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HOW THE OTHER HALF LEARNS

Reorienting an Education System That Fails Most Students

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MI

About the Author

Oren Cass is a senior fellow at the Manhattan Institute, where his work on strengthening the labor market addresses issues ranging from the social safety net and environmental regulation to trade and immigration to education and organized labor. He also writes extensively on the nature and implications of climate change and on the process of formulating and evaluating public policy.

Cass has written for publications including the *New York Times*, *Wall Street Journal*, *Washington Post*, *Foreign Affairs*, *National Affairs*, and *National Review*, and he regularly speaks at universities and testifies before Congress. His 2018 book, *The Once and Future Worker: A Vision for the Renewal of Work in America*, has been called "the essential policy book for our time" and "an unflinching indictment of the mistakes that Washington has made for a generation and continues to make today."

Before joining MI, he held roles as the domestic policy director for Mitt Romney's presidential campaign in 2012, as an editor of the *Harvard Law Review*, and as a management consultant in Bain & Company's Boston and New Delhi offices. He earned a B.A. in political economy from Williams College and a J.D. from Harvard Law School.

Contents

Executive Summary

America's public education, from kindergarten through the state university, is designed to produce college graduates. Those who stop short of at least a community-college diploma are widely regarded as failures, or at least victims of a failed system. Yet most Americans fall into this category, and current trends offer little hope for improvement. Politicians and policymakers are finally paying attention to this population—which, roughly speaking, comprises the working class—and calls for more vocational education and apprenticeships have become fashionable. But a more fundamental reordering of the nation's misshapen educational infrastructure is necessary if alternatives to the college pipeline are to take their rightful place as coequal pathways to the workforce.

Key Findings

- Fewer than one in five students travel smoothly from high school diploma to college degree to career; most Americans fail to earn even a two-year associate's degree. Students are as likely to drop out of high school, skip higher education, drop out of college, or earn a degree unnecessary to their subsequent jobs. Decades of reform and increased spending have failed to improve this situation. High schools are not producing students better prepared for college, and young people are not attaining bachelor's degrees at higher rates.

- Contrary to conventional wisdom, a college degree is neither necessary nor sufficient for reaching the middle class. The wage and salary distributions for college graduates and high school graduates overlap significantly; high-earning high school graduates in a wide variety of fields that require no college degree earn substantially more than low-earning college graduates.

- While the potential demand for a serious Career and Technical Education (CTE) pathway is huge, the federal government spent only $1 billion on CTE in 2016 but more than $70 billion subsidizing college attendance. State and local governments spent an additional $80 billion on college and almost nothing on expanding CTE pathways. Federal spending on college has more than doubled since 1990; spending on CTE has declined.

- The standards- and testing-based regimes implemented to improve academic performance in traditional high schools are ill-suited to a noncollege pathway. CTE schools should be exempted from them and alternative standards and measures designed. Education funding should begin from the principle that a student pursuing a noncollege track deserves at least the same level of public support as one pursuing college.

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Introduction

The president of Amarillo College encounters two young people on a September morning. Alexandra, an 18-year-old woman, reports recently getting clean. Eddie, a 20-year-old man, has spent time in jail. Russell Lowery-Hart knows what they should do next: enroll in his community college, on the spot.[1]

His advice is well intended. It is also extremely dubious. Fewer than half the students who enroll at Amarillo will return for the second year; fewer than 15% of those who attend full-time will graduate from the two-year program on time, and fewer than one-third will graduate within four years.[2] Equally damning, six years after enrolling full- or part-time at Amarillo, only 54% are earning more than the $25,000 typical of someone with only a high school diploma. After accounting for the opportunity cost of the time spent in school, the tuition dollars paid, and the debts many will accrue, the median student is almost certainly worse off for having started.[3]

Even these data paint too rosy a picture. They describe the aggregate experience across all students—including those who are prepared for the college's courses, have an intentional plan for completion, and benefit from structural support at home. But who succeeds and who fails is not random, and the odds are much worse for the marginal student drawn into the system by the cultural drumbeat of college-or-bust and the rivers of cheap federal cash subsidizing the endeavor. For Alexandra and Eddie, who were behind even that marginal student until their chance encounter with a college president, the bet they are encouraged to make with their lives is a foolish one.

The college dropout is not an outlier in the modern American education landscape. He is the standard: both the median and the modal outcome. After half a century of intensive reform efforts, only 36% of Americans aged 25 to 29 have earned a bachelor's degree—add in associate degrees, and the total still reaches only 46%. The share attaining a BA by age 25 has not risen for two generations.

Yet because college completion correlates with better career prospects and higher earnings, the cultural imperative persists to push more people into the college pipeline. The public education system remains oriented entirely toward college preparation, and funding flows almost exclusively to those pursuing the elusive golden ticket. For those who get a degree, all that focus and funding represents a regressive investment in the economy's future winners. For those who don't, it represents a waste of their own time and money, as well as limited public resources. Those latter Americans are told that they have failed. When a system fails the majority of the people it is intended to serve, the system is the failure.

Refocusing education reform from an obsession with college to a respect for the other pathways

that young people can follow into the labor market will be a long, slow process. In part, the challenge is one for the broader culture of parents and students, teachers, and employers. Much effort has gone toward rebranding alternative pathways as equally rigorous and likely to lead toward postsecondary education, lest anyone think its participants "academically deficient."[4] But of course, many students *are* academically deficient. They deserve an education system geared to their abilities and needs.

Education reformers will have to realize that for every impoverished child admitted to the Ivy League, there are hundreds who need preparation for attaining steady jobs that will support stable families. That success is no less important. Policymakers need to act, too, opening the space for reform, creating the incentive for it, and reinforcing the message that schools must meet students where they are.

This report proceeds in three parts. Part one reviews the results from 40 years of efforts to strengthen the high school to college to career pipeline and finds little cause for celebration or optimism. Part two describes the current scale of alternative pathways and the relative allocation of resources in the secondary and postsecondary education system, showing the degree to which they are skewed toward college. Part three describes the policy structures that reinforce the present system and suggests reforms that could begin a process of reorientation toward the students in greatest need of support, for whom we do the least today.

I. The Broken Pipeline

Each cohort of American students runs a gauntlet of checkpoints on the journey from middle school to life after school. These checkpoints allow analysts to monitor the overall health and progress of the education system. Are enough students reaching each checkpoint, and are they prepared to progress toward the next one? Over time, are more students arriving better prepared at further points? Unfortunately, the results are discouraging.

