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FLIPPING THE PARADIGM

WHY WE NEED TRAINING-BASED PATHWAYS TO THE
BACHELOR'S DEGREE AND HOW TO BUILD THEM

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Contents

Introduction	2
America's Dual System: Not Separate But Very Unequal	3
Weighing the Odds: Completing Versus Earning	5
The Other Side of the Gamble: Picking a Program That Pays Off	8
Sorry, But Your Credits Are No Good Here	9
The Way Forward	16
Conclusion	20
Notes	22

INTRODUCTION

If you graduated from a four-year college or university, it has probably never occurred to you to ask whether your degree was a “terminal award.” Most people take it for granted that their college degree can be a stepping-stone to the next level of education, whenever and wherever they wish to pursue it. Just like your high school diploma, a bachelor degree never expires and is recognized everywhere. It ensures that your resume gets past those computer programs weeding out all the job applicants without a bachelor degree, entitles you to move on to professional or graduate school, and guarantees you a lifetime of letters, emails, and calls from the development office at your alma mater.

If we peer down below the bachelor’s degree at the world of associate degrees and certificates, none of those assumptions hold true. Many of these programs are not designed to lead to an educational next step. For example, 40 percent of associate degree graduates from the Colorado Community College System last year earned “terminal awards.” These degrees are designed to lead directly to a job and are only loosely connected, if at all, to a four-year degree path. Often referred to as “applied” or “occupational” degrees, they equip students with the practical skills and training needed for a specific job. Most include some credits that a student can apply toward a bachelor degree, but usually with a lot of restrictions. And whatever credits might transfer will only be good for a few years, and at a limited number of institutions. Certificates and associate degrees earned at a private for-profit college are even less transferable than those earned at a community college.

It’s tempting to look at these occupational degree and certificate programs and shrug. Maybe those students don’t want a bachelor’s degree. And if the programs lead to good jobs, what’s the harm? The problem is that neither of those presumptions holds true for the majority of students or programs. Surveys of community college students indicate that most enter college with the intention of earning a four-year degree.¹ And while some of the programs lead to very good jobs with wages similar to what a bachelor-degree holder might earn, most do not. In fact, the labor market outcomes of occupational certificate and degree programs vary tremendously. Most lead to entry-level positions that will be hard for workers to advance beyond without further education and training – jobs like computer help-desk operator, surgical

technology assistant, or CNC machinist.² A substantial number of them are both very expensive and associated with very low earnings, in fields like cosmetology, culinary arts, or medical assisting, for example.³ Not only do some of the programs lead to poor-quality jobs, but students who enroll in occupational programs below the bachelor’s degree are the most likely to default on their student loans due to a combination of poor earnings and job prospects.⁴

Whatever else one might think of the bachelor’s degree – it’s too expensive, graduates are underemployed, students aren’t really learning much – it is still strong insurance against a fall into poverty, and Americans know it. On every indicator of well-being, bachelor-degree holders fare better than those without them: they make more money, are less likely to be unemployed, have an easier time becoming reemployed, are in better health, and like their jobs more. Fair or not, the bachelor’s degree functions as both a floor and a ceiling for career advancement in the United States. Below it, one’s options are constrained, as a growing number of occupations require a bachelor’s degree, including many jobs that did not previously.⁵ Above it, an individual gains access to a much larger pool of quality jobs and to a wide array of postgraduate career training opportunities.

Just because an individual enrolls in a career-focused program below the bachelor’s degree, we cannot assume that he or she does not wish to earn a four-year degree or more. But what we can assume is that the student would like to get a decent job in less than four years – preferably after one or two years of study. The inability to delay earning a family-sustaining wage for four or more years is what drives many students into career education programs and is a large part of the reason why low-income, adult, and first-generation students are overrepresented in career programs at both community and for-profit colleges.⁶ These students are stuck between a rock and a hard place – choosing an educational program that will lead to some economic security but delay their journey to a four-year degree, or enrolling in a bachelor’s degree program they may well never complete because of the expense and time it requires.

These trade-offs are not new. Throughout American history, students who opt for vocational programs have been routed off of educational pathways that lead to

college degrees and high-quality jobs. For reasons that are not entirely clear, vocational education in the United States has long been considered an ending rather than a beginning. While academic pathways are clearly demarcated and strongly linked – with a high school diploma opening the door to a bachelor’s degree opening the door to an advanced professional or master’s degree, and so on – vocational pathways have operated more like educational cul-de-sacs, cut off from main roads and with weak linkages to further learning opportunities or career advancement. This two-tier system penalizes low-income, adult, and nontraditional students who need to start earning a decent living before completing a four-year degree.

Despite tremendous attention from policymakers over the last three decades to the need to increase bachelor’s degree attainment rates in the United States, they have proven difficult to budge. Of the many factors that make the rate so stubborn, one of the least recognized is how hard we make it for students who start their postsecondary education in career education programs

designed to lead to a job. Our higher education policies provide access to a wide array of one- and two-year career education opportunities below the bachelor’s degree, but fail to ensure that those programs connect to more educational opportunities. As a consequence, our policies systematically favor wealthier students who can afford to spend four years or more in school before starting their career.

These trade-offs are also not inevitable, nor insurmountable. Explaining how they developed, and how they can be remedied, is the goal of this paper. It will trace the evolution of the postsecondary vocational education sector with special attention to how our higher education policies have both enabled and constrained its development. It will then explore how a number of states, institutions, and professions are leading the way in building pathways to four-year degrees and beyond that start with a career training program. Drawing from their success, the paper will offer a series of concrete policy recommendations.

AMERICA’S DUAL SYSTEM: NOT SEPARATE BUT VERY UNEQUAL

Over the past three decades, the United States has developed a large and robust postsecondary vocational education sector that provides occupational training to millions of students every year. By some estimates, a quarter of all undergraduates – over 4 million students – are enrolled in some form of career and technical training (also called “CTE”) below the bachelor’s degree.⁷ In fact, CTE represents the fastest-growing segment of our postsecondary education sector today, with the rate of growth in the awarding of certificates and associate degrees outpacing that of bachelor degrees. Between 1997 and 2011, awards of sub baccalaureate certificates nearly doubled, from just over half a million to just over a million.⁸

The sector’s impressive growth has been fueled by a combination of student demand and access to large amounts of federal funding – anywhere from \$25

billion-\$30 billion annually.⁹ Given the size of the federal investment, one might expect an equally robust federal policy infrastructure to ensure that the dollars are well targeted. But the policy apparatus guiding our investments in postsecondary vocational education is surprisingly weak, fragmented, and underdeveloped.

There is only one federal program explicitly dedicated to supporting vocational education in the United States – the Carl D. Perkins Career and Technical Education Act (Perkins) – and it has an annual budget of just \$1.1 billion, the majority of which supports programs at the high school level. The law represents the latest incarnation of a series of federal programs supporting vocational education that date back to the Smith Hughes Act of 1917. Every state has a Perkins office with staff responsible for administering funding and monitoring programs in high schools and community colleges.

The law includes many provisions designed to ensure quality and academic rigor in vocational programs. State agencies and participating schools are required to study local labor market demand, form employer advisory councils, and, in the case of high school programs, connect with offerings at local community colleges. Schools are also required to collect and report a variety of student outcome measures – graduation rates, technical skill attainment, and job placement, among others. But despite the program’s broad reach and focus on outcomes, its influence on the design and delivery of postsecondary CTE in the United States is quite small. By one estimate, less than 2 percent of an average community college’s operating budget comes from Perkins funding, limiting the ability of policymakers to use the program to drive institutional behavior.¹⁰ And the funds do not go to private schools, which provide a large share of postsecondary CTE.

Most of the federal funding for postsecondary vocational education flows from a variety of other programs. The lion’s share – about \$20 billion each year – comes through the Higher Education Act (HEA), in the form of Pell grants and student loans. More than any other federal program, HEA has shaped the development of postsecondary vocational education, establishing the terms by which students, programs, and schools would be eligible for federal funding. But vocational education has never been the primary focus of the Higher Education Act. And while \$20 billion is a lot of money, it represents just 15 percent of the federal student aid budget, which comes to more than \$150 billion each year.

