A Policy Agenda to Develop Human Capital for the Modern Economy

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ACKNOWLEDGEMENTS

We are grateful to the members of our working group: Sylvia M. Burwell, Mitch Daniels, Melissa S. Kearney, Ruth Porat, Penny Pritzker, and Margaret Spellings. We are also grateful to the following individuals who provided helpful insights into our working group: Juan Salgado, Courtney Brown, Josh Wyner, Leslie Miller. The authors Joshua Goodman, Ann Huff Stevens, and Robert Lerman contributed background research and policy proposals that served as valuable inputs into our working group's discussions. We are also grateful to John Soriano for excellent research assistance. The views expressed herein are those of the authors and do not necessarily represent the views of the working group members.

ABSTRACT

Globalization and technological innovation have intensified the demand for college-educated workers. In 2017, college graduates earned 65% more than non-college-educated workers and were twice as likely to be employed. This proposal recognizes the simultaneous need for more college educated workers and also for a higher level of labor market skill among non-college educated individuals. We propose to invest in the upskilling of the American workplace by better leveraging the potential of the community college sector. Community colleges offer widely accessible and flexible postsecondary education and midcareer training opportunities. They are also a gateway to four-year colleges for millions of students. Yet, despite their promise and potential, community colleges are under intense resource pressures that constrain the educational and labor market outcomes of their students. We call for a new federal grant program to provide funding to community colleges, contingent on institutional outcomes. Our cost estimates suggest new funding on the order of $22 billion per year. This new public investment in community colleges would promote the policy goals of: (1) increasing the supply of college-educated workers; (2) expanding opportunities for midcareer skill development and training; and (3) providing better pathways into the workforce for non-college-educated workers. We additionally support a set of six complementary proposals to further advance these stated goals.

1. Evidence-Based Investments in Community Colleges

More than ever, a college degree is predictive of an individual's economic success. In 2017, college graduates earned 65% more than non-college-educated workers and were twice as likely to be employed. Increasing the number of Americans with a college degree would advance both individual economic security and the productivity and competitiveness of the American economy. Increasing numbers of high school graduates are enrolling in college, but many fail to earn a degree. Among students who matriculate at four-year institutions, nearly half fail to complete their degree within six years. Among students who first enrolled full-time at a two-year public institution in 2010, nearly 42 percent had not received any degree or were no longer enrolled in school six-years later (Shapiro et. al, 2018).[1] Increasing college completion rates must be a policy priority.

Posing an additional challenge, skills demanded in the modern economy are constantly changing. Workers today typically change jobs and industries multiple times throughout their working years. As a result, individuals must adapt to new

1 Shapiro, D., Dundar, A., Huie, F., Wakhungu, P.K., Bhimdiwali, A. & Wilson, S. E. (2018, December). Completing College: A National View of Student Completion Rates – Fall 2012 Cohort (Signature Report No. 16). Herndon, VA: National Student Clearinghouse Research Center.

technologies, learn new skills, and earn new credentials over their careers. Lifelong learning and skill upgrading is the new normal. As such, American institutions of higher education must be prepared to serve students throughout their careers with a flexible, market-driven model of education.

The United States should make a bold and dedicated commitment to increasing the skills and productivity of its workforce by leveraging the potential of the community college sector. We propose a federal grant program to provide new funding to community colleges, contingent on institutional outcomes in degree completion rates and labor market outcomes. We believe a program of a similar scale to the 19th century Morrill Land Grant Program, which dramatically expanded access to higher education for working-class Americans, is needed to ensure our workforce meets the demands of the modern economy.[2]

This new public investment in community colleges would promote the policy goals of: (1) increasing the supply of college-educated workers; (2) responding to unmet demand for midcareer skill development and training; and (3) providing better pathways into the workforce for non-college-educated workers through the expansion of high-quality, short-term certificate programs.

The investment of resources in community colleges would be linked to metrics of the policy's success. To determine the appropriate barometers of success, we take a lesson from U.S. history and look to the high school movement of the early 20th century. In 1910, fewer than 10% of Americans had a high school degree. By 1935, nearly 40% of the population had earned their degrees. This inflection point came from substantial new investments in the nation's education resources. We aim to achieve increases of a similar magnitude in postsecondary degree and credential completion rates with a new generation of public investments. Our aim with this proposal is to achieve the following benchmarks by 2030:

1. Close the completion gap between two-year college students aged 18 to 24 and their peers at four-year institutions by increasing the average completion/transfer rate among 18- to 24-year-olds at community colleges from 37.5% to 60% by 2030.[3] This would result in 3.6 million additional 18- to 24-year-olds with college degrees in 2030.