In 1970, the United States spent $6,100 per K–12 student and $16,900 per postsecondary student. In 2015, those amounts were $14,000 and $27,200 (all figures in 2016–17 dollars).[5] But progress has remained elusive. Among the fairly undifferentiated cohort that arrives in ninth grade each year, students will split into five roughly even categories:

- One-fifth fail to complete high school on time
- One-fifth graduate high school but do not proceed to college
- One-fifth enroll in college but drop out
- One-fifth complete college but fail to find a job requiring the degrees earned
- One-fifth travel successfully through the high school to college to career pipeline

High School Completion

In 1970, 79% of public school students earned a diploma within four years of entering the ninth grade. By the mid-1990s, this figure had fallen to 71%. From there, it rose slowly back to 79% in 2011, breaking 80% in 2012, and reaching 82% in 2013.[6] Though the trend may look encouraging, attaining a graduation rate barely above the 1970 level is hardly impressive. Worse, it appears more a function of declining standards than of improving achievement.

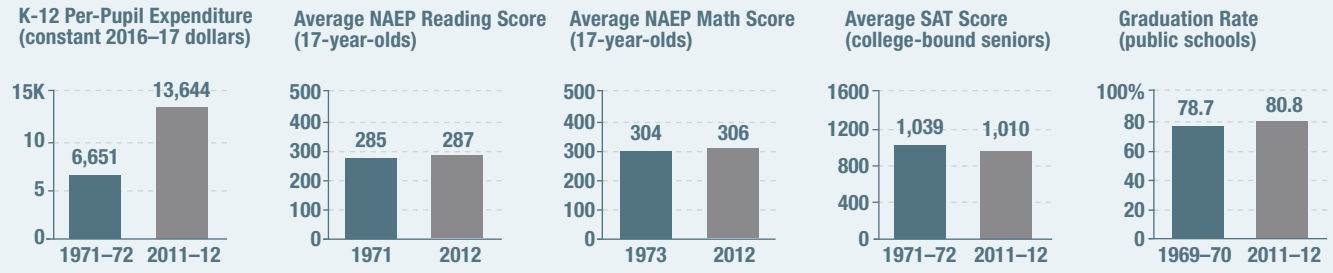
The Heritage Foundation and the Brookings Institution have shown how states from New York to Texas to California lowered or eliminated their graduation requirements and manipulated their data in pursuit of a higher rate.[7] National Public Radio has likewise reported on creative accounting procedures and the use of less rigorous, "alternative" diplomas from Camden to Chicago to Detroit.[8] In some instances, administrators opted for outright fraud. An investigation by the U.S. Department of Education in Los Angeles found widespread misclassification of graduates.[9] In Washington, D.C., the graduation rate leaped from 53% in 2011 to 73% in 2017, but a citywide audit concluded that one-third of the graduating students had failed to meet district requirements.[10]

The proof is in standardized test scores, which have not improved (**Figure 1**). The Long-Term Trend National Assessment of Educational Progress (NAEP) has tested 17-year-old students nationwide in select years since 1971. The average NAEP score in reading was 285 in 1971, 288 in 1996, and 287 in 2012.[11] In mathematics, the average score was 304 in 1973, 307 in 1996, and 306 in 2012.[12] SAT scores have declined, from an average of 1039 in 1972 to 1010 in 2012.[13] In most states, only college-bound seniors are likely to take the SAT, which means that declining scores may reflect the addition of more low-scoring students to that pool rather than worse absolute performance for a comparable student cohort. What the declines do not reflect is a system that is preparing more students for greater success.

In 2013, after years of study, the National Assessment Governing Board, responsible for the NAEP, established threshold scores that reflected academic pre-

FIGURE 1.

Educational Spending vs. Test Scores and Graduation Rates



Source: Digest of Education Statistics 2016, tables 236.55, 221.85, 222.85, 226.20, 219.10

paredness for college. By these measures, fewer than 40% of high school seniors achieved sufficiently high reading or math scores that year. The share demonstrating preparation in *both* reading and math would presumably be lower still. While the methodology prevents tracing the result for math historically, the share prepared in reading was lower in 2013 than in 1992—a finding that holds broadly across racial groups. At no point from 1992 to 2013 did 20% of African-Americans or 25% of Hispanics achieve reading scores that would indicate preparedness for college.[14]

College Enrollment

The top-line numbers seem impressive: of the 3.14 million students who graduated from high school in the spring of 2016, 2.19 million (70%) enrolled in college that fall. By comparison, with the college enrollment rates of the 1970s, only 1.54 million (49%) would have enrolled.[15]

The 650,000 additional enrollees were not, however, the result of steadily increasing or uniformly distributed increases in enrollment. More than two-thirds of the gain was attributable to increasing rates between the 1970s and 1990s; less than one-third was the result of increases that occurred more recently. Increasing enrollment has also occurred disproportionately among women and, specifically, among women attending four-year institutions. Of the 650,000 additional enrollees, 60% were women. Those women were three times as likely to enroll in four-year, as compared with two-year, programs. By comparison, the additional men were more likely to enroll in two-year programs.[16]

All these imbalances—toward gains between the 1970s and 1990s, for women, and for four-year degrees—suggest that a central driver of rising enrollment has been a shift in social norms concerning gender. This is a positive development but not one for which the education system can claim credit.

In any event, many students enrolling in college are every bit as unprepared as the testing data predict. The U.S. Department of Education reports that half of the incoming students in 2003 took at least one remedial course, and many more needed, but did not receive, remediation. The California State system, which mandates remediation for all students who fail to meet proficiency thresholds, places 80% of students in remedial classes.[17]

Recent years have seen a decline in remedial course enrollments, but this may be a result of colleges avoiding it rather than students requiring less of it.[18] Students who are required to take remedial courses typically struggle to complete them and are subsequently less likely to complete their degrees. While this would appear to be a consequence of those students lacking the capability to succeed in college, some analysts instead assert that remedial courses are the *cause* of the poor outcomes.[19] In 2017, the California State University system announced that it would eliminate its remedial courses. James T. Minor, a "senior strategist for academic success in the chancellor's office," explained that relegation to remedial classes "sunk a lot of ships" because "it invites students to question whether or not they belong in college."[20]

Time will tell whether the shift away from remediation indeed boosts the fortunes of those who need it, leads to a watering down of the standard curriculum to accommodate the less prepared students, or abandons those students to even higher drop-out rates.

