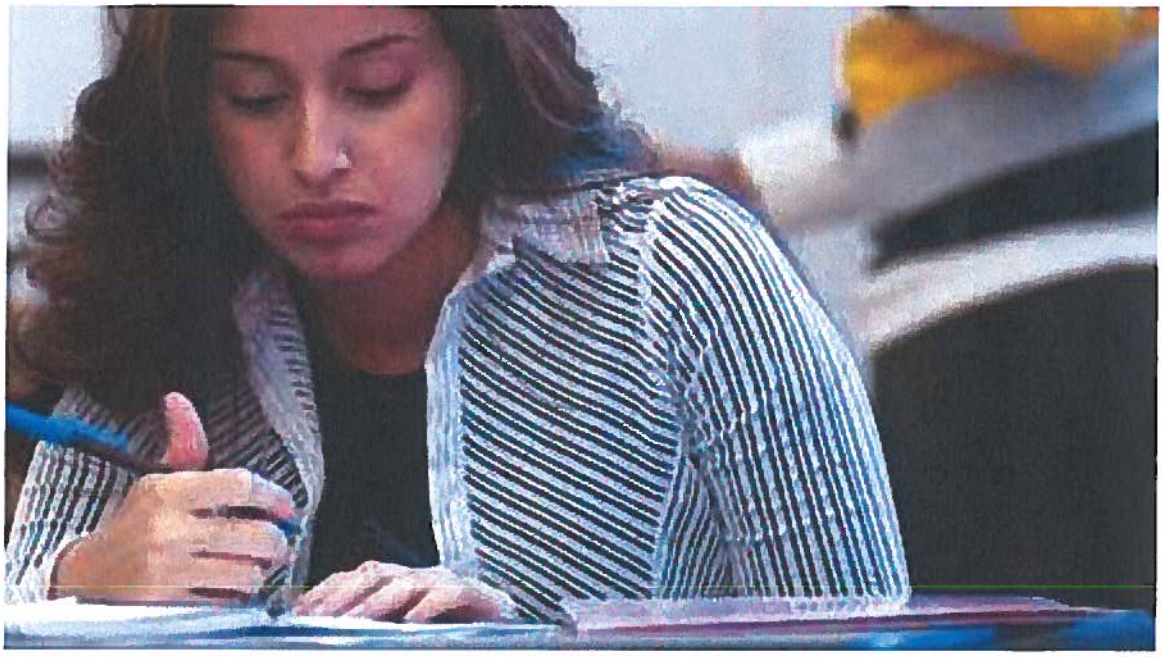
The compact's overarching goal should be that by the time they reach their early 20s, every young adult will be equipped with the education and experience he or she needs to lead a successful life as an adult. This compact should focus first on the urgent challenge of getting more young people to clear the initial but essential hurdle: graduating from high school. In the 21st century, failure to earn a high school degree has devastating implications for a young person's prospects. Economically, dropouts are at a severe disadvantage in the labor market, and are far more likely to be unemployed and/or to live in poverty. Socially, male dropouts are far more likely to end up in prison, while female dropouts give birth to a disproportionate share of the babies born out-of-wedlock. And because of the heavy costs of prison, welfare and other social transfers, the average dropout will actually be a net drain on society. Put another way, the average dropout contributes about $300,000 less to society than the average high school graduate.[47]

Some may question why we need a social compact at all. We believe it's required as a response to a profound change in the nature of the transition from adolescence to adulthood. Today, this transition takes far longer and is far more challenging than in earlier eras. And as the time they spend as "dependents" has lengthened, young people are increasingly turning to their families for financial support well beyond the age of 18. One study found that families now typically devote 10 percent of their annual income to supporting young adult children. In effect, the U.S. has privatized much of the system for providing supports needed by young adults.[48]

The problem is that as income inequality has widened, this has created a terribly uneven playing field. Children of affluent parents tend to do well in this privatized system. They are eight times more likely to earn college degrees than their low-income counterparts, and the financial support provided by their parents gives them enviable freedom to make the transition to adulthood in comfort. In stark contrast, middle class parents struggle to provide even a fraction of the same support. Their children are often forced to juggle college with work and take out huge student loans. Meanwhile, young adults from low-income families receive little financial or critical social-network resources that would help them make a successful transition. No wonder they are far less likely to complete college, or enter promising careers. Ultimately, millions of young adults find their families simply cannot provide all the supports they need.

Unfortunately, the institutions that serve young adults often reinforce these disparities. Community colleges, which serve many struggling young adults, are grossly under-resourced compared to the four-year colleges that many affluent students attend. One aim of the social compact would be to reduce these disparities, thus broadening opportunities for millions of young adults. For example, we should provide more aid and assistance to enable far more talented low-income students to complete college.