HEA became the primary funding source for American vocational education after a series of amendments to the law in 1972 expanded the range of programs and schools eligible to participate in federal student aid programs. The ’72 amendments included a number of controversial and hotly debated changes to HEA, including the addition of Title IX to address discrimination against women in higher education and the introduction of the “basic student education grant,” the precursor of the Pell grant. Much less controversial at the time was the decision to expand eligibility for federal grants and loans to vocational schools that were providing “gainful employment programs.” These new programs were understood to be terminal - lasting two years or less and leading directly to a job, not a four-year degree. Their inclusion generated little objection from traditional higher education institutions, perhaps because of their terminal nature. The law did not include any provisions for how the programs might connect to further educational opportunities and it seems safe to assume

that lawmakers saw little reason to include any. It also seems safe to assume they would never have predicted that the rules and regulations surrounding gainful employment programs would be at the center of higher education policy debates 40 years later.

The ’72 amendments combined federal funding for traditional higher education and postsecondary vocational programs, with all of it coming out of the same pot – Title IV of the Higher Education Act. Prior to 1972, funding for vocational programs was channeled through the Vocational Education Act of 1963 (a predecessor of the Carl D. Perkins Act), while funding for more-traditional institutions came through the Higher Education Act of 1965. For both programs, the money went directly to the schools, not the students. The 1972 amendments changed all that, putting federal higher education dollars directly into the hands of students and allowing them to choose the programs and institutions best suited to their needs, including vocational programs. It also expanded the types of providers eligible for funding under HEA to include private vocational institutions, including for-profit trade schools.

The amendments opened up a funding stream for postsecondary vocational education that depended fundamentally on student demand for the programs – and there turned out to be a lot of demand. Today, one-third of all Pell grants – \$10 billion worth – go to students enrolled in CTE programs below the bachelor’s degree. Enrollment in private, for-profit career colleges totaled just 38,000 students in 1975. By 2013, it stood at 2.4 million. But while the amendments provided a foundation for growth, they are also at the heart of the policy fragmentation that plagues postsecondary career education and makes it such a confusing and risky sector for students. They unlocked the door to billions of federal dollars to new providers and programs, but did so with surprisingly few conditions. On the one hand, the schools were expected to meet requirements similar to other institutions of higher education – they would need to become accredited and secure authorization to operate from state higher education authorities. On the other hand, they were allowed to create their own accrediting agencies *because* their programs and students were considered so different from those in traditional higher education that they should not be held to the same standards. Specifically, it was understood that the programs were terminal and the students were not seeking bachelor degrees. Finally, and perhaps most surprising of all, the amendments did not require schools delivering the terminal “gainful employment programs” to collect or report on the gainful employment

of their students after graduation. Just like in the rest of higher education, but in striking contrast to other federal employment and training programs, access to federal funding was not linked in any meaningful way to the ability of schools to connect students with jobs – even when employment was the express purpose of the educational program.¹¹ Taken together, the '72 amendments created a set of rules and regulations that enabled the growth of postsecondary vocational education, while also keeping the programs separate from traditional higher education *and* failing to hold them accountable for the purpose for which they were created – employment.

By allowing students to use Pell grants and loans to pay for either a traditional academic or a vocational program, the '72 amendments began erasing any clear boundaries between higher education and vocational training in the eyes of students. Both types of programs

would award associate degrees and often the same institution would deliver transfer and terminal degrees. Over the next 40 years, the programs would become increasingly indistinguishable to students, who might not realize that an associate degree from the for-profit Kaplan College was actually a “terminal award” in the eyes of higher education, while one from a community college might be an academic transfer degree, or might not. But while students might find it hard to distinguish the different degrees, institutions of higher education and their accrediting bodies continue to make the distinction, sustaining the boundary between occupationally-focused and academic programs below the bachelor's degree. It is this boundary, in turn, that makes it so difficult for students who would like to start their journey toward a four-year degree with two years of career training and that systematically favors students who can afford to delay starting a career until they have finished a bachelor's degree.

WEIGHING THE ODDS: COMPLETING VERSUS EARNING

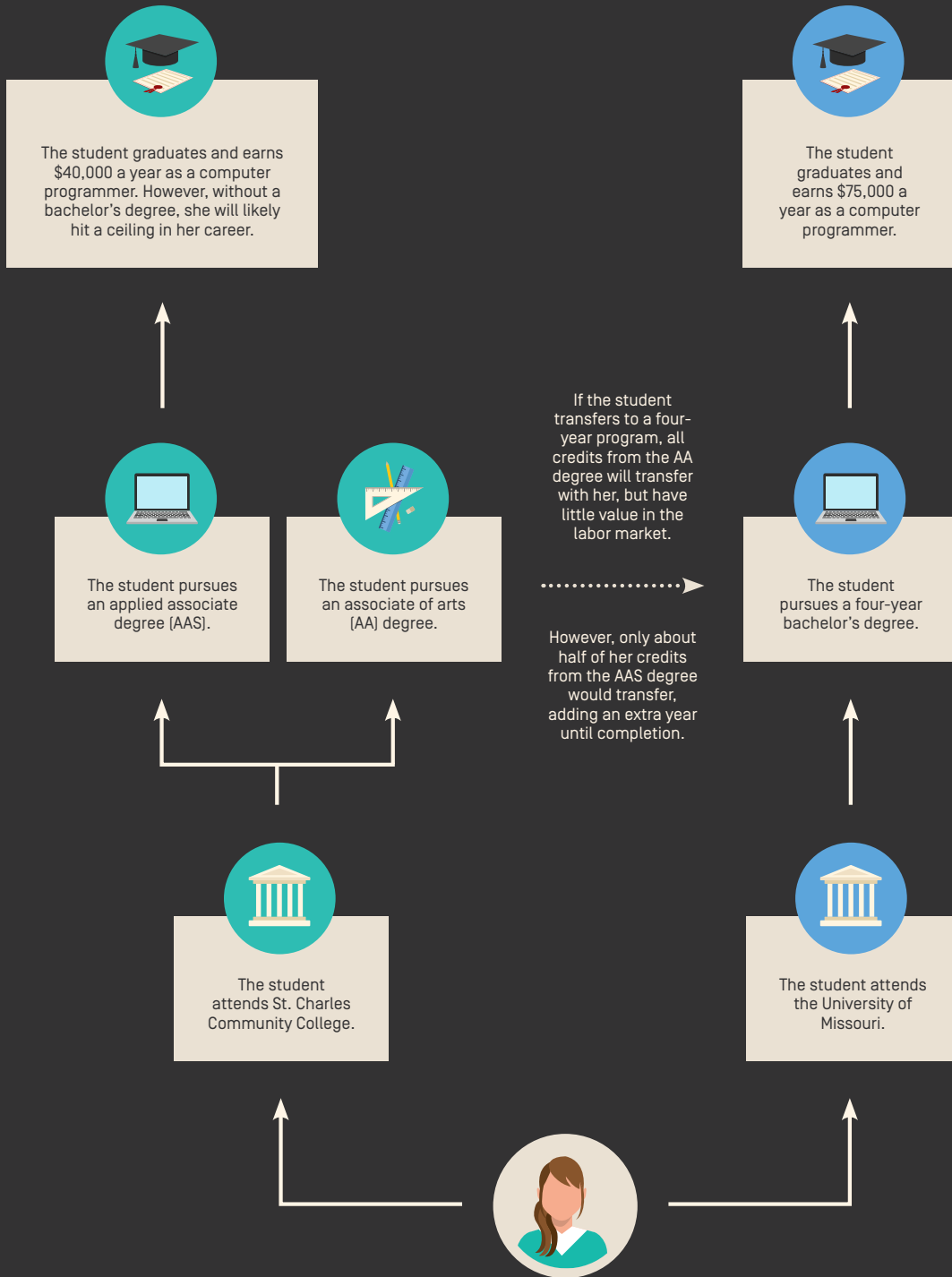
Occupational certificate and degree programs can be found at just about any community college around the country, as well as at the majority of for-profit colleges. Few institutions use the label “terminal” any longer, and the word frankly sounds out of place today. Community colleges are more likely to use the terms “career technical,” “CTE,” or “applied” in reference to certificate and degree programs not designed to transfer as the first two years of a BA. And in most cases, the programs include at least a few courses that will be accepted for credit by some four-year institutions, even if the degree as a whole will not transfer. For-profit colleges generally refer to all their two-year programs as associate degrees, with little or no indication that the degrees will not transfer to a four-year institution and that few, if any, of the credits will either. The lack of a common nomenclature for associate degrees or consistency in how they connect to an educational next step stands in sharp contrast to the bachelor's degree and makes it easy for students to get routed away from a four-year degree without them even realizing it.