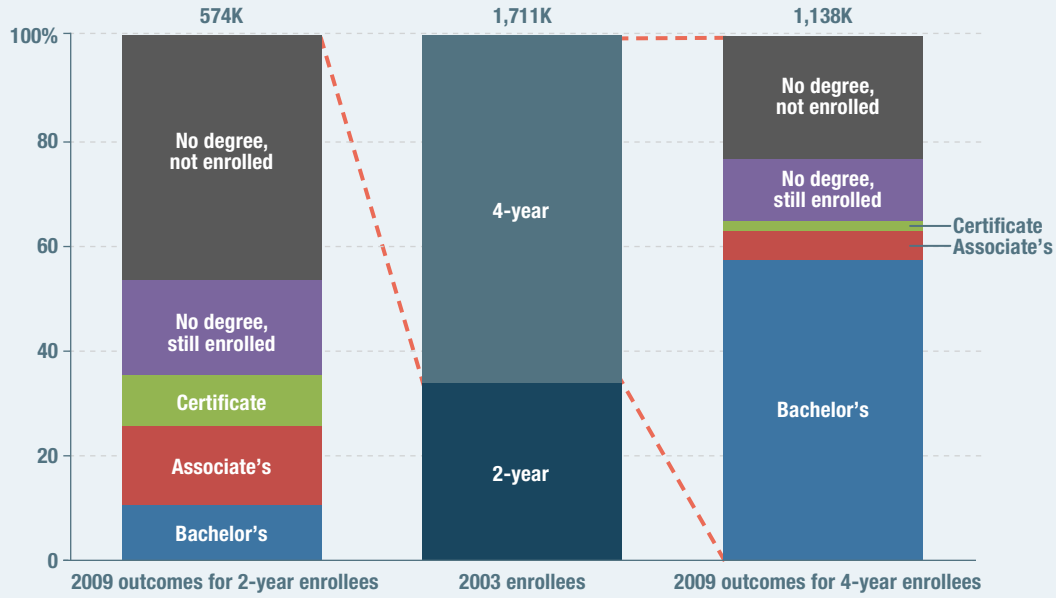
College Completion

The most comprehensive view of college completion rates follows the cohort that enrolled in 2003 (**Figure 2**).[21] Of the 1.7 million students who began their course of study that fall—574,000 in two-year colleges and 1.1 million in four-year colleges[22]—six years later, in the spring of 2009, just over half had obtained any credential at all:

FIGURE 2.

College Enrollees After Six Years

Students enrolling in college, Fall 2003



Source: Digest of Educational Statistics 2016, table 326.40

- 74,000 had earned certificates
- 138,000 had earned associate's degrees
- 720,000 had earned bachelor's degrees
- 245,000 were still in school
- 535,000 had dropped out

Among those initially enrolled in community college, 26% had obtained at least an associate's degree; among those initially enrolled in a four-year college, 58% had completed a bachelor's degree.

While no comparably comprehensive survey exists for the current decade, overall completion rates have changed little since 2003, so those data should provide a fairly accurate picture of more recent cohorts as well. For students enrolling in full-time, two-year programs in 2004, 28% had earned their associate's degree by 2007 from the institutions at which they started; for those enrolling in 2013, 30% had achieved the same by 2016.[23] For students enrolling in four-year programs in 2004, 58% had earned their bachelor's degree by 2010 from the institutions at which they started; for those enrolling in 2010, 60% had achieved the same by 2016.[24]

Efforts to increase college enrollment tend to show little effect on ultimate college completion. For instance, a study of the Florida Tax Credit Scholarship, which helps low-income residents send their children to private schools, found that participation in the program boosted college *enrollment* rates by 6 percentage points—almost entirely for community college. Yet for students who entered the program before high school, the increase in associate's degree *attainment* was only 0.6 points; for those entering the program in high school, attainment did not improve at all.[25] More broadly, *Education Next*'s Jay Greene has written:

> We have a number of studies that look at short-term and narrow effects of nudges to get students into college. Sure enough, if we push (I mean, nudge) people to enroll in college, they tend to do that. All that shows is that people believe we are experts and are willing to substitute our expert advice for them (even though we know almost nothing about them) for their own, better-informed judgment about what they should do. The real proof of college-going nudges is not whether people listen to us, but whether that helps them long-term. Those long-term results have not yet been published, but those results exist and I believe—based on leaked drafts—that the short-term benefits go away or even turn into harms after a few more years. That is, students who didn't think they were ready for college but were pushed into attending may have difficulty

finishing, and other students who enroll later may be better prepared at that point to succeed, causing the overall effect of these nudges to be null or even negative.[26]

As Greene notes, many students should pursue college later, rather than never pursue it. Indeed, many students who drop out along the path to college completion do ultimately return. All told, 46% of 25- to 29-year-olds hold at least an associate's degree. But the "lifetime learning" perspective is discouraging in its own way: at least 46% of *every* age cohort younger than 50 also hold at least an associate's degree.[27] For each of those cohorts, at least 36% hold a bachelor's degree. On both measures, the 25- to 29-year-olds are the least educated.[28]

Employment

The motivation behind intensive efforts to push students through the college pipeline stems in large part from the assumption that a college degree is both necessary and sufficient to succeed in the 21st-century labor market. Data do not support that assumption.

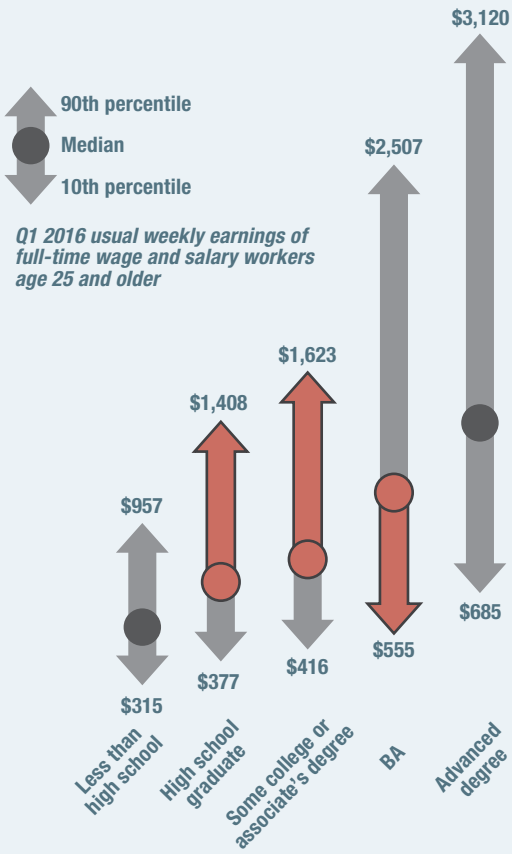
A college degree is by no means a guarantee of career success. The Federal Reserve Bank of New York tracks the share of college graduates employed in "noncollege jobs"—defined as those where the majority working in a job do not consider a bachelor's degree necessary to do it. As of early 2018, more than one-third of employed college graduates worked in noncollege jobs. For recent graduates (aged 22–27), that figure rose to 43%,[29] most of whom were working in sales, office and administrative support, or low-skill service positions.[30]