2 For background information on this act, see: https://press.princeton.edu/titles/10320.html; *Morrill Land Grant Act of 1862*; a related notion is put forward by Goolsbee and Minow (2016).

3 It should be noted that closing the completion gap between two and four-year colleges will require progress in the four-year sector as well. Only about 40 percent of students who transfer from community colleges into a four-year institution complete a bachelor's degree within six years. We refer readers to the Aspen Institute College Excellence Program and the Community College Research Center work on evidence-based policies and tools to improve transfer performance.

2. Increase the share of Americans aged 25 to 64 with a college degree or other high-quality credential from 46.9% to 65% by 2030, which reflects the expected share of jobs requiring advanced skills by that year. This goal would require 28 million additional workers to earn first-time degrees or high-quality credentials by 2030.[4]

2. Why We Need Major New Public Investments in Community Colleges

We call for a dedicated funding commitment to improving the capacity of community colleges to increase degree completion rates, offer opportunities for lifelong learning, and provide career and technical education programs to non-degree-seekers. Community colleges are both pathways to degree completion and institutions that provide career opportunities for students who are not currently pursuing an associates or bachelor's degree. Rather than proposing the creation of new, untested public programs, we focus on improving pre-existing public institutions at scale to better serve these purposes.

GREATER INSTITUTIONAL RESOURCES WILL LEAD TO HIGHER RATES OF DEGREE COMPLETION

Community colleges offer widely accessible and flexible postsecondary education and midcareer training opportunities. They are also a gateway to four-year colleges for millions of students. National data reveal that a third of first-year students at four-year colleges begin their postsecondary education at a community college (Shapiro et al., 2015). Among these students, three in four are racial or ethnic minorities, and 44% are from low-income households (Baum & Ma, 2016). Older, independent students with full-time jobs also make up a greater share of the student population at community colleges than at four-year universities (Baum & Ma, 2016).

Despite their promise and potential, community colleges are under intense resource pressures that constrain the educational and labor market outcomes of their students. For every dollar that is spent on education expenses per student at public, four-year bachelor's institutions, only 75 cents are spent per student at community colleges. The Delta Cost Project (2016) estimates that in the year 2013, average spending per student on instruction and student supports at a community college was $11,400, as compared to $14,900 at a public bachelor's institution.[5] Part of this gap is driven by

4 See the appendix to this paper for more detail about our assumptions.

5 Both numbers are in 2017 dollars. Bachelor's institutions are defined as institutions at which bachelor's degrees represent at least 10% of undergraduate degrees; fewer than 50 master's or 20 doctoral degrees are awarded per year (Delta Cost Project, 2016).

per-student funding for "student supports," which include career counselors, mental health resources, and supplemental instruction; such spending is, on average, 40% higher at four-year public schools compared to two-year schools (Delta Cost Project, 2016).[6] This difference is especially noteworthy because two thirds of community college students are from economically disadvantaged backgrounds, and are thus more likely to require these supports (The Century Foundation, 2013).

Institutional resources have a significant impact on student outcomes. Students who attend institutions with fewer resources, including community colleges, are less likely to complete a degree than similar students who attend a four-year school. (See, for example, Hoxby & Turner, 2013; Cohodes & Goodman, 2014; Goodman, Hurwitz, & Smith, 2015). Unfortunately, students from lower income families and minority students are more likely to attend low-performing institutions (Bailey & Dynarski, 2011), which diminishes these students' prospects for degree completion, and in turn, for upward economic mobility.

A series of randomized, controlled trial studies demonstrates that enhanced supports for low-income students can lead to improved rates of persistence and completion. Such studies have demonstrated the potential success of academic coaching (Bettinger & Baker, 2014), social worker guidance (Evans, Kearney, Perry, & Sullivan, 2017), and academic tracks dedicated to disadvantaged students (Scrivener et al., 2015). Increasing the public resources available to community colleges will equip them to provide and expand such services, thereby better serving their students. This will ultimately lead to increases in the number of college graduates in the United States, as well as higher rates of economic advancement among students from low-income backgrounds.

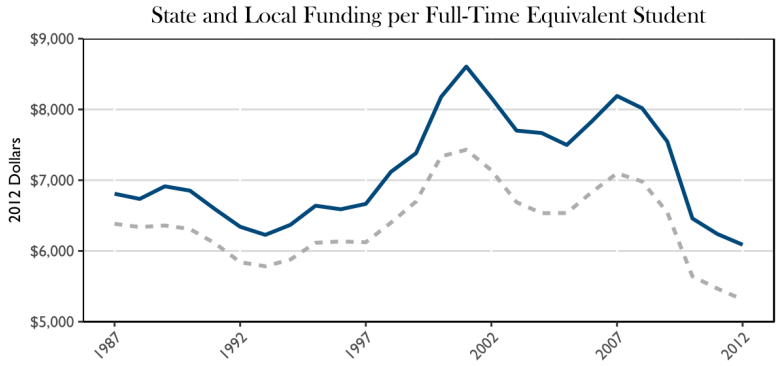
Nevertheless, state appropriations for institutions of higher education have declined significantly since the late 1990s. The decline in per-student appropriations has had a negative impact on persistence and completion rates, while the increase in financial aid spending through federal Pell Grants is not expected to offset the impact of lower public funding per student (Deming & Walters, 2017; Deming, 2017; Bound & Turner, 2007).