St. Charles Community College (SCCC) in Missouri is typical of how most two-year public colleges organize their offerings. The school awards a variety of transfer degrees, including an associate of arts (AA) and associate of fine arts (AFA), that are guaranteed to count as the full equivalent of the first two years of a bachelor degree program at any of Missouri's public four-year universities. It also offers more than 30 different types of applied associate degrees (AAS) that are “*not meant for transfer but instead to prepare a student for immediate transfer into a career.*” Below the AAS are a host of certificate programs that take less than two years to complete and are also tailored to the skills required of specific occupations. Some of the college credits a student earns might transfer to a related AAS degree, but not necessarily.

A student enrolling at SCCC will have to choose from among these many options. Depending on their goals – and their resources – the different degree routes present different sets of trade-offs. Students in the distinct tracks

Figure 1

Applied Associate Degrees vs. Bachelor Degrees



take different courses. For example, a student who wants to learn about computer programming can choose between an AA degree with a specialization in computer science that can be transferred toward a bachelor's degree at any public four-year institution in the state and an AAS degree that is meant to prepare her for immediate entry into a career in computer programming. If the student wants or needs to get a job before completing four years of college, the AA degree is not going to be much help. Of the more than 20 courses that make up the degree, only five of them are in computer science. The large majority (45 of 65 credits) are general education courses – English, math, history, humanities, and science classes. They are all guaranteed to transfer, but do not have much value in the labor market.¹²

If the student decides to get the AAS degree, she will take courses in database programming, mobile apps development, Java, and SQL. These courses will help her find a job, and probably a decent-paying one.¹³ According to the website “Simply Hired,” the average national salary for a computer programmer with an associate degree is \$40,000 – a solid wage and more than she will likely earn if she graduates with just an AA degree.¹⁴ If she can go on to earn a bachelor's degree though, she has a good chance of doubling that salary. A computer programmer with a BA makes, on average, around \$75,000 a year. Given the fact that 80 percent of computer programmers have a bachelor's degree, she may have a hard time moving up without one.¹⁵ But here's the catch. Only about half of the credits from her AAS degree will count toward a bachelor's degree at the University of Missouri, which means she will likely need to add a year or more to her “four-year degree.”

It is clearly in the long-term interest of this student to get a bachelor's degree. But she now has to weigh the odds of being able to complete that four-year degree against her need to acquire some marketable skills that will help her earn a living in the here and now. If she completes the transfer AA degree and enrolls at the University of Missouri as a junior, she has a very good chance of completing. But if she is like most community college students, she is unlikely to complete either degree.¹⁶

Only 16 percent of students who enrolled in a community college in 2008 completed a four-year degree in six years or less. If she is a low-income or first-generation student, or attends part-time, her odds are even worse.¹⁷

If, on the other hand, she opts for the AAS degree, there is some evidence that she will be more likely to graduate than if she enrolls in the transfer degree option.¹⁸ But since she loses more credits once she tries to transfer, and will not be able to enroll at the University of Missouri with junior standing, she is even less likely to complete than a student who graduated with an AA transfer degree. The loss of credit when students transfer from two-year to four-year institutions – not what they studied or their GPA – is the best predictor of a failure to complete.¹⁹ The more credits lost during transfer, the less likely a student is to complete a four-year degree.²⁰ So while this student may have been able to get a decent job with her AAS degree, she will probably hit a ceiling in her career unless she can get the BA degree, which will be significantly harder than if she had opted for the more general transfer degree.

St. Charles Community College is by no means unique in offering programs that can lead to decent jobs but are not well connected to four-year degrees. The Department of Education does not collect data specifically on AAS degrees (and not all states or institutions call them that), so the fact that not all associate degrees lead directly to an educational next step can often come as a surprise to policymakers today. But a large number of students do enroll in college-level programs not designed for transfer. In Illinois, for example, about 30 percent of community college students in 2014 were enrolled in non-transfer, CTE programs.²¹ In Texas, just over half of all the awards below the bachelor's degree are technical certificates or applied associate degrees. In New York, 30 percent of students in SUNY community and technical colleges are enrolled in applied associate degree programs.²² Combine these students with the more than 800,000 enrolled each year in certificate and associate degree programs at for-profit colleges and non-degree-granting institutions, and it becomes clear that millions of students in higher education today are enrolled in programs that are only loosely connected, if at all, to a four-year degree path.

THE OTHER HALF OF THE GAMBLE: PICKING A PROGRAM THAT PAYS OFF

Students who enroll in college have to weigh the odds of completing a four-year degree against getting some skills that will lead to a job in less time. Students who choose certificate and applied associate degrees are often opting for what they consider to be the least risky higher education option – a shorter program they are more likely to complete that will lead directly to a job. Unfortunately, the last piece of that assessment is much less certain than the first two. The 1972 amendments did not include any provisions to ensure that the new gainful employment programs would actually lead to good jobs. Not surprisingly, some do and many don't. In fact, the programs literally occupy both ends of the spectrum when it comes to return on investment. Graduates of the applied associate degree in process technology from Brazosport College in Texas can expect to earn close to \$90,000 upon graduation and the degree only costs \$5,000. Graduates from St. Louis College of Health Careers' program for pharmacy technicians, by contrast, can expect to earn around \$28,000 when they graduate – and the two-year program at this private, for-profit school costs \$29,000. Not surprisingly, nearly a third of the most recent cohort of graduates defaulted on their student loans.²³

Career education programs below the bachelor's degree are a Wild West of cost and quality, and we leave it to students to find their way through. The combination of access to federal funding with no accountability for outcomes vastly increased the supply of career education offerings, but also enabled the rise of a large and highly profitable sector of private schools. For-profit colleges account for 42 percent of the growth in postsecondary enrollment over the last decade, and the large majority of the enrollment growth was in sub-baccalaureate CTE programs. While some of the schools deliver high-quality programs to students not well served by community colleges, the sector as a whole has been the source of the worst student outcomes in all of higher education. Two-year degree programs at for-profit colleges cost, on average, \$30,000, compared with just \$8,000 at a

community college. More than 80 percent of students in for-profit colleges take out federal loans, with an average debt of \$24,000 for those enrolled in associate degree programs.²⁴ Most importantly, students who enroll in one- and two-year programs at for-profit colleges are the most likely to default on their student loans and will have a harder time finding employment.²⁵

Career education programs below the bachelor's degree are a Wild West of cost and quality, and we leave it to students to find their way through.

The proliferation of for-profit providers in the postsecondary vocational education space is a direct consequence of the 1972 amendments and another example of how our higher education policies neglect vocational education students and favor students who enroll in four-year programs. In addition to not knowing whether their credits will transfer to a four-year degree, vocational students – who are more likely to be low-income and nontraditional – are exposed to tremendous risk. According to data recently published by the U.S. Department of Education, students who enrolled in programs at more than 600 higher education institutions in 2005 earned less than \$20,000 seven years later. More than 90 percent of those institutions delivered sub-baccalaureate vocational programs.²⁶

SORRY, BUT YOUR CREDITS ARE NO GOOD HERE

Why do we make students choose between CTE programs that promise to help them start their career and programs leading to a four-year degree? And why do we expose them to so much risk in the process? Separating academic and vocational pathways is nothing new in the United States, or most other countries. In fact, for most of our history, vocational education has never been considered an appropriate starting point for a bachelor's degree. When lawmakers decided to expand the federal student aid programs to include vocational programs in 1972, it was not with the goal of providing an additional pathway to a four-year degree. They were concerned first and foremost with broadening access to educational opportunities after high school that would lead to middle-class jobs. At the time, a bachelor's degree was not essential for economic security and mobility the way it is today. In fact, in the 1970s, only 15 percent of jobs required a bachelor's degree, and the difference in median annual earnings between adults with a bachelor's degree and those with just some college or an associate degree was about \$5,000. Today, more than 30 percent of jobs require a bachelor's degree and the difference in median annual earnings between the two groups have tripled to \$15,000 a year.²⁷ Not only are the wages associated with jobs requiring a bachelor's degree better, so are the benefits. At the same time, the cost of obtaining a four-year degree has risen tremendously, with tuitions at most public four-year institutions double or triple what they were in 1980.²⁸

That lawmakers could not see into the future is hardly their fault. Few would have predicted the collapse of American manufacturing or the combined effects of technological change and globalization on the U.S. labor market. But these economic changes have transformed how Americans think about postsecondary education and what they need from it. Many students are looking for programs that will help them start a career and earn a four-year degree. Unfortunately, it's not just a matter of flipping a switch. The firewall between vocational programs and higher education was built over a long period of time and is deeply embedded in a thicket of federal, state, and institutional policies and practice. Despite widespread agreement on the value of pathway approaches that facilitate movement from

one educational level to the next, connections between CTE programs and four-year degrees are haphazard, disjointed, and highly variable across programs.