Nor is such underemployment a temporary career blip. Burning Glass Technologies and the Strada Institute studied millions of résumés in job-search databases. Their research similarly found that 43% of graduates are underemployed in their first job and that the majority of those graduates remain underemployed 10 years later.[31]

Conversely, workers with only high school diplomas do not necessarily fare worse than those with college degrees. Certainly, the average wages for a college graduate are far higher. But what often escapes notice is that the *overlap* in the wage distributions for the two groups is also substantial (**Figure 3**). According to Bureau of Labor Statistics (BLS) data,[32] the median full-time worker with only a high school diploma earned $679 per week in the first quarter of 2016, while the median for a bachelor's degree was $1,155. But a worker at the wage distribution's 90th percentile

FIGURE 3.

Earnings Overlap by Education Level



Source: BLS, "Weekly Earnings by Educational Attainment in First Quarter 2016," May 11, 2016

for high school diploma holders earns $1,408, while one at the 10th percentile for bachelor's degree holders earns only $555. In other words, the wage range for roughly the top half of high school graduates ($679 to $1,408) is substantially higher than for the bottom half of college graduates ($555 to $1,155).

This substantial overlap could be specious if the higher-earning high school graduates are the older and more experienced ones while the data for lower-earning college graduates reflect those just out of school. But analysis of U.S. Census data by the Georgetown University Center on Education and the Workforce shows that this is not the explanation. There, researchers studied the distribution of *lifetime* earnings at various education levels and found that 14% of high school graduates earned more than the median bachelor's degree holder and 30% earned more than the median associate's degree holder.[33] If the study's reference points were not the median college degree earners

but rather ones struggling at the 10th or 20th percentile, the shares of high school graduates with better lifetime earnings would be dramatically higher.

A separate BLS analysis confirms this conclusion from the perspective of job categories. Among more than 50 million U.S. jobs in occupations with an entry-level requirement of only a high school diploma, 25% paid at least $25 per hour in 2017. Among nearly 30 million in fields requiring a bachelor's degree, 25% paid less than $25 per hour.[34] Especially if the marginal student who could attend college but would struggle is likely to land in the top half of the former category and the bottom half of the latter, the labor-market benefits of a bachelor's degree—let alone an associate's degree—are far lower than the dramatic "college graduates earn twice as much" that is often emphasized by comparing median with median.

What Do Jobs Pay?

The stereotypical well-paying, noncollege job is in manufacturing or a trade such as plumbing or HVAC maintenance, and with good reason. The median annual wage among more than a million American plumbers and electricians exceeds $50,000; 10% earn more than $90,000. Another million Americans work as industrial machinery mechanics and first-line supervisors of production workers—again, with median earnings in the $50,000–$60,000 range and 10% reaching the $80,000–$100,000 range.[35]

But jobs like these also exist throughout the economy. In the health-care sector, half a million clinical laboratory and radiologic technicians achieve earnings in a comparable range. For hundreds of thousands of first-line supervisors of housekeeping and landscaping workers, median earnings are $40,000–$50,000, and 10% reach $60,000–$80,000.The same goes for 700,000 licensed practical and vocational nurses. The median wage among 100,000 massage therapists is $40,000.[36]

In high-tech fields, noncollege jobs are common. For more than 600,000 computer support specialists, the median wage is $50,000 and 10% earn more than $80,000.[37] Further, Mark Muro and colleagues at the Brookings Institution have shown that fields assumed to require bachelor's degrees often do not. Almost 40% of 900,000 jobs in what they call "mid-tech"—computer systems analysts, computer network support specialists, and computer network architects—are held by workers with less than a bachelor's degree.[38] While the workers without college degrees in those fields may be relatively lower paid, annual earnings at the 10th percentile of the respective wage distributions are $54,000, $37,000, and $58,000.[39]

The Fortunate Fifth

From one perspective, the U.S. education system's performance can appear adequate or even heartening. The vast majority of students graduate from high school. Most go on to college. Most who enroll will ultimately earn a degree. Most who do earn a degree will find jobs that require their degrees. Looked at another way, the same data depict a system that divides students into five similar-size groups, only one of which has been well served.

Consider a cohort of 100 students arriving in the ninth grade (**Figure 4**):

- Of the 100, **18** of them won't graduate on time from high school
- Of the 82 who do graduate, **25** won't enroll in higher education
- Of the 57 who do enroll, **29** won't earn even an associate's degree after six years
- Of the 28 who do graduate, **12** will land in jobs that do not require a degree
- Only **16** will successfully navigate the high school to college to career pipeline—the current aim of the education system[40]

These are the hardly stellar results after decades of education reform and massive increases in spending. Ongoing efforts continue to focus on the exact same goal: college preparation. Little attention or funding goes to an alternative.