A social compact with our youth is hardly unprecedented in America. World War II was in effect an extraordinary youth development program. The unemployment of the Great Depression was replaced with near-universal service for young men, and many young women. These young adults were given enormous responsibilities. And after the War, the GI Bill helped many returning veterans complete a post-secondary education. It was hardly an accident that all this produced what's now known as the Greatest Generation.



At the national level the most tangible commitment we could make to a new social contract with young people would be to extend the scope of the Pell grant program to any post-secondary program that leads to "gainful employment in a recognized occupation."

If this language from the Higher Education Act, intended for proprietary schools but never enforced, were applied more broadly to all career-focused institutions and programs that accepted Pell recipients, it might significantly reduce the number of young people who leave higher education with large debt but minimal job prospects and strengthen the role of trade unions and community-based training programs with a strong record of job training and placement. If all low-income young people understood that upon graduation from high school they would have access to an individual education or training account they could use to finance job training, it might provide a powerful incentive to complete high school.

Such a system would send students a strong message that our society has a real stake in their success, and that they have a real choice about how to shape their future. Some of the extra cost might be offset by reform of our existing grant and loan system, designed to reduce the amount of money squandered on largely ineffective programs. For young people, the result would be a more exciting and engaging range of pathway options. And as a society, we might finally look forward to achieving the education and youth development goals that have eluded us for so long.

Fortunately, we are not starting from scratch in creating a social compact. We already have a wide range of organizations and successful programs that serve young people through the key age-and-stage transitions from middle school through high school and late adolescence into adulthood. At the national level we have the America's Promise Alliance, which together with other partners recently launched the Grad Nation campaign to address the dropout crisis.

And in the all-volunteer era, the U.S. military has become remarkably effective in supporting youth development. The military helps many recruits develop careers, while providing them with extensive financial supports, including housing, health care and income. The military has also invested heavily in training programs that enable high school graduates to use very sophisticated

equipment in very demanding situations–even as their civilian counterparts are typically rejected as unsuitable for such responsibility. In this environment, soldiers also get married and become parents sooner than their civilian counterparts. While there are huge risks associated with military service, the military's approach to education, work-based learning and career development offers important lessons to broader society.[49]

Meanwhile, at the local or regional level we have excellent examples of organizations that have taken on the challenge of creating community-wide structures to build comprehensive strategies to serve their young people. Such efforts include the work of the E3 Alliance in Austin, Strive in Cincinnati, and the newly formed Opportunity Agenda in Boston.

More cities need to be encouraged to follow these examples and invest in building an "umbrella" infrastructure to coordinate and manage a truly comprehensive social compact. This kind of effort must be organized by prominent leaders from the corporate, nonprofit, and public sectors who issue the rallying cry, designate an existing organization, or create a new one to coordinate the work and commit to sustained involvement. A key initial step is to create a "map" that documents both the pathways challenge, and the work that is already being done by existing organizations. The designated intermediary can then use the map to push for more collaboration and coordination among existing programs, carefully monitor outcomes, and marshal additional resources.

Meeting the Pathways challenge will require an enormous expansion of our existing efforts. We must rethink and reform the roles that employers and the public sector play in youth development, and we must create a new culture that strongly encourages and enables youth to succeed. It may seem daunting. Yet few other efforts have more potential to help America realize its true promise in the 21st century.

V. CONCLUSION

The American system for preparing young people to lead productive and prosperous lives as adults is clearly badly broken.

Failure to aggressively overcome this challenge will surely erode the fabric of our society. The American Dream rests on the promise of economic opportunity, with a middle class lifestyle for those willing to work for it. Yet for the millions of young Americans entering adulthood lacking access to marketable skills, the American Dream may be just an illusion, unlikely ever to come within their grasp. If we fail to better prepare current and future teens and young adults, their frustration over scarce and inferior opportunities is likely to grow, along with economic inequality. The quality of their lives will be lower, the costs that they impose on society will be higher, and many of their potential contributions to society will go unrealized. This is a troubling prospect for any society and almost certainly a recipe for national decline.

As President Obama has said, we now need every young American not only to complete high school, but to obtain a post-secondary credential or degree with currency in the labor market. Most Americans now seem to have gotten the message that a high school education is no longer sufficient to secure a path to the middle class. As we have noted, college enrollment has been steadily rising over the past decade. The problem is completion: nearly half of those who enroll leave without a degree.