The poor connections are not for lack of effort on the part of colleges. In fact, community colleges spend considerable time and resources negotiating individual credit transfer agreements with four-year institutions and helping students navigate the complex world of transfer. Many provide students with links to detailed spreadsheets on possible transfer options and extensive advising. The College of Lake County (CLC), a community college just north of Chicago, for example, helpfully numbers courses that administrators believe are likely to transfer with even numbers, and those that are not with odd numbers. CLC also publishes a table of transfer guides and articulation agreements that the college has negotiated with four-year institutions. But as the table illustrates, the transfer options for students in CTE programs are quite proscribed. A student graduating with an AAS in paralegal studies, for example, can transfer many of her credits to nearby Dominican University to earn a Bachelor of Arts in Legal Studies – but Dominican's annual tuition is \$30,000. Or she could transfer and get the same degree at the more affordable Southern Illinois University at Carbondale or the California University of Pennsylvania – but both are located more than 350 miles from Lake County.

Adding to the confusion for students is the fact that the difference between the applied programs and the transfer programs are rarely clear-cut. The associates degrees designed for transfer often contain courses that some four-year institutions will not accept, particularly selective colleges and universities. The non-transfer degrees almost always include some courses that will transfer to some four-year institution, somewhere. To make matters worse, the word "transfer" can mean different things, depending on the course, the institution, and the student's major. Often, many of the credits in a program will be listed as transfer-worthy but only as electives, which means that the credits do not actually count toward degree requirements. Students generally cannot have more than four or five elective courses count towards a bachelor's degree. The transfer of courses as

Table 1

College of Lake County: Guides and Articulation Agreements for Transferring an Associate in Applied Science [A.A.S.] Degrees

CLC Career Program	Transfer College/University
Accounting	DeVry University
Accounting	Northeastern Illinois University
Accounting	Roosevelt University
Administrative Office Systems	Columbia College of Missouri
Administrative Office Systems	DeVry University
Architectural Technology	Ferris State University
Automotive Technology	Ferris State University
Automotive Technology	Minnesota State University
Automotive Technology	Southern Illinois University
Computer Information Technology	Southern Illinois University
Construction Management Tech	Illinois State University
Construction Management Tech	Purdue Calumet
Criminal Justice	Roosevelt University
Dental Hygiene	Robert Morris University
Dental Hygiene	Southern Illinois University
Early Childhood Education	Kendall College
Electrical Engineering Technology	DeVry University
Electrical Engineering Technology	Milwaukee School of Engineering
Electrical Engineering Technology	Southern Illinois University
Electrical Engineering Technology	Northern Illinois University
Electronic Systems Technology	Southern Illinois University
Fire Service Management	University Center of Lake County
Health Services	Indiana State University
HVACR Engineering Technology	Ferris State University
Industrial Technology	University Center of Lake County
Medical Imaging	Robert Morris University
Mechanical Engineering Tech	Northern Illinois University
Paralegal Studies	California University of Pennsylvania
Paralegal Studies	Dominican University
Paralegal Studies	Southern Illinois University
Pharmacy	Rosalind Franklin University
RN-BSN Nursing completion	Indiana Wesleyan
RN-BSN Nursing completion	Olivet Nazarene University
RN-BSN Nursing completion	Robert Morris University
RN-BSN Nursing completion	Rockford University
RN-BSN Nursing completion	St. Xavier University
RN-BSN Nursing completion	University of St. Francis
Surgical Technology	Robert Morris University

Source: College of Lake County, Transfer Planning Guides. [http://www.clcillinois.edu/student-services/counseling-advising-transfer/transfer-planning/transfer-guides/transferring-an-associate-in-applied-science-\[a-a-s\]-degree/guides-and-agreement](http://www.clcillinois.edu/student-services/counseling-advising-transfer/transfer-planning/transfer-guides/transferring-an-associate-in-applied-science-[a-a-s]-degree/guides-and-agreement).

electives is one of the reasons why so many students who start a bachelor's degree in community college end up with well over the 120 credit necessary for graduation.

So while few CTE programs at community colleges today are completely terminal in nature – some credits will likely transfer somewhere – the transfer process is highly unpredictable and inefficient. In fact, credit loss as a student transfers from a two-year to a four-year institution is pervasive and is a leading cause for the low degree completion rates among students who start their postsecondary education at community college. A 2014 study by researchers from the City University of New York found that fifteen percent of community college students were unable to transfer any credit and nearly half were not able to transfer the majority of their credits when they moved to a four-year institution. There is every reason to believe that many of those students who had trouble transferring credits were enrolled in career education programs.²⁹ With the notable exception of nursing students, students who begin their education in a career and technical program at a community or for-profit college will have difficulty transitioning smoothly to a bachelor degree program and will lose a significant number of credits during transfer.³⁰

Why is transferring CTE credit so difficult? There are three distinct but related reasons: 1) the structure of the bachelor degree, which limits the types of courses that can count toward the first two years; 2) the difficulty four-year institutions have accepting credit for courses they

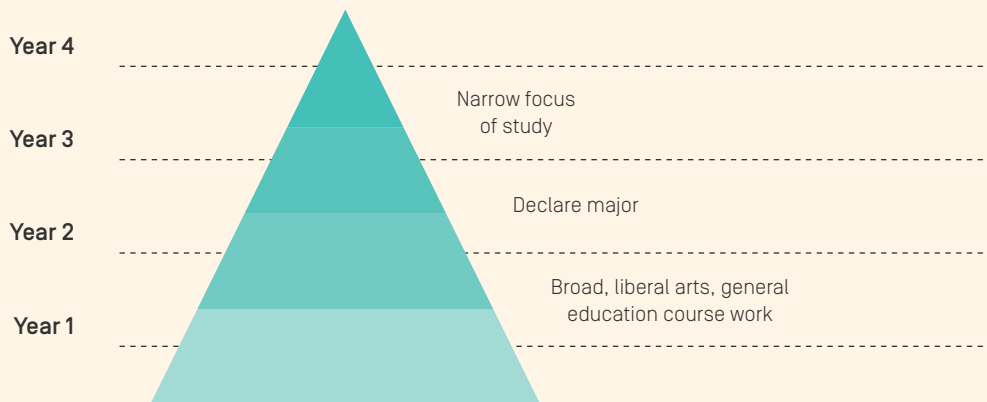
do not deliver; and 3) well-founded concerns about the academic rigor of some programs and providers.

The Core of the Problem: General Education – When and How Much?

The defining feature of the bachelor's degree at almost every institution of higher education is a core of lower-division general education courses that are taken during the first two years of a four-year program. The “gen-ed” core usually takes up anywhere from 10 to 15 courses, the large majority of a student's first two years in college. It is a mix of introductory courses from across various disciplines – the humanities, social sciences, the natural and physical sciences – and also includes math and writing courses.

This pyramid structure, broad on the bottom growing more specialized on the top, is the reason that associate degrees designed for transfer are so different from applied associate degrees. It also helps explain why the latter are so hard to connect to a bachelor's degree. The transfer degrees are carefully constructed to match the general education core of four-year colleges and universities in a particular state, leaving little room for courses that focus on technical or occupational skills. Transfer degrees have to be made up primarily of general education classes. They are often a funny mix of extremely disparate courses – U.S. History, Introduction to French Cinema, Astronomy, Detective Fiction, World Mythologies, Shakespeare – that

Figure 2
The Bachelor's Degree Pyramid



build general knowledge but have little if any practical application. Students in transfer degree programs generally have a great deal of choice in their courses, as long as they stick to the liberal arts and sciences. Skills-based courses, like JavaScript, Proofreading and Editing, Introduction to Welding, or Biomedical Measurements, are unlikely to count.