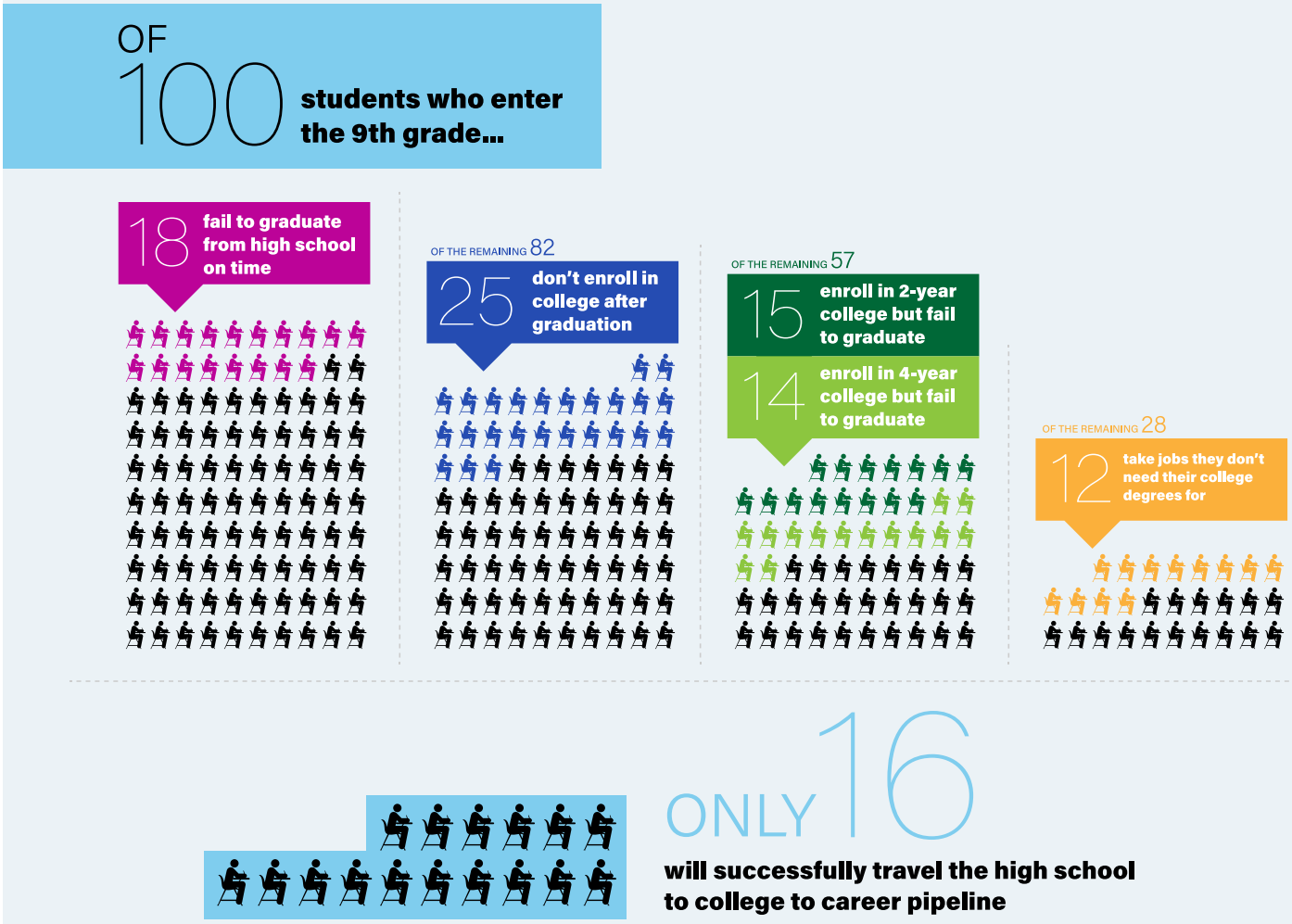
II. An Alternative Track

The best alternative, or alternatives, to the college pipeline is an open question. Broadly speaking, it will be vocational in nature—a pathway to prepare young men and women for productive participation in the labor force that relies less on academics and more on concrete skills and real-world experience. The term "vocational" has fallen into disfavor, and programs along these lines are now more often referred to as "Career and Technical Education" (CTE). The general concept remains the same, though in the specifics a variety of models continue to evolve.

CTE, along with programs like apprenticeships that aim to smooth the transition for young people into good jobs that do not require college degrees, has

FIGURE 4.

The Fortunate Fifth



Source: Digest of Education Statistics 2016, tables 219.10, 302.10, 326.40; Federal Reserve Bank of New York, "Underemployment Rates for College Graduates," March 2018

become hugely popular with politicians, policymakers, and educators—at least as a talking point. Yet their scale remains minuscule relative to the need, and their mission too often drifts back toward reinforcing the college pipeline rather than providing a worthwhile alternative. Further, good CTE is expensive. As long as the college pipeline consumes every available resource and demands more, any alternative will struggle to emerge.

The Scale of CTE

Analyses frequently emphasize the high share of students that takes CTE courses. For instance, the first "Key Finding" of the U.S. Department of Education's "National Assessment of Career and Technical Education" is:

> Nearly all public high school students (95% of ninth-grade students in 2009) attended a school that offered CTE instruction, either on campus or at a partnering school. In 2009, 85% of public high school graduates had completed one or more occupational CTE courses, 76% had earned at least one full credit in occupational CTE, and 19% were CTE concentrators who had earned at least three credits in the same CTE field.[41]

But offering or taking a CTE *course* does not imply the existence of a credible noncollege *pathway*. Even among the 19% of students classified as "CTE concentrators," for earning at least three credits in a single CTE field, the rate of college enrollment is nearly indistinguishable from that of non-concentrators.[42] Studies often find that CTE enrollment has no effect on subsequent college enrollment or is even *positively* correlated.[43] The majority of CTE concentrators in every field, including repair and transportation, enroll in postsecondary education after high school graduation. Only

10% of them pursue the field of study in which their CTE credits were concentrated.[44]

Thus, the share of American high school students that proceeds from a CTE concentration to relevant postsecondary training is less than 2%. The share that moves from a CTE concentration to any job in the workforce is, at most, 6%, and they do not earn significantly more than similarly situated non-concentrators, suggesting that if their CTE training is even relevant to their work, it is not leading to higher wages.[45]

Figures in this 5% range are also consistent with the usage of apprenticeships—in 2017, 190,000 people entered the apprenticeship system,[46] in a population of roughly 4.2 million 17-year-olds.[47] While nearly all schools offer CTE courses, only 4% of public high schools are CTE-focused.[48] Across all school types, only 8% of teachers focus mainly on a CTE occupational field.[49] By comparison, in most developed economies, 40%–70% of students attend vocational and technical programs in high school.[50]

CTE's scale is not only small but is also declining. The share of students earning CTE credit has declined since 1990, and the share qualifying as "concentrators" has fallen by more than 20%—from 24% in 1990 to 19% in 2009. This has occurred even as total credit loads in public high schools increased. From 1990 to 2009, the number of academic and extracurricular credits earned by the average graduate increased from 19.4 to 23.4 while the number of CTE credits fell from 4.2 to 3.6.[51] Strikingly, these declines were largest in areas such as manufacturing, repair and transportation, and engineering, which are typically assumed to represent the quintessential vocational fields. Health sciences, public services, and communications and design all saw substantial increases.[52]