While the economic returns to "some college"—a category no other country uses in calculating higher education outcomes—are greater than those for young people with only a high school diploma, they vary widely depending on family background. Because of family connections and social networks, a middle-class student dropping out of a selective college is much more likely to find his way into a decent job than a working class student dropping out of a less selective urban university. However, a young person of whatever background who leaves community college after completing a one-year occupational certificate program—also counted in our "some college" category—may earn more than many students who complete a four-year degree program.

As the recent OECD reports suggest, other countries manage to equip a much larger fraction of their young people with occupationally relevant skills and credentials by their early twenties. Consequently, these young people experience a much smoother transition into adulthood, without the bumps and bruises so many of our young are now experiencing. The lessons from Europe strongly suggest that well-developed, high quality vocational education programs provide excellent pathways for many young people to enter the adult work force. But these programs also advance a broader pedagogical hypothesis: that from late adolescence onward, most young people learn best in structured programs that combine work and learning, and where learning is contextual and applied. Ironically, this pedagogical approach has been widely applied in the training of our highest status professionals in the U.S., where clinical practice (a form of apprenticeship) is an essential component in the preparation of doctors, architects, and (increasingly) teachers.

When it comes to teenagers, however, we Americans seem to think they will learn best by sitting all day in classrooms. If they have not mastered basic literacy and numeracy skills by the time they enter high school, the answer in many schools is to give them double blocks of English and math. Northern European educators, by contrast, believe that academic skills are best developed through embedding them in the presentation of complex workplace problems that students learn to solve in the course of their part-time schooling. These educators also focus on helping students understand underlying theory -not only how things work, but why.

This philosophy isn't simply about learning: it's also about how to enable young people to make a successful transition to working life. What is most striking about the best European vocational systems is the investment, social as well as financial, that society makes in supporting this transition. Employers and educators together see their role as not only developing the next generation of workers, but also as helping young people make the transition from adolescence to adulthood. If we could develop an American strategy to engage educators and employers in a more collaborative approach to the education and training of the next generation of workers, it would surely produce important social as well as economic returns on investment. Let us embark on this vital work.

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Recommended reference: William C. Symonds, Robert B. Schwartz and Ronald Ferguson, February 2011. *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century.* Report issued by the Pathways to Prosperity Project, Harvard Graduate School of Education.

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ENDNOTES

1 The information in these first two paragraphs is drawn from *The Race between Education and Technology* by Claudia Goldin and Lawrence F. Katz (Belknap Press of Harvard University, 2008). See especially the introduction and chapters 5-7.

2 This is vividly documented by reports published by Andrew Sum and his colleagues at Northeastern's Center for Labor Market Studies. See especially the July, 2010 report, "Vanishing Work Among U.S. Teens 2000-10: What a Difference A Decade Makes."

3 *The Forgotten Half* was published in Nov., 1988, as the final report of the William T. Grant Foundation's Commission on Work, Family and Citizenship. Twenty years later, it is clear that it was a remarkably prescient report.

4 These figures are taken from the June, 2010 report from Georgetown's Center on Education and the Workforce, *Help Wanted: Projections of Jobs and Education Requirements Through 2018*. See especially the Introduction and Part 1.

5 These figures are also drawn from the Center on Education and the Workforce report. As the authors write, "This shift represents a sea change in American society. Essentially, postsecondary education or training has become the threshold requirement for access to middle-class status ..." (p. 13)

6 These figures are taken from "Education Pays 2010," which was prepared by the College Board Advocacy and Policy Center and released in September, 2010.

7 The Georgetown Center is hardly alone in concluding that "middle skill" jobs will offer well-paying opportunities for those with less than a B.A. Economists Harry Holzer and Robert Lerman have made this case in several recent papers. And in a July, 2009 report–"Preparing the Workers of Today for the Jobs of Tomorrow"–the Council of Economic Advisors concluded that the fastest job growth is likely to come "among occupations that require an associate's degree or a post-secondary vocational award."

8 This analysis is taken from Part 4 of the Center on Education and the Workforce report, which offers detailed projections on job openings–and the educational credentials they will require–across a full range of industries.

9 Tony Wagner also offers a compelling analysis of this problem in his 2008 book, *The Global Achievement Gap*. After interviewing many leading employers, Wagner concluded that today's teens need to master "seven survival skills," including the ability to access and analyze information, collaboration and problem solving. But he concluded that today, "even our best schools don't teach the new survival skills our children need."