Figure 1 illustrates that state appropriations for community colleges reached a 30-year low during the Great Recession. After peaking in 2001 at $8,600 per full-time equivalent student, inflation-adjusted state and local funding per student for community colleges declined by 30% to $6,000 in 2012. Figure 2 illustrates the long-term trend in federal funding for community colleges. Federal funding increased significantly between 2009 and 2012, driven primarily by an increase in the maximum amount awarded under the Pell Grant Program. However, the increase in federal funding during this period did not offset this decline in state and local appropriations.

6 The average advisor-to-student ratio in community colleges nationwide is one advisor for every thousand students, compared to one advisor for every 260 students at four-year schools (MDRC, 2010; Robbins, 2013).

Consequently, public colleges and universities have come to rely more heavily on tuition and student fees to cover costs that are no longer supported by state and local tax revenues, and to take advantage of more generous federal financial aid.[7] Between 2002 and 2012, tuition and fees at four-year public institutions increased 41% (NCES, 2016).[8] Community college tuition has remained more stable, increasing by 25% over the same period. Community colleges are often the most cost-effective option available to students, with average annual tuition and fees of $3,520 per year (Community College Association of America, 2017), compared to $9,650 at four-year institutions and $16,000 per year in the for-profit sector (Delta Cost Project, 2016).

Figure 1. State and Local Funding Per Full-Time-Equivalent (FTE) Student at Community Colleges



Source: Delta Cost Project, American Institutes for Research, and author's calculations.

Note: A full time equivalent student is equal to one student enrolled full time for one academic year. Total FTE enrollment includes full time students and the equivalent of part-time enrollment.

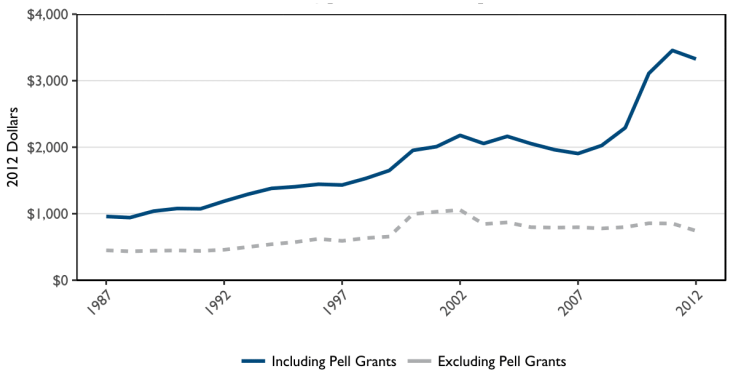
EXPANDING OPPORTUNITIES FOR LIFELONG SKILL UPGRADING

Community colleges play an important role in providing American workers with opportunities for lifelong learning. The average community college student is 28 years old, and one in ten students are over age 40. Two thirds of community college students live and file taxes independently of their parents. A third are employed

7 Higher education is sometimes referred to as "the balance wheel" of state appropriations as it often is cut back the most when other spending categories require more funding (Delaney & Doyle, 2011). Between 1997 and 2017, state appropriations for Medicaid increased 5.7%, while state funding for higher education decreased 3.1%--the largest decline out of all spending categories (NASBO., 2018). Kane, Orszag, & Thomas (2001) find that each additional dollar in state Medicaid spending crowds out higher education appropriations by about six to seven cents.

8 41% increase for four-year public institutions and a 25% increase for two-year public institutions.

Figure 2. Federal Funding Per Full-Time-Equivalent (FTE) Student at Community Colleges



Source: Delta Cost Project, American Institutes for Research, and author's calculations.

Note: A full time equivalent student is equal to one student enrolled full time for one academic year. Total FTE enrollment includes full time students and the equivalent of part-time enrollment.

full time.[9] Community colleges also educate a disproportionately large share of underrepresented minority and low-income adult learners (Baum & Ma, 2016).

Half of working adults believe they will need to get more training or develop new skills throughout their careers to keep up with changing skill demand (Pew Research Center, 2016). Two thirds of working adults report taking a course or receiving additional training in the past 12 months in order to develop new job skills or expertise for the purposes of career advancement (Horrigan, 2016). Gone are the days when a student could receive a degree after college and expect to be prepared for a lifelong career.