Following the Money

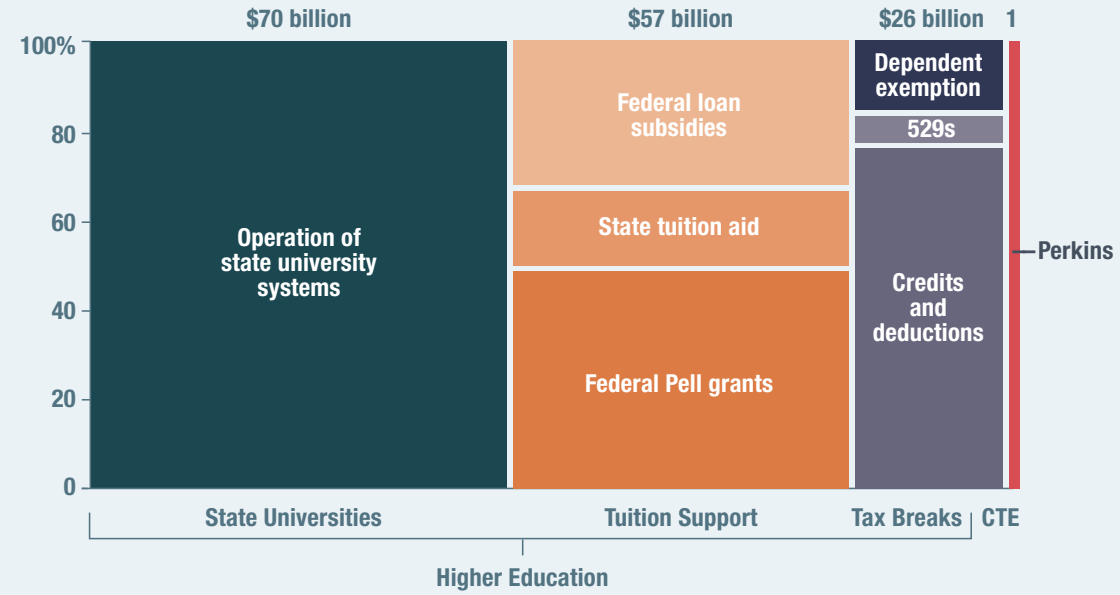
A major reason for the small scale of high-quality CTE programs is their expense. Good technical training requires facilities, equipment, and expertise that most public high schools lack.[53] In Massachusetts and New Jersey, for example, the per-pupil cost in technical high schools is $5,000 higher than in traditional schools.[54] Likewise, providing students with on-the-job experience can often require subsidizing an internship or apprenticeship, something that the typical school district does not accommodate in its budget.

But in evaluating these costs, the question must be: Compared with what? Most policy analyses take as given the enormous public sums spent on postsecondary education (in the form of direct support to

FIGURE 5.

State and Federal Spending on College and CTE, FY 2016

Federal and state spending on higher education and CTE (FY2016) Total – $154 billion

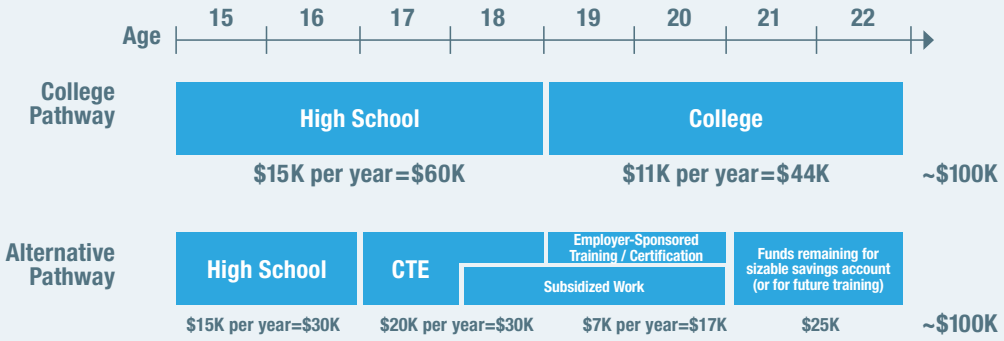


Source: U.S. Department of Education, "Education Department Budget History Table: FY 1980–FY 2018," October 2017; Nicholas Turner, "Tax Expenditures for Education," U.S. Department of the Treasury, Working Paper 113, November 2016; Congressional Budget Office, "Baseline Projections for the Student Loan Program," March 2016, table 5; State Higher Education Executive Officers Association, "State Higher Education Finance: FY 2016," 2017

colleges, tuition grants, loan subsidies, and tax breaks) and then treat investments in CTE as incremental. But if students currently consuming those postsecondary resources without ever completing college could benefit from larger CTE investments *instead*, then constructing a strong CTE track would add nothing to the education system's total cost. Further, where trade-offs are necessary, shouldn't support for the struggling student with poor economic prospects take priority over support for the prospective college graduate whose future earnings will more than compensate for having to bear the cost of that education himself?

FIGURE 6.

Hypothetical Parallel Tracks for College and Noncollege Spending



Source: Author's calculation

In 2016, public spending on higher education totaled roughly $150 billion (**Figure 5**). This included $70 billion in state and local spending on public universities and community colleges,[55] $28 billion in federal Pell grants[56] and $10 billion in state grants[57] to cover tuition costs, $26 billion in federal tax breaks,[58] and $19 billion in federal subsidies for student loans.[59] No single student would take advantage of all these programs—lower-income households would benefit more from grants, whereas higher-income households would benefit more from tax breaks. Public university attendees would benefit from the direct state and local support for those institutions while students at private universities would more likely make use of subsidized loans. But averaged across all 20 million students enrolled in a given year,[60] the annual subsidy amounts to $7,500.

The typical student from a low- to middle-income household, attempting to pursue college, can expect to have society spend roughly $15,000 on his education in each year of high school. If he then attends a four-year public university, his state might fund $6,000 per year of education costs, and a Pell grant might cover another $5,000. If he graduates on time, he will do so thanks to more than $100,000 of taxpayer investment.

What if that student would prefer, and benefit more from, a CTE pathway? **Figure 6** depicts such a pathway, alongside the standard college track with its four years of high school and four years of college at a public cost of more than $100,000. For the same amount that taxpayers are prepared to spend on his behalf in pursuit of a bachelor's degree, he could attend two years of traditional high school, spend a third year in a more technical (and thus costly) classroom curriculum, and then work three years in a job for which the employer receives an annual public subsidy of $5,000. For the first two of those working years, he might spend half his time on the job and half his time in more focused training that receives further public support. All this still costs far less than the college track, so he could arrive at age 20 with job experience, an industry-recognized credential, and an additional $30,000 from the government in a savings account, perhaps for further training in the decades to come—as well as anything his employer paid him. This pathway may not be more attractive than the bachelor's degree, *for those who will earn a bachelor's degree*. But for the majority who will not, it would be vastly superior to the path traveled by most today, which ends in no postsecondary degree.