10 The report is entitled, *A Developmental Perspective on College and Workplace Readiness*, and was published by Child Trends in 2008. The "Chart of Key Competencies" on pp. 32-34 of the report offers an especially helpful summary of the findings. The report can be accessed through the following link: http://www.childtrends.org/Files/Child_Trends-2008_09_15_FR-ReadinessReport.pdf

11 One recent example of this concern is the report, *Rising Above the Gathering Storm Revisited*, which was published by the National Academies in Sept. , 2010. This report, authored by the same prominent committee of business executives and other leaders who produced the original "gathering storm" report in 2005, concludes that America's ability to compete for jobs in the global economy has actually deteriorated over the past five years.

12 This data is drawn from reports published by the Center for Labor Market Studies at Northeastern. We found two reports especially helpful: "Vanishing Work Among U.S. Teens 2000-2010," and "How the U.S. Economic Output Recession of 2007-2009 led to the Great Recession in Labor Markets." Both reports were published in July, 2010.

13 This conclusion is based in part on a Pathways Project analysis of U.S. Census data for 2006-08 on the employment to population ratio for young adults aged 25 to 30.

14 These remarks are taken from President Obama's address to a Joint Session of Congress on Feb. 24, 2009.

15 These graduation rates were calculated using 2006 graduation rate data from the National Center for Higher Education Management Systems and NCES/IPEDS.

16 For a more detailed discussion of this problem, see *The College Completion Agenda: 2010 Progress Report*, pp. 10-14, which was published by the College Board.

17 See *America's Perfect Storm: Three Forces Shaping our Nation's Future* for a fuller discussion of the nation's changing demographics, and the implications for educational attainment. This report was published by the Educational Testing Service in 2007.

18 *The College Completion Agenda* (see note 16) contains a full discussion of The College Board's goals.

19 *The Silent Epidemic*, a 2006 report prepared by Civic Enterprises in association with Peter Hart Associates, dramatically illustrates this problem. Surveys conducted as part of this report found that 81 percent of dropouts felt that efforts to make high school more relevant–including opportunities for real-world learning and connecting school to work–would have encouraged them to stay in school.

20 This data is based on graduation rates of two and four-year programs in 2006. We used the NCES/IPEDS Graduation Survey and data from the National Center for Higher Education Management Systems.

21 Drawn from presentations by and discussions with Andreas Schleicher of the OECD Directorate for Education.

22 For a fuller analysis, see *Transition to Adulthood*, published in 2010 by The Future of Children, a collaboration of the Woodrow Wilson School at Princeton and the Brookings Institution. This data was drawn from one article in this volume: "What's Going on with Young People Today? The Long and Twisting Path to Adulthood," by Richard Settersten Jr. and Barbara Ray.

23 Taken from the report—*Gender Equity in Higher Education: 2010*—issued by the American Council on Education. The report also found that among undergraduate students over 25, women outnumber men by a two-to-one margin. The largest gender gap was found among African Americans, where 63 percent of all undergraduates were women.

24 This section of the report draws on contributions by Nancy Hoffman and Robert Schwartz to OECD's *Learning for Jobs* study, and from a forthcoming publication by Hoffman on lessons for the U.S. from VET in OECD countries.

25 These features of the dual system are critically important, since in heavily-unionized Germany it is difficult and expensive to fire people once hired. In contrast, third-year apprentices are typically paid only half as much as a regular new hire, and can be easily fired if they don't work out.

26 The abysmal performance of the U.S. is all the more striking when you consider relative education expenditures. U.S. spending on education has increased significantly in recent years, and in 2004 ranked second highest among OECD nations as a percentage of GDP. The U.S. also devotes a larger share of its education spending to higher education than do all other OECD countries. This is another powerful indicator that there is a fundamental problem with the U.S. approach to education—with our pathways system.

27 There is a growing recognition in Korea that its previous "college for all" approach has produced a glut of college graduates. In March, 2010, Korean President Lee Myung-bak declared: "Reckless entrance into college pushes up the people's burden for private education and exacerbates youth unemployment, bringing huge losses to households and the country alike... (In contrast), students (at vocational schools) don't need private education and can get jobs without difficulty."

28 Unpublished analysis by James Stone III, director of the National Research Center for Career & Technical Education, shows that half the states that are part of the Achieve network (which champions increased high school graduation requirements) experienced a decrease in the percentage of high-school completers between 2003 and 2007. Similarly, Stone found that states that require only two math and two science courses for graduation have an 80 percent school completion rate, while states that require three or four math and science classes have a completion rate of just 74 percent. Stone concludes: "I think this dramatic increase in requirements contributes to the large number of youth choosing not to complete high school. The school day is a zero sum game. As more core academics are added to graduation requirements, the less time students have to engage in the kind of coursework that might intrigue them."