The requirement that students complete a large number of general and unrelated courses before specializing in their major is based on two common assumptions about students and learning that are very much open to question. First, is the often well-founded belief that many students enter college not yet knowing what they want to study, much less do for a living. The general education requirements are designed to help them dabble in different disciplines. While this assumption is certainly true for many young and traditional students entering four-year institutions, the average age of a community college student is 29 and many have identified specific, near-term career goals. Second, is the common assertion that general courses provide a necessary academic foundation for more specialized courses in the student's major. While many students do learn well through general and theoretical approaches, there is a robust body of research pointing to the value of front-loading hands-on, practical courses for some students. These applied-learning experiences can provide students with crucial context for understanding the relevance of more-general and theoretical concepts later.³¹

The emphasis on completing general courses during the first two years of a bachelor's degree is not a legal requirement under the Higher Education Act, nor is it a matter of federal regulation. State education agencies and accreditors establish guidelines around general education requirements as part of their role to ensure the quality of higher education institutions. Most state higher education agencies require a minimum number of general education credits for various degree awards at the state's public institutions, but they usually do not specify when in the course of a student's program those credits must be obtained. The practice of front-loading general education is more a matter of tradition than regulation. Unfortunately, it is a practice that narrows pathways into bachelor degrees. Creating more flexibility in the content and sequencing of the general education core is at the heart of building more options for graduates of postsecondary CTE programs.

We Don't Teach that Course

A second obstacle to connecting CTE programs to four-year degrees is the difficulty institutions have awarding credit for courses they do not deliver. AAS degrees are likely to contain a host of skills-based courses that have no direct counterpart at a four-year college or university – courses like “Radiographic Procedures” or “Automotive Brake Systems.” The benefit of not having to design a program for transfer is the freedom to customize it around the competencies needed for a particular occupation. The courses may require students to master analytic, numeracy, or literacy skills similar to traditional students, but the learning is contextualized around the requirements of the workplace. The downside is that four-year institutions are only supposed to award credit for learning that a student could have acquired at their institutions. Specialized courses, even when they are academically rigorous, present challenges to registrars who need to find a course equivalent before awarding credit.

Four-year institutions are particularly reluctant to award credit for courses that look too much like occupational training out of fear that they do not represent college-level learning. A 2011 policy statement from the Southern Association of Colleges and Schools (SACS) captures the concern, cautioning member institutions against accepting credits for courses that “blur the lines” between education and training:

The higher education community has traditionally understood educational programs that are applied in nature (e.g., certificates, diplomas, AAS and other types of applied associate degree programs) will include discipline-specific courses **not** intended to transfer to a traditional baccalaureate or non-applied associate's degree.... [I]t is incumbent on institutions to provide honest and open disclosure whether the intent of each of its undergraduate degrees is intended for transfer or not intended for transfer.³²

SACS is one of 14 accrediting agencies that are charged by the U.S. Department of Education with the responsibility of ensuring the quality of institutions of higher education for the purposes of receiving federal funding. There are seven “regional accreditors,” which oversee the large majority of four-year colleges and universities, and seven “national accreditors” that oversee the majority of the private, two-year vocational institutions. When it comes to quality, the regional accreditors are focused primarily on preserving the integrity of bachelor degree

programs, which means ensuring that all of the credits leading to one represent “collegiate level learning.” In this guidance, SACS is reminding its members that occupational certificates and degrees are not designed to transfer to a bachelor’s degree do not, almost by definition, collegiate level or transfer worthy. That was the deal struck back in 1972 when the programs were allowed access to higher education funding, and it is part of what has made them so difficult to build upon.

The reality is that there are many vocational programs – welding, dental hygiene, or medical equipment repair, for example – that may not fit our mental model of a higher education program, but do in fact require students to master core academic competencies on par with those of traditional college students.³³ But since credit is awarded for courses, not learning, they can be difficult to connect to four-year degree paths. The relative dearth of transfer pathways that are based on demonstrated learning outcomes rather than course equivalency is a significant barrier for students who opt for applied programs, but also one that can be addressed through external credentials and assessments, a point to which we will return later.

Concerns About Quality

The elephant in the room in many discussions of postsecondary vocational education is that some of the programs and providers really do not seem to belong in higher education. Cosmetology and truck driving seem more like job training classes than higher education programs. Studies of for-profit colleges have revealed that their graduates are often not well prepared academically.³⁴ Theoretically, institutions that participate in the federal student aid programs have undergone an accreditation process designed to ensure that they are delivering high-quality, college-level, educational programs. But accreditation does not focus on the transferability of programs. The fact that institutions have different accreditors that may have very different quality criteria and review processes, makes it a poor arbiter of the transfer worthiness of particular programs or courses. In fact, accreditors have little incentive to push their members to make their programs more academically rigorous if doing so threatens their ability to recruit or graduate students.

A regrettably under-noticed consequence of the failure to hold providers of “gainful employment programs” accountable for student employment outcomes has been the proliferation of low-quality postsecondary programs that are difficult to connect to either good jobs or four-

year degree paths. If we look at the vocational programs that have grown the most over the last 30 years, it is not those with the highest wage returns or that require students to master core academic skills in math or science. Rather, it is the programs with the lowest entry requirement and that are the cheapest to deliver. At a time when engineering skills are in high demand and lead to great salaries, the number of students enrolled in associate degree programs in “Engineering Technologies” has actually gone down since 2001, from 39,998 to 33,766 in 2012.³⁵ The number of students in “Precision Production” programs has remained steady over the same time period, despite the strong returns to technical training programs. The number of associate degrees in “Mechanic and Repair Technologies” has doubled, but they still only make up 2 percent of all degrees. Meanwhile, associate degrees in medical assisting, a job with earnings barely above minimum wage and that requires minimal academic preparation, have exploded, from 1,701 in 1987 to a stunning 41,917 in 2012. Medical assisting made up 4 percent of all associate degrees awarded in 2012, and was also the largest category of undergraduate certificates.³⁶ The category of “Personal and Culinary Services,” which includes cosmetology programs, came in second for greatest growth, from 2,542 associate degrees in 1987 to nearly 20,000 by 2012.

The lack of meaningful and consistent quality assurance processes for programs below the bachelor’s degree puts four-year institutions in a genuine bind. Without conducting extensive reviews of curricula and instructional practices, how do they know that graduates are really ready for the second two years of a bachelor’s degree? Without additional assurance about learning outcomes, four-year institutions risk admitting students who cannot succeed. Institutions with the same accreditor can at least rely on the fact that they share a set of common quality principles and expectations. Credits from regionally accredited colleges are much more likely to be accepted for transfer by four-year institutions for exactly this reason. But students rarely know which agency has accredited their college. For students in four-year colleges or universities it rarely makes a difference, but for students in vocational schools, going to a nationally accredited college can severely restrict their future educational options – and is another example of how our higher education policies systematically favor students who do not need to enter a career- training program before earning a four-year degree. Building quality in postsecondary vocational programs, through accountability for student outcomes and common quality assurance processes, would make it easier to connect the programs to four-year degree options and good jobs.

Figure 3

Select Associate Degrees by CIP Code

Source: National Center for Education Statistics (NCES).