Despite the great need for lifelong skill upgrading, many community colleges lack the capacity and funding to support high-demand training programs, such as healthcare and information technology, due to the relatively high costs of such training in these fields compared to other subject areas (Stewart, Farren, Gootman, & Ross, 2017). In addition, institutional funding is often tied to student headcounts instead of labor market outcomes, which suppresses incentives for community colleges to promote education in fields with the highest labor demand (Holzer, 2015).

9 Independent students are defined by NCES as: "age 24 or over and students under 24 who are married, have dependents, are veterans or on active duty, are orphans or wards of the courts, are homeless or at risk of homelessness, or were determined to be independent by a financial aid officer using professional judgment. Other undergraduates under age 24 are considered to be dependent" (NCES, 2018).

Economic downturns exacerbate resource constraints at community colleges, which is precisely the time at which many workers return to school to build new skills and acquire new credentials. During recessionary periods, many unemployed workers choose to go back to school to acquire new skills instead of searching for another job in poor labor market conditions. For example, in the fall of 2009, overall community college enrollment increased by nearly 12% over the previous year; full-time enrollment increased 24% (Mullin & Phillippe, 2009).

There is a tremendous opportunity to improve and modernize community colleges to better serve the needs of lifelong learners. An investment in the capacity of community colleges would enable these institutions to operate more effectively in the new paradigm in which training and education occur over the course of a worker's career.

ADVANCING LABOR MARKET SKILLS AMONG NON-COLLEGE-EDUCATED INDIVIDUALS

Career and technical education (CTE), sometimes referred to as "vocational education," can provide an alternative pathway to labor market skills for students who are not ready or inclined to pursue a college degree. CTE programs combine career-specific instruction with traditional academic content. Many workers are exposed to CTE through the Workforce Investment and Opportunities Act (WIOA) programs and the Trade Adjustment Assistance (TAA) program. Safety net programs, including Temporary Assistance for Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP), also refer workers to CTE. Most community colleges offer CTE programs that include short-term certificates or diplomas that can be earned in as little as six months, as well as programs that lead to a two-year associates degree.

As Ann Stevens summarizes in this volume, CTE offerings at community colleges lead to significant improvements in student earnings and employment outcomes. Research on CTE offerings at California community colleges showed that completion of a CTE certificate increased earnings by 14% to 28% and employment rates by two to four percentage points. The highest returns were in the health occupations, but earnings increased by 15% to 22% in non-health occupations, as well (Stevens, Kurlaender, & Grosz, 2018).

Another evaluation of CTE offerings at public institutions (primarily community colleges) find that completion of a CTE certificate increased annual earnings by more than 30% and increased employment rates by four percentage points. Students at

for-profit universities, meanwhile, exhibited *lower* earnings and employment after completing a CTE program (Cellini and Turner, 2018).

Based on the strong evidence that community colleges play an important role in equipping non-college-educated workers with in-demand skills through CTE, further expanding such programs requires a dedicated commitment to enhanced public investment in community colleges.

3. Accountability

The new federal grant program that we are proposing would offer funding to community colleges based on specific metrics, including: (1) characteristics of the student body (with greater funding allocated to schools with greater shares of students from disadvantaged backgrounds); (2) the labor market conditions in the local community, such as the local employment rate; and (3) demonstrated improvements in student retention and completion.

The federal grant program will be temporary, and its continuation will be contingent upon demonstrated outcomes. We propose allowing the program to expire in 2030 unless the aforementioned benchmarks are achieved. In addition, continual monitoring and evaluation will be required to ensure funds are being directed to their best use (as described below).

The availability of new federal funding for community colleges could entice state lawmakers to divert existing funds away from community colleges toward other uses. To avoid this unintended consequence, we propose making federal grants contingent upon continued state funding for community colleges at or above current levels.

This proposal contrasts with other recent proposals that have called for increased student financial aid, for example, that from the Center for American Progress (2018). We do not take this approach because increasing financial aid can increase the demand for higher education without addressing supply constraints. This mismatch creates several unintended consequences: it could lead more students to attend a college program that does not necessarily serve them well, and it could also lead to higher tuition "sticker prices." Institutions can capture aid by adjusting prices—including by adjusting tuition, fees, and internal aid. Indeed, Lesley Turner (2017) finds that schools capture 15% of students' Pell Grant aid through reductions in institutional aid. Nicholas Turner (2012) finds that federal student aid crowds out institutional aid, dollar-for-dollar. Increases in institution-specific subsidized loan maximums increase

tuition prices by as much as 60 cents on the dollar (Lucca, Nadauld, & Shen, 2016).[10] These concerns about publicly provided aid are an important factor in our emphasis on supply-side investments in this proposal.