Such a CTE pathway is not available because the education system lacks the capacity to offer it and funds are not available for it. As compared with the $150 billion available for higher education, the primary funding mechanism targeting CTE is the Perkins Act, which disbursed a total of $1 billion in 2017 across all 50 states for both secondary and postsecondary CTE programs.[61] From 1985 to 2014, federal discretionary funding for K–12 and postsecondary education increased in real terms by 153% and 133%, respectively; for CTE, Perkins funding declined by 32%.[62]

Given the choice between intensive support for the pursuit of a college degree and no support for the pursuit of an alternative, even students with very

small odds of success behave rationally in their choice of the college path. The unsurprising result is vast resources misallocated and vast numbers of poorly served students falling short of the goal and abandoned there.

How Much Should College Cost?

The high and rapidly rising cost of college has produced strong political support for intensive subsidies targeting college students and, increasingly, the idea of "free college."[63] Even putting aside the extent to which generous tuition subsidies fuel the rising costs that purportedly justify the tuition subsidies, the question remains as to why such subsidies are necessary. If college is a worthwhile investment that yields a high return to attendees, they should fund that investment via borrowing that they repay out of future earnings.

The Manhattan Institute's Max Eden has shown that *for students who successfully complete college*, the return on investment remains high and the burden of student loans relative to subsequent earnings has actually fallen substantially. The median borrower's monthly payment has remained a consistent 3%–4% of income for decades, and the mean payment-to-income ratio has fallen by half. Three-quarters of borrowers pay less than $3,600 annually, and, even among those who default, most have less than $10,000 in outstanding debt. Relative to the purported benefits of a college degree, these amounts are very low.[64]

Thus, the primary effects of the $150 billion spent annually on subsidies for college students are to: (a) transfer resources to Americans who are "winners" in the modern economy and could afford to service student loans while maintaining a standard of living above that of the typical high school graduate; and (b) insulate people who should not have attended college from the full cost of their decision to enroll (thereby making that poor decision more likely). Neither of these is a good use of public funds.

Rather, the goal of public funding should be to balance the relative attractiveness of college and noncollege pathways so that those who are likely to succeed in college choose to attend, while those unlikely to succeed there have an alternative that for them is more promising.

III. An Education System for Everyone

There are initiatives to develop effective CTE pathways. Nationwide, 7,000 "Career Academies" provide a school-within-a-school experience oriented toward career preparation.[65] In San Antonio, Texas, a partnership between the local school districts, community colleges, and employers has created the Alamo Academies, which enables 11th- and 12th-grade students to receive training in high-demand occupations, gain on-the-job experience and industry credentials, and transition directly into good jobs.[66]

Deploying these models on a larger scale, as well as ensuring that school districts have the resources and incentives to make them attractive and successful, is another matter. One problem is deep-seated institutional resistance—for instance, from the teachers' unions and universities that will lose out if less teaching occurs in the standard classroom or if the number of education years is reduced. Another is that any goal besides college preparation collides directly with the standards- and testing-based regime that education reformers have emphasized for years. Yet another is the constant pull of college enrollment as the framework for or definition of success against which educators seem determined to measure.

The Massachusetts Mistake

To see what happens when innovation occurs in the wrong framework, consider Massachusetts. The state is consistently recognized as the nation's top K–12 education system,[67] and its students achieve the nation's highest NAEP scores.[68] In recent years, attention has also turned to its network of high-performing CTE schools, which are producing *academic* results on par with its traditional high schools.[69] That's the problem.

At first glance, Massachusetts appears to have done things right. Rather than count anyone who takes a few courses as a "CTE concentrator," the state has created regional technical schools and stand-alone technical schools within districts that offer students a comprehensive CTE experience—including a schedule that alternates between weeks in the classroom and in the field. Nearly 50,000 students—17% of all high schoolers—are enrolled in these programs, a figure that grew by 12% from 2010 to 2017, even as total public school enrollment remained flat.[70] Districts receive an additional $4,500 of state funding for each student enrolled in such a program to defray the added cost.[71] Employers report that graduates are far better prepared for the

workplace than traditional high school graduates, or even some college graduates.[72]

But Massachusetts made a critical mistake. Rather than build a program geared toward those students for whom the college pipeline was a poor fit, it made the schools a segment in its college pipeline. The schools implement the same MassCore curriculum as traditional high schools, and their students must pass the same MCAS standardized tests to graduate.[73] And unlike charter schools, which must admit students by lottery, Massachusetts CTE schools can selectively admit students on the basis of middle school academic performance, attendance, and behavior, and even recommendation letters and in-person interviews.[74]

Predictably, school administrators have responded to this combination of expectations and tools by selectively admitting strong students. Thousands of students remain on waiting lists, and, in areas with poorly performing traditional schools, the CTE alternatives have become akin to magnet schools. In New Bedford, the regional CTE school accepted a class of ninth-graders in which 41% had scored well on the prior year's math exams. Among those headed to the traditional high school, only 13% had done so. The district no longer lets the CTE school deliver a recruiting presentation to eighth-graders.[75]

The CTE schools do indeed perform as well on the MCAS as traditional high schools—94% (versus 91%) of students demonstrate proficiency in English, 78% (versus 79%) in math, and 75% (versus 75%) in science.[76] But as a careful statistical analysis by the University of Connecticut's Shaun Dougherty recently found, students on the cusp of admission to a CTE school end up achieving comparable MCAS scores regardless of which type of school they ultimately attend.[77] In other words, the CTE schools do not strengthen the performance of struggling students; they admit students with comparable academic talent and give them comparable support, at a substantially higher cost.

The state's Alliance for Vocational Technical Education (AVTE) released a white paper in 2018 celebrating the success of CTE schools in sending students to college at a higher rate than traditional schools. It lamented the state's decision to ignore the role of CTE in promoting college enrollment, arguing: "The addition of an explicit career technical education strategy or goal to the Commonwealth's [federal Elementary and Secondary Schools Act] Plan would be an effective way to increase college-going rates in Massachusetts."[78] Among students surveyed in 2015 who had graduated in the prior decade, only 20% were working full-time or pursuing further training in the field they had studied.[79]

Conclusion

Refocusing the education system to serve the half of Americans who will not achieve even an associate's degree will require structural reform in three areas:

1. Defining Success

Metrics matter. And the metrics used to define success in American education today are high school graduation rates, test scores, and college enrollment. Unsurprisingly, then, high schools focus on raising those numbers as high as possible and, given the choice, seek out students who will help in that effort. Test scores remain important and have proved at least relatively more difficult to "game" (perhaps explaining why this is the metric on which gains have been smallest). But graduation rates and college enrollment, in isolation, say little.