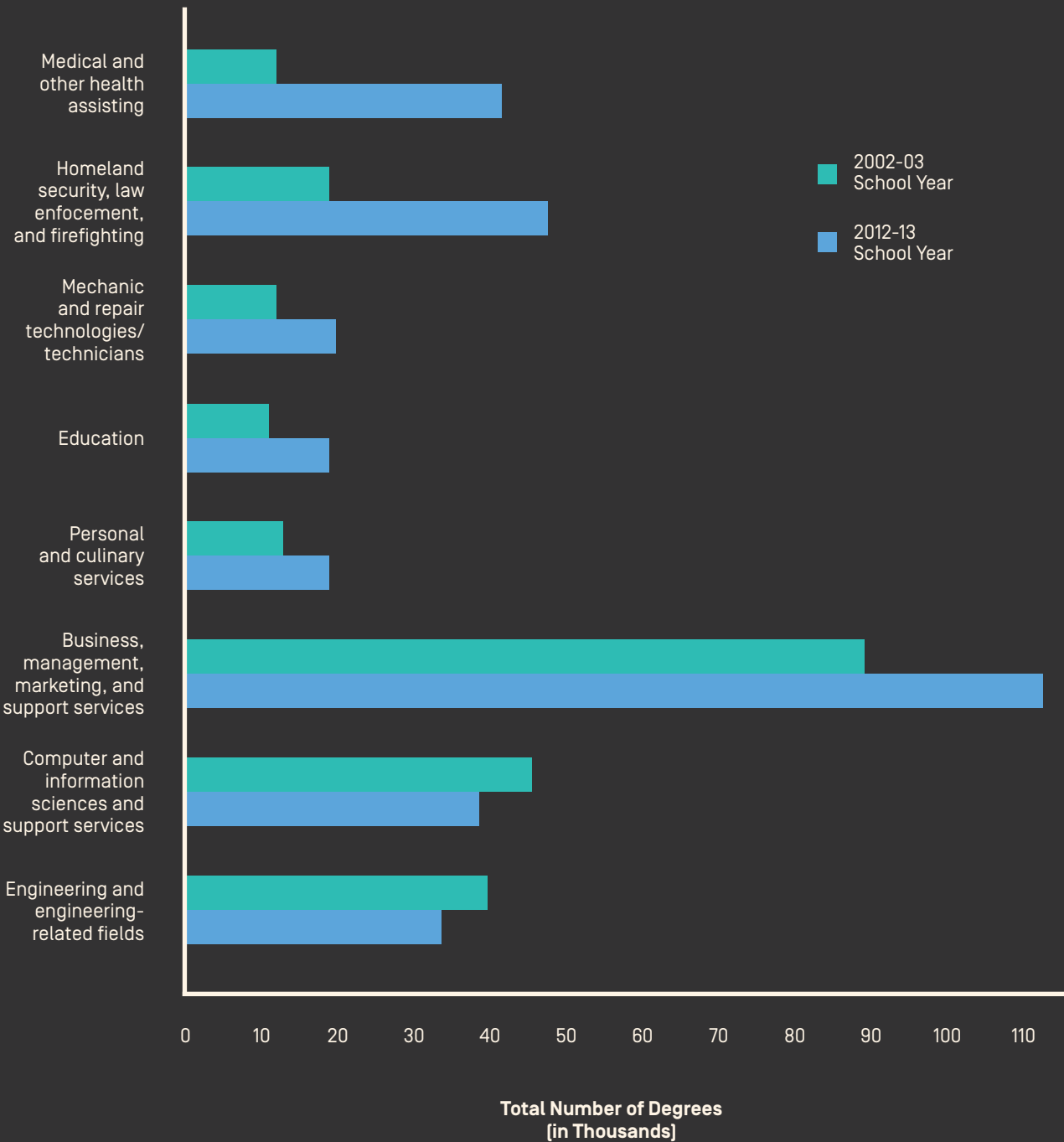
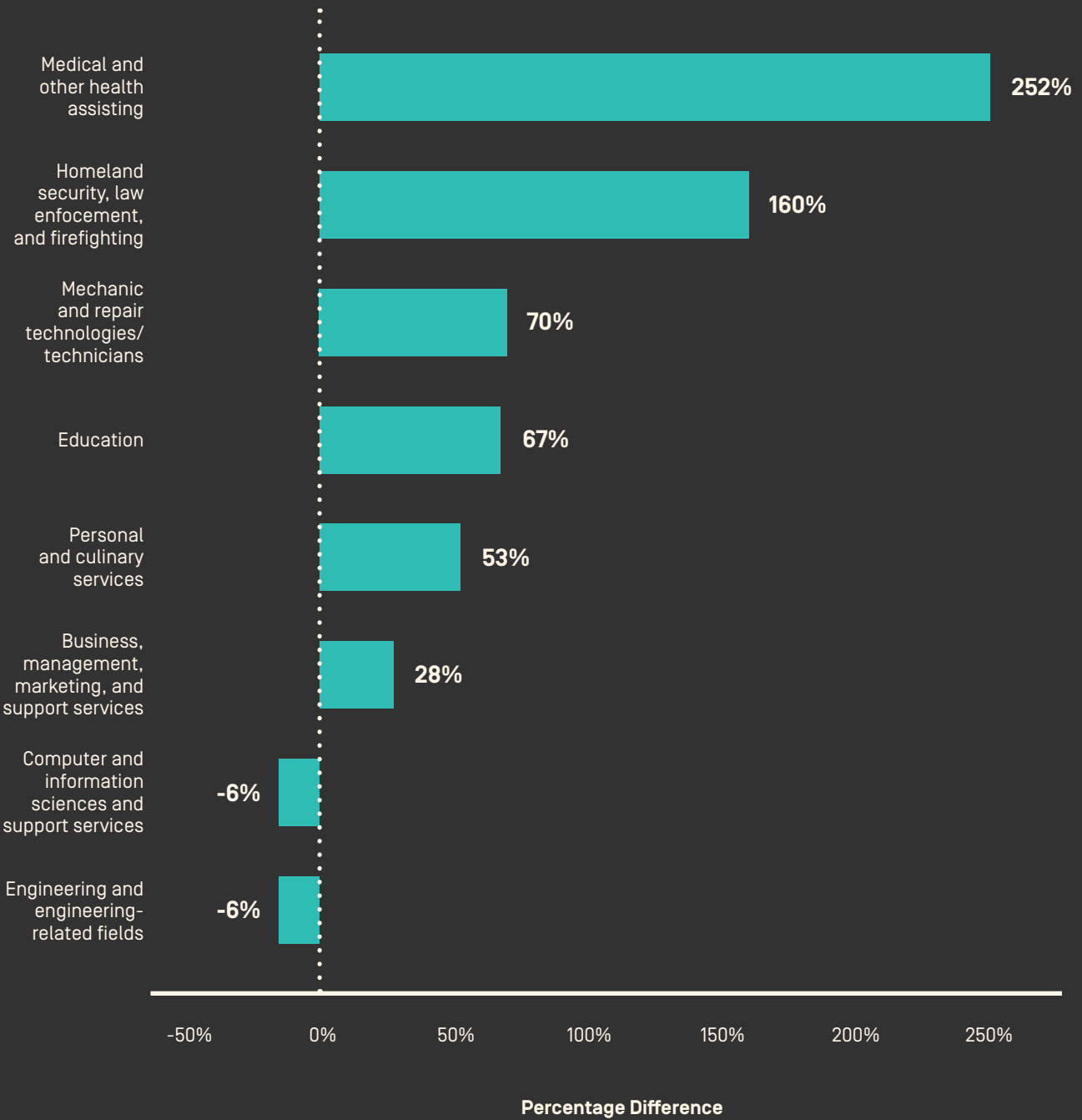


Figure 4

Select Associate Degrees by CIP Code, Percentage Difference Between 2002-03 and 2012-13

Source: National Center for Education Statistics (NCES).



THE WAY FORWARD

Building connections between career education programs, four-year degree paths, and high-quality jobs means addressing the unanticipated consequences of three faulty assumptions underlying the 1972 amendments to the Higher Education Act: 1) that vocational students would not want to continue their education; 2) that vocational programs were too narrow and specialized to be connected to four-year degrees; and 3) that it would not be necessary to collect employment and earnings outcomes for gainful employment programs to ensure quality or prevent fraud and abuse. Even if these assumptions were well grounded at the time, none of them is today. Students want to learn both practical skills and earn four-year degrees. The failure to link funding to employment outcomes has led to the proliferation of many low-quality programs that are hampering efforts to build quality in our postsecondary CTE system. The good news is that none of the practices or policies that grew out of these faulty assumptions is immutable, as the examples and policy recommendations below will demonstrate.

Creating More Four-year Degree Options

Vocational education does not have to end short of a four-year degree. In fact, the best vocational systems in Europe provide a series of connected programs that start in high school but can lead to advanced degrees. A number of countries (Austria, Sweden, Switzerland, for example) have “higher vocational” sectors, with polytechnic or applied universities and degree programs that provide opportunities for advancement for those who started their education on vocational tracks. Florida, Washington, and Texas have been leading the way on similar efforts here in the United States, creating four-year degree options for students graduating with applied associate degrees. Below are examples of how states and innovative institutions can break outside the box of the traditional four-year degree:

- **Upside Down Degrees:** The Evergreen State College of Washington’s “upside down degree” is an example of how flexibility around the sequencing of general education requirements can help more students earn Bachelor of Arts degrees. The college allows students to flip the degree pyramid, putting two years of general, liberal

arts education after a two-year applied associate degree. It is an approach that preserves the general education core but without closing the door to students who start their education with technical training. Students earn a traditional BA and are able to transfer into Evergreen with an AAS degree from any community college in Washington and start as a junior.