At least 32 states have adopted performance-based funding measures—which make funding contingent upon successful course completion, credits earned, and credentials earned—for community colleges and public universities. We believe that new community college investments must be tied to both student retention and completion results, as well as tangible outcomes in the labor market, including increased employment and higher wages within students' given professions. Such accountability metrics are especially important for the evaluation of two-year associates degrees and shorter-term credentials that are intended to prepare workers for specific vocations after graduation. A focus on labor market outcomes would improve the incentive for schools to produce more students with credentials that have significant labor market value.

We do not want to encourage schools to select only the best students to make their completion rates appear higher. Therefore, the funding formula would take into account institutional "inputs," such as the characteristics of entering students and local labor market conditions, as well as institutional "outputs," including completion, employment, and wage outcomes.[11] Funding would reward schools that make the greatest progress against the "output" measures, conditional upon their initial institutional characteristics. For example:

10 The incidence varies by institution type. Turner (2017) finds that public schools capture less than five percent of their students' aid. Singel and Stone (2007) find that increases in Pell grants are matched one-for-one with tuition increases for private universities and out-of-state tuition increases for public universities, while Cellini and Goldin (2012) find that private for-profits' programs that are eligible for aid charge tuition that is 78% higher than comparable aid-ineligible programs. Increases in federal and state financial aid are not the only drivers of the rising direct costs of higher education—increases in the return to college education and cuts in public appropriations also play an important role. Gordon and Hedlund (2017) find that between 1987 and 2010, these factors played an important role in the tuition increases that occurred over that time period, but that increased financial aid was the biggest driver of tuition increases.

11 Suggested metrics draw heavily upon the criteria that are used for awarding the Aspen Prize for Community College Excellence.

INPUTS	OUTPUTS
• Share of students attending college part time • Share of students in academic/transfer programs vs. technical/vocational programs • County unemployment rate • Five-year difference in employment rates in county • Language diversity of students • Share of students requiring academic remediation • Share of underrepresented minority students	• Share of students who earn a credential or transfer to a four-year institution within three years • Share of students who earn a credential or transfer into two- to four-year degree program within three years • Among students who transfer to four-year college, share that complete four-year degree • Graduates' earnings relative to regional labor market • Job placement and continuous employment rates • Quality and reliability of data gathered by college on student learning outcomes • College's use of data on learning outcomes to improve coursework • Graduation rates of underrepresented minorities • Achievement gap between white and underrepresented minority students

4. Best First-Dollar Investments

There is substantial variation in the types of interventions needed within institutions to significantly increase college completion. That said, there are many promising, evidence-based directions that could be taken to ensure the highest return on investment. Promising potential interventions that are backed by evidence include:

1. **Expanding student support services and advising.** Increasing the availability of dedicated, nonfinancial student supports, such as case management or individualized financial counseling, has been shown to cost-effectively increase retention and completion rates in a cost-effective way. (Evans et al., 2017; Page, Kehoe, Castleman, & Sahadewo, 2017; Angrist, et al. 2016; Clotfelter, Hemelt, & Ladd, 2016).

2. **Using financial incentives to promote course and degree completion.** Several colleges and universities have experimented with providing students with financial incentives, such as tuition waivers or transportation subsidies (Barrow, Richburg-Hayes, Rouse, & Brock, 2014; Richburg-Hayes et al., 2009), to stay enrolled and to complete degrees. For example, the Stay the Course program in Fort Worth pairs community college students with a trained social worker and provides access to a fund for limited emergency financial assistance. The program has increased completion rates by as much as 31.5 percentage points (Evans et al., 2017).

Improving remedial education to increase academic preparedness. Many students are not prepared for college-level coursework when they enter college and must take remedial courses before advancing to credit-bearing coursework. Students who are required to pursue remedial education are less likely to persist and complete their degrees. However, several recent studies have examined interventions to promote persistence among students who require remedial education. Successful examples include course structure changes (Schneider & Clark, 2018), combining academic supports with incentives (Angrist et al., 2009), and academic coaching (Bettinger & Baker, 2014).