29 *How High Schools Become Exemplary*, a report recently published by The Achievement Gap Initiative at Harvard University, documents how 15 public high schools managed to raise achievement and lower the achievement gap thanks to focused, strong leadership.

30 Cited in "CTE's Role in Career Guidance," published by the Association for Career and Technical Education, 2008.

31 From the chapter, "Young Adults and Higher Education," by Thomas Brock, in the book, *Transition to Adulthood*. (see note 22 above)

32 To learn more about Project Lead the Way, visit their website at www.pltw.org

33 This data was taken from, "Career Academies: A Proven Strategy to Prepare High School Students for College and Career," by David Stern, Charles Dayton and Marilyn Raby. An updated version of this study was published in 2010 by the University of California Berkeley.

34 *Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment and Transitions to Adulthood*, by James Kemple with Cynthia Willmer, issued by MDRC in 2008.

35 See, for example, *Ready for Tomorrow: Six Proven Ideas to Graduate and Prepare More Students for College and 21st Century Careers*, published by SREB in Nov., 2009.

36 See "Vocational Education in Massachusetts," published by the Pioneer Institute in 2008, for more information.

37 Drawn from *Learning for Jobs*.

38 From "Young Adults and Higher Education," by Brock. (see note 31)

39 Association for Career and Technical Education

40 The Center figures that employers spend $313 billion a year on informal "on the job" training, and another $141 billion on more formal employer-provided education programs. At many companies, completion of a post-secondary degree is in effect a gateway to these training programs.

41 See www.usfirst.org for more information about the program, its history and impact.

42 This information is taken from a presentation by Allen Phelps, director of the Center on Education and Work, at the University of Wisconsin -Madison.

43 See NAF's website, www.naf.org for more information about their academies and the impact of their programs.

44 See *Dollars and Sense: How "Career First" Programs Like Year Up Benefit Youth and Employers*, published by Jobs for the Future in 2010.

45 The Pathways Project has been involved with this effort, which is being led by the Illinois Business Roundtable, the Illinois Department of Commerce and Economic Opportunity, the Illinois State Board of Education and Blouke Carus, chairman of Carus Corp.

46 See *Training Tomorrow's Workforce*, by Robert Lerman, a research report published by the Urban Institute in December, 2009.

47 See "The Consequences of Dropping Out of High School," prepared by Andrew Sum and colleagues at the Center for Labor Market Studies at Northeastern and published in October, 2009.

48 "What's Going on with Young People Today," the chapter by Settersten and Ray (see note 22 above) contains a fascinating discussion of the implications of the lengthening transition to adulthood.

49 "The Military and the Transition to Adulthood," a chapter in *The Transition to Adulthood* (see above) by Ryan Kelty, Meredith Kleykamp, and David Segal examines how the military supports the transition to adulthood in considerable detail.

ABOUT THE PATHWAYS TO PROSPERITY PROJECT

The Pathways to Prosperity Project was launched in October, 2008, and was initially known as "The Forgotten Half Project." In early 2009 we changed the name to signal that we were more focused on finding solutions than on calling attention to the problem. The project is based at the Harvard Graduate School of Education. It is led by Robert B. Schwartz, Academic Dean and Francis Keppel Professor of Practice at HGSE, and Ronald Ferguson, senior lecturer at HGSE and the Kennedy School of Government and director of the Achievement Gap Initiative at Harvard University. William C. Symonds is the full-time project director. He has been primarily responsible for the project's work with partners in several different geographies, as well as for the writing of much of this report in collaboration with Schwartz and Ferguson.

From the beginning, we intended to work with people and organizations in several different regions eager to collaborate in developing solutions to the forgotten half challenge. We have now worked with partners in Silicon Valley, Illinois and Boston, as well as people interested in developing more effective pathways to careers in healthcare.

In Silicon Valley, our work has focused on encouraging creation of a regional, collaborative effort to address the challenge. We helped convene a conference in early 2010, entitled, "Creating Pathways to Prosperity for Young Adults in Silicon Valley," which was hosted by Cisco, and attracted over 100 leaders from the business, education and the non-profit communities. This led to the formation of an advisory board that is promoting collaboration and new initiatives. In Illinois we have been working with a group of state and national leaders on an ambitious effort to improve career education in Illinois high schools. In Boston, we helped convene a meeting of key stakeholders with The Boston Foundation, which then led an effort to map and analyze programs that support post-secondary pathways in the Boston region, which will help to inform the new Boston Opportunity Agenda. In healthcare, we have worked with educators, government and industry partners to examine how pathways to healthcare careers might be enhanced by improving healthcare career education, and intend to convene a national conference on this issue.

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