- **Bachelor of Applied Science Degrees:** Another strategy for building on applied associate degree is to link them to a bachelor of applied science (BAS) and allow community colleges to award both. Beginning in the 2000s, Florida, Washington, and Texas all began allowing their community colleges to award select BAS and Bachelor of Science degrees, enabling students to start and finish a four-year applied degree at a single institution. Since 2001, Florida has authorized 24 of its 28 colleges to grant bachelor’s degrees in more than 150 career fields, primarily management, education, nursing, and allied health. Washington authorized a select group of community colleges in 2007 and now offers more than 20 different degrees at 15 colleges. The degrees address two of the major barriers to four-year degree completion at once: the inevitable loss of credit upon transfer and the limited range of applied degree options at most four-year institutions. The degrees come in roughly two forms, one that continues to build on technical knowledge within a particular occupational field (the “career ladder model”) and one that provides more general management and leadership skills and can serve as a next step for a wider array of AAS degrees (the “management capstone model”).³⁷ Florida’s BAS in cardiopulmonary studies is a good example of the career ladder model, as it builds on an AAS degree for cardiopulmonary technicians. South Texas College’s BAS in Organizational Leadership is a typical example of the management capstone model.

Bachelor of applied science and upside down BA degrees are not new, but they are still relatively scarce. While 22 states allow community colleges to grant four-year degrees, fewer than 70 community colleges actually did so in 2014, with the majority clustered in Florida,

Washington, and Texas. All three states have seen positive outcomes for their graduates, with average retention and completion rates of 90 percent in Washington.³⁸ In Florida, the average earnings of graduates of community college BAS programs are higher than the average earnings of graduates from the state's four-year institutions.³⁹ Washington's programs have generated similarly promising earnings returns. In 2015, California and Colorado both authorized select community colleges in their states to start awarding a limited number of BAS and BS degrees.⁴⁰

Recommendations: States are well-positioned to expand the four-year degree options available to students and ensure that those degrees have both labor market value and can serve as a stepping-stone to further education. Specifically:

- Using careful labor market analysis, states should authorize community colleges to award four-year degrees – applied baccalaureate and Bachelor of Science degrees – and monitor programs to ensure that they remain aligned with state labor market needs and opportunities.
- States can also authorize at least one public institution to award an “upside down” degree designed to enable graduates of applied associate degrees to earn a Bachelor of Arts.

Facilitating Transfer Through Industry-based Credentials and Assessments

Nursing is the well-known exception to the rule of students who start in certificate or applied associate degree programs having difficulty moving smoothly on to the next educational and career advancement opportunity. It is the original career pathway model and, while it can be overused as a policy example, it is worth understanding the key elements that make it work so well. Students can begin their career journey in nursing by enrolling in a one-year certificate program that allows them to earn a license in “practical nursing”. Many schools – public, nonprofit, for-profit, even many non-degree-granting institutions – provide training programs in practical nursing, preparing students for state licensing exams. In most states, students who pass the exam can start working and use their license to transfer directly into a two-year associate degree in nursing program (ADN) as a second-year student. Upon completion of their ADN, the student will take another outside examination, called the NCLEX, to attain the rank of Registered Nurse. With

the ADN and NCLEX in hand, that student will be able to enroll directly into a Bachelor's of Science in Nursing program (BSN), and often complete that degree in less than two years. The BSN, in turn, is a stepping-stone to a wide array of additional educational and career advancement opportunities.

The key to the smooth transition from one educational level to the next, often across different institutions and sectors, is the existence of external, industry-validated quality markers – the licensing and NCLEX exams – that give receiving institutions confidence that the student is academically prepared for their program. The examinations make the learning outcomes at each stage of the process explicit and consistent. The involvement of both professional nursing societies and state agencies in the development of the licensing and other credentials can ensure that they have value in the labor market and are aligned with current industry needs.

External, industry-based quality anchors – licenses, certifications, and high-stakes examinations – can play a very helpful role in bridging applied certificate or associate degree programs with an educational next step. Unfortunately, many occupations do not have widely accepted third-party credentials that can serve as a substitute for courses during a transfer process. But a growing number of industries and professions, including manufacturing, information technology, health informatics, and avionics, to name a few, are working to develop open, transparent competency-based credentials that can serve as bridges across education and training programs.

Recommendations: Both federal and state governments can support the development of third-party credentials and assessments that facilitate student transition from applied degree and certificate programs to four-year degrees.

- Allow Pell grants and student loans to be used to pay for prior learning assessments that enable students to demonstrate core competencies that can substitute for general education requirements.
- Federal and state governments can support the development of competency-based degree pathways that integrate general education competencies into applied, occupationally focused programs.
- States can require more use of industry-based credentials in their CTE programs, using program

approval processes to create more consistency and clearer standards to facilitate transfer and building of pathways.

- States can work with professional societies, industry associations, and programmatic accreditors to develop common assessments and credentials that can serve as evidence of learning outcomes.
- States can develop reciprocity agreements around occupational licenses to facilitate student mobility.

Building Quality and Protecting Students by Tying Funding to Outcomes

Of the three policy gaps created by the 1972 amendments, the most obvious was the failure to hold providers of gainful employment programs accountable for the labor market outcomes of their students. It is also the easiest of the three gaps to fix in a technical sense, but the hardest politically. In hindsight, the omission of employment and earnings outcomes can seem almost baffling, as it enabled the proliferation of many low-quality CTE programs, exposed students to high levels of risk, and funneled taxpayer dollars to many bad, even predatory schools. Creating linkages between federal education funding and student outcomes (transfer, graduation, employment, and earnings) is an urgent and necessary step for protecting the interests of students and taxpayers. It will also help channel funds to quality programs that enable students to advance in their education and careers.

First, the technical challenges: Collecting accurate employment and earnings outcome data of graduates from postsecondary education programs is possible today, but only in a limited way. Beginning in 2010, after issuing the “gainful employment rule,” the U.S. Department of Education began collecting data on gainful employment programs, which it defined to include all programs offered by private, for-profit providers and all certificate programs offered by public institutions. The data are focused on the relationship between earnings and debt levels. The Department set a series of thresholds on debt-to-earnings ratios, and institutions that fall below them (whose students do not earn enough to pay their debts) lose access to the federal student aid programs. The rule is an important step forward in holding for-profit institutions accountable for charging high tuition with little regard for student debt or earnings. Despite intense opposition from for-profit schools, it has withstood

a legal challenge. But the gainful employment data provide a very limited view of what is happening in our postsecondary CTE system. They do not tell us much about the educational or career trajectories of the large majority of CTE students who attend public two-year colleges or about how students move from specific programs into the labor market or on to further education – both of which would be of great value to policymakers. The data tell us who is drowning in debt, but not much else.

States have the option of using the wage record data generated by their unemployment insurance offices to track all of the students attending their public institutions as they move into the labor market, and many do. But these data also provide an incomplete picture, as they miss students who attended private schools, have left the state, work for the federal government or military, or are self-employed.

Data collected by the Social Security Administration provide a much more comprehensive view of earnings that can track students and graduates after they have left the state and regardless of whether they are self-employed or working for the government. The Department of Education’s “College Scorecard” uses these data, but it currently tracks earnings outcomes at the institution level and only for students who received federal financial aid (grants or loans). The Department is promising in future rounds of the Scorecard to report earnings outcomes by program, but these efforts will be limited to students who receive federal aid.

From an accountability and program improvement standpoint, the ideal would be for the federal government to track all students, regardless of whether they receive aid or attend public or private institutions, as they move in and out of educational institutions and through the labor market. Unfortunately, the federal government is currently banned from collecting student-level data on students and matching it with Social Security Administration data, except for the students meeting the federal definition of a gainful employment program. The “student unit record ban” was adopted during the last reauthorization of the Higher Education Act, ostensibly out of concern for student privacy, though how collecting data on student outcomes would threaten students has never been clear (while the threat to low-quality institutions is).⁴¹ The ban has severely hampered efforts to collect data that could be used by policymakers to better link federal education funding for career education – whether through HEA or other programs – to student-level outcomes.

Efforts to link federal funding to student labor market outcomes have generated significant push-back from across higher education. The gainful employment rule met opposition from both for-profit schools and community colleges that complained that it placed an expensive burden on their schools and failed to recognize that, as open-access institutions, they often serve the least academically prepared students. The student unit record ban has strong support from the powerful National Association of Independent Colleges and Universities (NAICU), which represents more than 1,000 private, mostly liberal arts institutions, and has been successful at dissuading lawmakers from overturning it. In light of the intense opposition to current efforts to even collect outcome data, the decision by lawmakers in 1972 not to hold institutions delivering gainful employment programs seems less baffling. But just as changes to the economy have increased both the value of the bachelor's degree and the demand for career training, they have also increased the need for more accountability in the higher education sector.