The relevant measure of a high school's performance is not how many ninth-grade students receive diplomas four years later or even how many of them enroll in a college or university—especially in the era of open admissions at many universities. It is how many of their graduates earn a college degree or are working full-time six years later.

High schools would understandably resist the idea that they should be accountable for what happens in college. But the requirements and challenges at that next level are not unknown or unknowable—they are a factor that can be held constant in evaluating the high school's performance. In an ideal world, perhaps colleges would have better support infrastructure to help more students complete college—and perhaps educators should work toward that goal. But in the meantime, a high school that sends an unprepared student into the wrong postsecondary environment is at least partially culpable.

For a fraction of the effort invested in testing regimes, states could assist school districts to track carefully the subsequent outcomes—in higher education or the labor market—of their students. If parents understood that most of their town's high school graduates fail to complete college and find jobs that require the expensively acquired education, the pressure for greater emphasis on an alternative track would build quickly. And they might help their own children make better choices as well.

Further, a focus on the combination of full-time employment and college completion as coequal goals would erase the incentive to orient CTE programs toward college preparation. Given a population of students, some of whom will and some of whom will not

complete college, high schools' single-minded focus on college enrollment is misguided. But if college dropouts count *against* the school instead of in its favor, pushing unprepared students into college becomes undesirable. Creating an alternative pathway that is attractive to academically unprepared students becomes imperative.

2. Increasing Flexibility

High-quality CTE programs are fundamentally incompatible with many of the one-size-fits-all dictates that states and the federal government have issued in an effort to maximize college preparation. Demanding that CTE students show proficiency on standardized tests designed for a college-preparation curriculum makes no sense. States may want to develop a parallel set of standards and tests for a CTE pathway, but even no testing would be preferable to the wrong testing.

Likewise, teacher-certification and classroom-hour requirements designed for college preparation are no more appropriate to a CTE pathway than vice versa. (Parents of college-bound students would not tolerate requirements that their children spend half their time interning at a hospital or that their teachers all be certified medical-imaging technicians.) Again, the CTE pathway may need requirements of its own, but that is no justification for applying the wrong ones.

Charter schools are one approach to increasing flexibility that has proved effective in education reform. Nationwide, the charter school movement has become associated primarily with efforts to provide an academically rigorous education in urban districts with failing traditional schools. In some cases, those efforts have produced extraordinary results. A comparable effort by committed educators, if supported by state legislatures, could bring the same spirit of innovation and rigor to CTE—both to validate new models and provide opportunity quickly to many students.

3. Reallocating Resources

Education funding should begin with the principle that a student pursuing a noncollege track deserves at least the same level of public support as one pursuing college. The Trump administration has proposed a crucial first step in this direction: allowing students to use federal Pell grants for not only traditional postsecondary degrees but also short-term technical training.[80] But federal support for a noncollege track should not target only postsecondary programs; in many cases, the critical years requiring increased investment equate to 11th and 12th grade in a traditional high school. The impermeable barrier between "secondary" and "postsecondary" is itself an artifact of the traditional college pathway and is inappropriate in the context of building a strong alternative.

Nor are student-specific tuition grants necessarily the form of support most appropriate to constructing an alternative pathway. In many instances, local districts or cooperating regions building toward large-scale programs will need years of steady funding on behalf of hundreds or thousands of students. Where employers play an active role, funding might go toward subsidized employment rather than anything resembling tuition at all.

Both state- and federal-level funding should be redirected toward those goals. For states, the shift would be from intensive subsidies for community colleges and public university systems, leaving even in-state students to pay close to the full cost of their education so that a state's CTE infrastructure can begin to resemble in quality what its expansive postsecondary campuses already offer. At the federal level, tax breaks and grants that reduce the cost of tuition should be eliminated so that resources can be likewise reallocated toward expanding and smoothing the noncollege pathway. At both levels, these resources could be tied to the metric- and flexibility-related reforms described above.

Some federal intervention in the student-loan market, by contrast, remains more justifiable—because that market operates far from perfectly on its own and because with less tuition support, more students will need more such loans. Subsidizing that financing cost does put a thumb on the scale in favor of taking the risk of college. But when done in the context of loans that students must repay (and, ideally, structured in a way that forces the tuition-collecting institutions to have skin in the game, too), the effect is less distortionary. Expecting that students finance their college educations, while helping to ensure the availability of such financing, strikes a reasonable balance.

All these reforms will occur slowly—and they should. A hundred billion dollars of spending should not be shifted overnight, nor could it be used effectively if it were. But moving two-thirds of current postsecondary spending toward a noncollege pathway over a decade would give those losing funding time to adapt and those gaining it time to prepare for deploying it effectively. If, 10 years hence, even 20% of students could choose an attractive noncollege path, the education system's Fortunate Fifth would become a Fortunate Two-Fifths—greater progress than the past 40 years of college-for-all has achieved.

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Abstract

America's education system, from kindergarten through the state university, is designed to produce college graduates. Those who stop short of at least a community-college diploma are widely regarded as failures, or at least victims of a failed system. Yet most Americans fall into this category, and current trends offer little hope for improvement. Politicians and policymakers are finally paying attention to this population—which, roughly speaking, comprises the working class—and calls for more vocational education and apprenticeships have become fashionable. But a more fundamental reordering of the nation's misshapen educational infrastructure is necessary if alternatives to the college pipeline are to take their rightful place as coequal pathways to the workforce.

Key Findings

1. Fewer than one in five students travel smoothly from high school diploma to college degree to career; most Americans fail to earn even a two-year associate's degree. Students are as likely to drop out of high school, skip higher education, drop out of college, or earn a degree unnecessary to their subsequent jobs.
2. Contrary to conventional wisdom, a college degree is neither necessary nor sufficient for reaching the middle class. The wage and salary distributions for college graduates and high school graduates overlap significantly; high-earning high school graduates in a wide variety of fields that require no college degree earn substantially more than low-earning college graduates.
3. While the potential demand for a serious Career and Technical Education (CTE) pathway is huge, the federal government spent only $1 billion on CTE in 2016 but more than $70 billion subsidizing college attendance. State and local governments spent an additional $80 billion on college and almost nothing on expanding CTE pathways. Federal spending on college has more than doubled since 1990; spending on CTE has declined.

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