5. Fiscal Costs and Potential Offsets

ESTIMATED FUNDING AMOUNT

We estimate an annual investment of *$22 billion*. This amount is based on a calculation of what it would cost to increase the rate of completion and transfer among community college students aged 18 to 24 to 60% by 2030, and to increase the share of Americans aged 25 to 64, with a college degree or other high-quality credential to 65% in 2030. Data-driven calculations lead us to conclude that it will cost *$11.9 billion* to fund instruction and student supports at community colleges at the same per-student level as at public four-year institutions, thus equalizing the intensity of instructional resources across community colleges and four-year public institutions. We then calculate the cost of increasing the share of workers aged 25 to 64 with a college degree or other high-quality credential to 65% by 2030. This would require an additional *$10.1 billion* per year. One percent of the total funding amount (approximately $20 million per year) would be set aside for research, evaluation, and technical assistance, which is comparable to other large federal education grant programs.[12]

POTENTIAL PATHWAYS TO BUDGET NEUTRALITY

There is broad bipartisan agreement that greater public investment and accountability are needed to enable public institutions to support a new model of education in which workers are continuously building skills throughout their careers. The challenge we face is that even larger changes are needed to restore a sustainable fiscal position. As Jason Furman and Phillip Swagel observe in another chapter in this volume, there is broad consensus that policy actions are needed to achieve a sustainable fiscal position over time, but there is considerable disagreement over

12 More detail is available in the appendix to this paper.

the ideal composition and timing of those actions, as well as over the fundamental choices regarding the size, scope, and role of the government in society, which ultimately will determine the nature of the fiscal adjustment.

Setting aside this much larger debate, members of our working group agree any new spending increases or revenue reductions should be deficit neutral. However, we are less optimistic that there is a clear, bipartisan path to pay for such initiatives. Some of us believe the bulk of new spending should be paid for with broad-based revenue increases, while others think the bulk of funding should come from repurposing existing programs in the Department of Education or the Department of Labor that have had disappointing outcomes. While there is agreement that the proposed new spending would need to be offset by a combination of spending reductions and revenue increases, members disagree about the extent to which new funding should be drawn from each source.

6. Complementary Proposals

Several existing proposals that would complement our call for new public investments in community colleges. We discuss policies that could address the strong financial incentives that exist for workers to return to work (often in declining sectors) instead of pursuing longer term investments in training. We also describe several options that could help strengthen alternative pathways into the labor market for non-college-educated students.

EXPANDED PUBLIC-PRIVATE TRAINING PARTNERSHIPS

Many employers have shown a renewed interest in partnerships with community colleges as a way to train workers to fill critical positions. A tight labor market, combined with the ability to influence or even create coursework that directly aligns with needed skills, is appealing for both education providers and companies.

The skills that workers can learn on the job fall onto a continuum between the general, such as interpersonal communication skills or computing, and the firm-specific, such as the skills required for specific processes that are unique to a company or team (Becker, 1962; Hashimoto, 1981). The company loses the value of providing training, especially general training, if the worker leaves to go work elsewhere. A more skilled workforce is better for society as a whole, but companies often underinvest in general training because it makes their workers more attractive to their competitors.[13]

13 A standard economic model would imply that firms will provide general skills training to workers if and only if they are able to pass the costs onto the worker in the form of lower wages during the training period. This is because an employer cannot be guaranteed to reap the benefits of the training investment, since a worker could subsequently take those skills to another employer. If firms are unable to pass the costs of training provision unto workers, which would be the case if wages are unable to adjust downward, they will generally

Public-private partnerships with community colleges can help to address this externality by allowing firms to avoid bearing the entire cost of general training. This social externality helps explain the public sector in providing or subsidizing general workforce training. Our proposal to strengthen public investments in general training at community colleges is likely to complement firm-specific training provided by the business community. Additionally, partnerships between the two sectors will better enable workers to develop a complete skill set, all while sparing businesses from bearing the costs of general training.

IMPROVE AVAILABILITY AND TRANSPARENCY OF DATA ON STUDENT LABOR MARKET OUTCOMES

Many state and federal governments have made a concerted effort to improve the transparency and availability of education and labor market data (Zinn & Van Kleunen, 2014). For example, tools such as collegescorecard.ed.gov and College Navigator make data on graduation, retention, and student debt available for all institutions of higher education that receive federal aid. Nevertheless, important further improvements include harmonizing systems across states, making longitudinal data more widely available, and improving the accessibility and reporting of information to the public (Dynarski, Hemelt, & Hyman, 2015). Data gathering for alternative credentialing programs should also be expanded, and data on labor market outcomes should be linked to degree programs.

EXPAND FINANCING OPTIONS AND INCOME SUPPORTS FOR INDIVIDUALS WHILE THEY ARE PURSUING EDUCATION AND TRAINING

Many individuals who might otherwise seek training or education do not have the financial freedom to step away from working or have any significant amount of time to do so. As Ann Stevens (2018) explains in this volume, cash- and credit-constrained workers often face financial pressure to continue working or quickly return to work instead of entering training programs, even if that decision requires them to return to low-wage work in a declining industry. Safety net programs for prime-age workers in the United States are limited and typically emphasize work instead of training.