Recommendations: Public policies need to reward institutions for helping all students, especially those from historically disadvantaged or underrepresented groups, to access and succeed in higher education and transition successfully into the next stage of their personal and professional development. Our policies also need to make it easier for institutions and policymakers to collect and report student outcome data, including employment and earnings.

Federal: The upcoming reauthorizations of the Higher Education Act and Carl D. Perkins Act provide opportunities to strengthen accountability systems in both laws:

- Expand the gainful employment rule to include all higher education programs and providers, including bachelor degrees. All programs that lead to unsustainable debt levels for students require the attention of federal policymakers, regardless of whether they are explicitly “gainful employment” programs.

- Remove the student unit record ban in HEA to enable the collection of more accurate, program-level data on student education and labor market outcomes. That data, in turn, should be incorporated into the Department of Education’s College Scorecard and other consumer tools.
- Adopt common measures and definitions for graduation, credential attainment, employment, and earnings across the Higher Education Act and the Carl D. Perkins Act.
- Strengthen the accountability measures in the Carl D. Perkins Act to make them more consistent across different states.

States: States do not need to wait for the federal government to strengthen linkages between funding and outcomes or improve data:

- Tighten state authorization and program approval processes to include more monitoring of existing programs and more attention to outcomes.
- Adopt performance-based models that tie funding for postsecondary CTE programs to labor market outcomes and/or successful transfer to a four-year institution.
- Include state Perkins agencies in decisions to approve career education programs for purposes of Title IV funding. State Perkins agencies have established criteria and expertise for judging the quality and relevance of CTE programs, which should be leveraged by state governments to ensure their higher education funds are well-targeted.
- Strengthen state longitudinal data systems, connecting education and workforce data and ensure that data on Perkins and Workforce Innovation and Opportunity Act participants are also included.

CONCLUSION

A higher education system in which students can start their journey to a four-year degree and beyond with high quality training in a specific occupation would be a great help to many students, particularly those who cannot afford to delay earning a decent living for four years. In today's tough economy our policies should not create tradeoffs between learning for work and learning for a degree. But our federal higher education policies, sometimes intentionally, sometimes inadvertently, limit the ways in which students can get onto bachelor degree paths. The policies are strongly biased in favor of students who can delay career training until they graduate with a four-year degree and make it difficult to connect academic and career pathways below the bachelor's degree. The barriers are generated by a combination of outdated

conceptions of what a four-year degree must include, the manner (and sequence) in which students must learn those things, and a host of unintended consequences from policy changes made to the Higher Education Act almost forty years ago. But none of these barriers are inevitable or irreversible. As the examples in this paper demonstrate, a number of states and institutions are leading the way in building pathways to four-year degrees and beyond that start with a career training program. The proposed reforms to federal and state education policy will make it easier for institutions to meet the needs of students seeking career education opportunities and ensure that their educational journey moves in only one direction – forward.



NOTES

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² See O*NET Online: <http://www.onetonline.org/find/quick?s=surgical+tech>.

³ See Ben Miller, “Policy Brief: The Student Debt Review.” (Washington DC: New America, 2014).

⁴ See Adam Looney and Constantine Yannelis, “A crisis in student loans? How changes in the characteristics of borrower and in the institutions they attended contributed to rising loan defaults.” (Washington DC: Brookings, 2015).

⁵ Burning Glass, “Moving the Goalposts: How Demand for a Bachelor’s Degree is Reshaping the Workforce.” (Boston: Burning Glass, 2013). <http://burning-glass.com/research/credentials-gap/>

⁶ See National Center for Education Statistics, Career/ Technical Education (CTE) Statistics <https://nces.ed.gov/surveys/ctes/>

⁷ See Mary Alice McCarthy, “Beyond the Skills Gap: Making Education Work for Students, Employers, and Communities.” (Washington DC: New America, 2014). https://www.newamerica.org/downloads/20141013_BeyondTheSkillsGap.pdf.

⁸ See National Center on Education Statistics: http://nces.ed.gov/programs/digest/d14/tables/dt14_318.40.asp

⁹ For a breakdown of federal spending on vocational education in the United States, see McCarthy, Mary Alice. October 2014. “Beyond the Skills Gap.” <https://www.newamerica.org/education-policy/beyond-the-skills-gap/>.

¹⁰ Ibid

¹¹ Lawmakers included a provision that proprietary institutions not use access to the federal grant and loan dollars to raise their tuition, but the rule has proven

impossible to enforce. They also added a grant program to the Higher Education Act, explicitly aimed at building the capacity of community colleges to deliver occupational programs for gainful employment. It included grants to states to establish steering committees made up of staff from vocational and higher education agencies to develop quality criteria for occupational programs and take charge of programs approval processes. The program was never funded and was finally removed from HEA during the 1986 reauthorization.

¹² For more on the returns to certificate and associate degrees see Mark Schneider, “Education Pays in Colorado: Earnings 1, 5, and 10 Years after College.” (Washington DC: College Measures, 2015).

¹³ “Applications Software Developer” was among the top three jobs in demand in Missouri. See Missouri Economic Research and Information Center (MERIC), “Missouri Real Time Labor Market Summary.” (Jefferson City, July 2015). https://www.missourieconomy.org/pdfs/rt_lmi_state.pdf.

¹⁴ <http://www.simplyhired.com/salaries-k-computer-programmer-with-associate-degree-jobs.html>.

¹⁵ <http://www.onetonline.org/link/summary/15-1131.00>.

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¹⁹ David B Monaghan and Paul Attewell, “The Community College Route to the Bachelor’s Degree.” *Educational Evaluation and Policy Analysis* (2014, Vol. XX) pp 1-22.

²⁰ Ibid.

²¹ See Illinois Community College Board 2014 Databook: <http://64.107.108.147/databook/home.cfm>.

²² See http://system.suny.edu/media/suny/content-assets/documents/institutional-research/2014_05_BOTAA_AppliedAssociates.pdf/.

²³ See 2011 Gainful Employment Information Rates: <https://studentaid.ed.gov/sa/about/data-center/school/ge>.

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²⁵ David J. Deming, et al., “The Value of Postsecondary Credentials in the Labor Market: An Experimental Study.” NBER Working Paper No. 20528, September, 2014. See also Adam Looney and Constantine Yannelis, “A crisis in student loans? How changes in the characteristics of borrower and in the institutions they attended contributed to rising loan defaults.” (Washington DC: Brookings, 2015).

²⁶ See “Post-school earnings” at <https://collegescorecard.ed.gov/data/>.

²⁷ Pew Research Center, “The Rising Cost of Not Going to College.” (Washington DC: Pew Research, 2014).

²⁸ See National Center for Education Statistics: <https://nces.ed.gov/fastfacts/display.asp?id=76>.

²⁹ David B Monaghan and Paul Attewell, “The Community College Route to the Bachelor’s Degree.” *Educational Evaluation and Policy Analysis* (2014, Vol. XX) pp 1-22.

³⁰ Julia Panke Makela, Collin M. Ruud, & Debra D. Bragg, “Exploring the Landscape: Identifying Pathways to Baccalaureate Degrees in Technician Education.” (Champaign-Urbana: Office of Community College Research, 2011).

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³³ Julia Panke Makela, Collin M. Ruud, & Debra D. Bragg, “Exploring the Landscape: Identifying Pathways to Baccalaureate Degrees in Technician Education.” (Champaign-Urbana: Office of Community College Research, 2011).

³⁴ See Kevin Lang and Russell Weinstein, “Evaluating Student Outcomes at For-Profit Colleges.” NBER Working Paper No. 18201. (Washington DC: June 2012).

³⁵ See http://nces.ed.gov/programs/digest/d14/tables/dt14_321.10.asp

³⁶ See Digest of Education Statistics <https://nces.ed.gov/programs/digest/d96/d96t241.asp> and http://nces.ed.gov/programs/digest/d14/tables/dt14_321.10.asp

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⁴⁰ See <https://www.insidehighered.com/quicktakes/2015/01/21/bachelors-degrees-california-community-colleges>

⁴¹ For full background on the student unit record ban, see Clare McCann and Amy Laitinen, March 2014. “College Blackout: How the Higher Education Lobby Fought to Keep Students in the Dark.” <https://www.newamerica.org/education-policy/college-blackout/>.



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