One approach to addressing this challenge would be to increase funding for individual training vouchers for disadvantaged adult workers under the WIOA program. The voucher program, which is administered by state workforce development boards, has been shown to increase the long-term earnings of participants from $300 to

not provide general skills training. This is one explanation for why there is not more training provided by firms.

$900 per quarter (McConnell, Berk, & Perez-Johnson, 2014; Heinrich, Mueser, Troske, Jeon, & Kahvecioglu, 2013).

Another approach would be to expand lifelong learning accounts. These accounts function like other tax-deferred accounts such as IRAs—individuals contribute tax-deferred (or tax-exempt) funds into a savings account that can be used for qualified education and training programs. Tax incentives would encourage individuals to save and invest funds for continued education. Employers could also make tax-exempt contributions to the accounts, which would be portable so that the account remains with the employee after changing jobs.

EXPAND ONLINE LEARNING OPPORTUNITIES

There is no one-size-fits-all solution for expanding midcareer training opportunities. For instance, online education has made continuing education cheaper, more flexible, and more accessible for many adult learners (Goodman, Melkers, & Pallais, 2016). Enrollment in the for-profit education sector, which is largely online, tripled in size during the 2000s, driven primarily by students over the age of 24 who live independently (Deming, Goldin, & Katz, 2012). Although enrollment at for-profit institutions leveled off during the 2010s, enrollment in nonprofit online institutions continues to soar, particularly in credentialing programs in information technology, healthcare, business, and other high-demand fields.[14] The success of massive online open courses (MOOCs) and other nontraditional credentialing programs also signals that there is a significant appetite among adult learners for skill development in emerging technical fields.

However, significant questions remain about the quality of some online programs and the value of online credentials in advancing worker careers. One resume audit study found that otherwise identical job applicants were 22% less likely to receive a callback from a prospective employer if their degree came from a for-profit online institution as opposed to a nonselective public institution (Deming, Yuchtman, Abulafi, Goldin, and Katz, 2016). Hoxby (2017) compares the earnings of college students before and after their enrollment in online degree programs and finds that the labor market returns to such programs are insufficient to justify their cost to students. While exceptions undoubtedly exist, the mixed performance of online education to date leaves us apprehensive about asking too much of online postsecondary education.

14 For example, between 2012 and 2015, enrollment in Western Governors University, an online four-year university, grew 70%; Southern New Hampshire University experienced a fourfold increase in enrollment.

Students from low-income and academically disadvantaged backgrounds also perform less well when enrolled in online coursework relative to in-person formats (Joyce, Crockett, Jaeger, Altindag, & O'Connell, 2015; Alpert, Couch, & Harmon, 2016; Krieg & Henson, 2016; Xu & Jaggars, 2013; Figlio, Rush, & Yin, 2013; Bettinger, Fox, Loeb, & Taylor, 2017). Blended learning approaches, which combine online and in-person components, appear to be more promising. Recent studies find that students at four-year universities fare equally as well in blended formats as they do in entirely in-person programs (Bowen, Chingos, Lack, & Nygren, 2013; Alpert et al., 2016; Joyce et al., 2015).

We specifically do not seek to position community colleges as competitors to other high-quality, nonprofit online institutions that seek to appeal to adult learners. On the contrary, we believe there is potential opportunity for community colleges to leverage high-quality educational technology developed by other online institutions, rather than reinvent the wheel in-house. The working group affirms the importance of all institutions of higher education—including public, nonprofit, and for-profit—being held accountable for the labor market outcomes of their students. These institutions must also be transparent about the value their institutions can (or cannot) offer students.

ENHANCE APPRENTICESHIP PROGRAMS

Work-based learning strategies, particularly apprenticeships, have drawn renewed interest as a means of promoting skill development and providing a secure path to employment for young people. Germany, Switzerland, the United Kingdom, Canada, and Australia maintain robust apprenticeship programs in which two to three percent of the workforce is enrolled at a given time. In these countries, apprenticeships are a common path into the workforce and do not preclude students from pursuing four-year college degrees. In the United States, only 0.03% of the workforce is engaged in an apprenticeship.

Although apprenticeship programs are largely untested in the United States, we believe apprenticeships that provide high-quality training and workforce preparation for students prior to, or in conjunction with, college attendance merit further exploration. We also agree with recent emphasis placed on the development of industry-wide credentials to ensure apprenticeship credentials are a credible signal in the labor market. However, apprenticeships can be quite costly to employers. Excluding start-up costs, the most expensive programs cost up to $250,000 per apprentice; the least costs less than $25,000 (U.S. Department of Commerce, n.d.). We think it is worth exploring the scalability of apprenticeship models that do not require substantial public investment.

PROMOTE ALTERNATIVE CREDENTIALING

For workers without a college degree, earning an industry-recognized credential can be a useful market signal that leads to higher earnings. Although there is little available evidence on the impact of nontraditional credentials on earnings, this is an avenue worth exploring. Policymakers could help establish a process to evaluate and accredit organizations that provide high-quality certifications and improve the general acceptability of credential programs. Improvements in credential quality and transparency would enhance the signals trainees send to employers, increasing the value of credentialing programs for both employees and employers.

REFORM THE PELL GRANT PROGRAM TO BETTER PROMOTE COLLEGE COMPLETION

Though Pell Grants are the largest federal source of student financing, funding cannot be applied to most career-focused, short-term credentialing programs. Currently, loans are only available for programs that run for at least fifteen weeks, disqualifying many short-term, skills-based training programs. This is an element of the program that might benefit from reform. Other reforms could include: eliminating or drastically simplifying the free application for student aid (FAFSA), as proposed by Baum and Scott-Clayton (2013).

Appendix: Cost Estimates

We calculate costs using our two stated goals:

a) *Close the completion gap between two-year college students aged 18 to 24 and their peers at four-year institutions by 2030. This would require increasing the average completion/transfer rate among 18- to 24-year-olds at community colleges from 37.5% to 60% by 2030. This will result in 3.6 million more 18- to 24-year-olds with college degrees by 2030.*

We first calculate the funding that would be required to equalize resources for education and student supports at four-year public institutions with those at community colleges. We assume that providing community college students with the same level of resources as those provided to bachelor's degree students—in the evidence-based manner for which we advocate—can bring about similar completion rates. This assumption is consistent with the elasticity estimates from Deming and Walters (2017), who find a one percent increase in institutional funding for community colleges is expected to lead to a 1.45 percent increase in the number of completions one year after investment. Therefore, we calculate the cost of increasing per-student

funding at community colleges to the level at public four-year institutions, holding constant the number of current community college students for the years 2019-2030.

In 2013, the latest year for which data are available, per-student funding for "education and related expenses" at four-year public universities was $14,900 per full-time equivalent student (Delta Cost Project, 2016).[15] At community colleges, this number was only $11,400—a difference of $3,500. In 2015, there were 3.4 million students aged 18 to 24 enrolled at community colleges nationwide (NCES, 2016). Assuming the community college student population remains constant through 2030, increasing per-student resources would imply an annual cost of *$11.9 billion*.

b) Increase the share of Americans aged 25 to 64 with a college degree or other high-quality credential from 46.9% to 65% by 2030, which reflects the expected share of jobs requiring advanced skills in that year. This goal would require 28 million total additional workers to earn first-time degrees or high-quality credentials by 2030.

Approximately 65% of jobs are projected to require college-level skills by (or before) 2030 (Manyika et al., 2017; Carnevale, Smith, & Strohl, 2013; Juszkiewicz, 2017). Therefore, we measure the number of additional workers aged 25 to 64 that would need to complete a degree or credential in order to achieve the 65% threshold by 2030.

Assuming the policy is enacted in 2019, we expect a three-year implementation lag, so that interventions are fully operational by 2022. According to the Lumina Foundation, 46.9% of adults aged 25 to 65 held a college degree or other high-quality credential in 2016 (Lumina Foundation, 2018). We use the Lumina Foundation measure, since it is the only data source that contains a measure of adults who have completed a high-quality credential. Although the rate of degree/credential completion is already increasing among the U.S. adult population, we must accelerate the rate of degree completion to achieve this goal.

We assume an annual growth rate of 0.6 percentage points per year through 2022, based on historical trends in degree and credential attainment reported by Lumina. Therefore, 51% of the workforce will have a degree or other high-quality credential by 2022. We then calculate the number of additional workers that would need to earn a credential in order to achieve the 65% goal by 2030. Based on population projections from the United States Census Bureau, *28 million* additional American adults would need to attain a degree or other high-quality credential between 2022 and 2030 in order to reach the 65% benchmark (U.S. Census Bureau, 2017).

15 "Education and related expenses" in the Delta Cost Project data *include* items directly related to training students: instruction, student services, and a prorated share of administration and operations and maintenance. These *exclude* spending on research, public service, enterprises, hospitals, and independent and other non-academic operations that are irrelevant to community colleges.

Since younger workers are more likely to hold a college degree relative to older workers, we adjust our underlying cohort according to the population that will age in (Hussar & Bailey, 2017; NCES, 2016) and age out over this time period (U.S. Census Bureau, 2017).

We estimate the cost of an additional credential to be $3,520, which is based on the average annual cost of community college tuition and fees in 2017 (Community College Association of America, 2017). We assume a lower cost per adult learner relative to students aged 18 to 24, since this population will include participants in short-term certification programs and will rely more heavily on online education delivery. This results in an annual cost of *$10.1 billion*.

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